RULES & BACKGROUND FOR

JOVIAN CHRONICLES

ENTER THE SAGA OF MANKIND



FROM DREAM POD 9

JOVIAN CHRONICLES



In Memoriam: Alexandre Racine (1972-1999), member of the original Jovian Chronicles design team.

We will miss you.

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▶ CREDITS

▼ WRITTEN BY:

Phillippe Boulle
Jean Carrieres
Wunji Lau
Marc A. Vezina

▼ ADDITIONAL WRITING BY:

Brent Carter
Elie Charest
Laurie Mair
Michael P. O'Shea
Tyler Millson-Taylor

▼ SILHOUETTE DESIGN:

Gene Marcil
Stephane I. Matis

▼ SILHOUETTE DEVELOPMENT:

Marc A. Vezina

▼ ADDITIONAL SILHOUETTE DESIGN:

Jean Carrieres
Elie Charest
Eric Garvis
Tyler Millson-Taylor

▼ COPY EDITING:

Jean Carrieres
Brian Faughnan
Tyler Millson-Taylor
Julia Dover

▼ ART DIRECTION:

Pierre Ouellette

▼ LAYOUT:

Jeff Fortier
Pierre Ouellette

▼ COVER ART:

Ghislain Barbe

▼ INTERIOR ART:

Ghislain Barbe
Normand Bilodeau
Bobbi Burquel
Jeff Fortier
Pierre Ouellette

▼ MARKETING:

Robert Dubois

▼ MECHANICAL DESIGN:

Dream Pod 9

▼ PLAYTESTING:

Jonathan Bezeau, Hugh H. Browne Jr., Erik Centner, Scott DiBernardino, Dan Eveland, Jeremy T. Fox, Alistair Gillies, David Graham, Dave Handy, Dan Higdon, Mark Hofmann, Lloyd D. Jessee, Wunji Lau, Brian Laxson, Richard Meaden, Prabal Nandy, Micheal P. O'Shea, Joe Poulin, Jason Prince, John D. Prins, Jon Souza, Kenneth Winland

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▼SPECIAL THANKS

David Brin, Arthur C. Clarke, Etienne Gagnon, Stephen L. Gillett, Stephen Hawkins, Robert A. Heinlein, Gerard K. O'Neill, Martin Ouellette, David Pulver, Kim Stanley Robinson, Ridley Scott, Allen Steele, G. Harry Stine, Yoshiyuki Tomino, Robert M. Zubrin, The Barenaked Ladies; The old time fans (you know who you are), the 'Net people, for the kicks in the pants, the crew of the JSS Faraday and the DC-X, and all the others we forgot (sorry!)

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Brough to you by the letter "C" (again — some things never change).

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The use of the male gender throughout this manual should not imply exclusion of the female gender. It is meant only in order to avoid pronouns like "him/her/it," making the text easier to read.

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Dedicated to Carl Sagan (1934-1996), astronomer and visionary, for opening new frontiers.

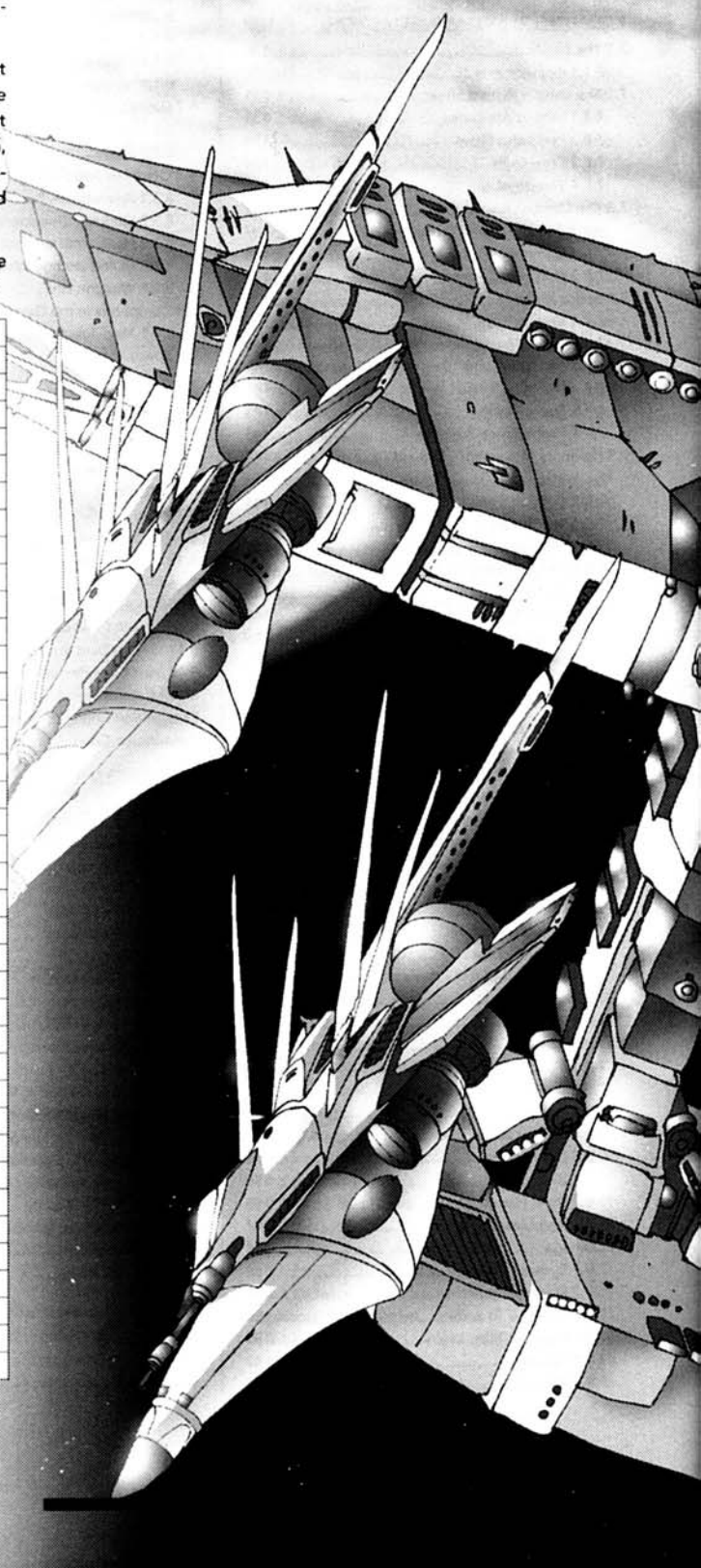
THE SAGA OF MANKIND

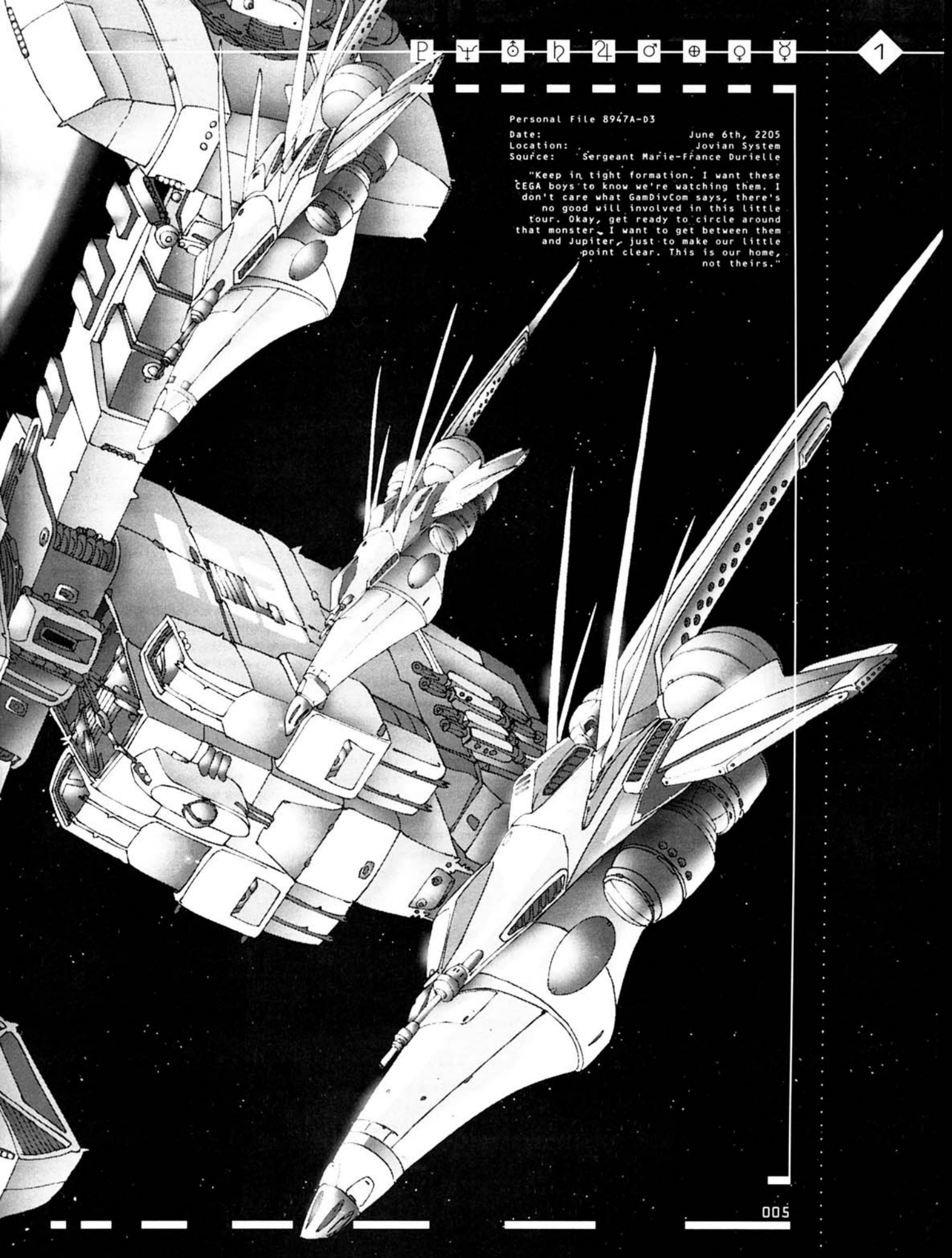
The **Jovian Chronicles** is a complete science fiction universe for the **Silhouette™** roleplaying game system. Inspired by classic science fiction stories and giant robot animations, this book will take the players beyond the confines of planet Earth to discover a solar system on the brink of war. Along the way, they will interact with a rich cast of characters, visit exotic locales and possibly alter the destiny of the Jovian Confederation, if not the human race!

Other than players, six-sided dice, paper and pencils, all that you need to play can be found in this book. In addition to the **Chronicles'** historical, political and scientific background, it contains the **Silhouette** game rules for character generation, character action and vehicle combat that support the campaign. The book also contains pre-generated characters and vehicles, all ready to use in a roleplaying campaign.

Get ready to enter the twenty-third century and step into the world of the **Jovian Chronicles.** Are you up to the challenge?

HISTORY	
1772	Lagrange theorizes the existence of the gravity points in Earth orbit
1957	Launch of the Sputnik, first man-made satellite
1961	Yuri Gagarine becomes the first man in space
1969	Apollo 11 lands on the Moon
1977	Gerard K. O'Neill proposes the open-type space colony design
1982	First launch of the American Space Shuttle
1999	Solar Power Satellite 1 test succesful
2002	Freedom Station is launched
2007	Prototype fusion engine sustains reaction and generates power
2011	Trial flight of the Megaloader, first true spacecargo
2017	First Laser Launch System constructed at Cape Canaveral
2024	First permanent Moon Base established
2026	Artificial diamond fiber composites marketed
2030	Construction of the orbital colonies begins
2031	NASA/ESA Jupiter exploration ship "Galileo II" is launched
2033	First Martian settlement
2037	Jovian Gas Mining Corp. is founded; first station built in Jovian orbit
2038	Ares Corporation founded on Mars
2070	First nomad settlements established in the Asteroid belt
2072	Project New Earth begins; terraformation of Venus
2080	Social and environmental pressures collapse several nations
2090	Major exodus toward space and the colonies
2081	Provisionnal Terran government takes refuge in orbit
2085	Mars becomes independant
2086	First colonization of Venus
2090	Earth loses any remaining authority over the colonies
2100	Earth is isolated; rumors of major disasters and civil conflicts
2120	Intermitent skirmishes on Mars
2160	The Jovian settlements struggle to survive their environment
2163	First true exo-armor enters service in the JAF
2182	End of the Unification War on Earth
2184	CEGA is founded
2185	Contacts are slowly resumed between settlements
2190	Beginning of a new age of peace and prosperity
2200	Peace in the solar system
2205	Commerce is dominated by the powerful Venusian Bank
2210	The Odyssey
Now	





Personal File 8947A-D3

Date: June 6th, 2205
Location: Jovian System
Source: Sergeant Marie-France Durielle

"Keep in tight formation. I want these CEGA boys to know we're watching them. I don't care what GamDivCom says, there's no good will involved in this little tour. Okay, get ready to circle around that monster. I want to get between them and Jupiter, just to make our little point clear. This is our home, not theirs."

▶ PLAYING GAMES

Tensions continue to rise between the Jovian Confederation and the Central Earth Government and Administration. Jovian President Alexandra Itangre announced yesterday that Gamma and Alpha Divisions of the Jovian Armed Forces will be increasing patrols in the Belt region through to the orbit of Mars. CEGA officials announced that naval forces will be responding to "defend our planetary security and that of our allies on Mars." The Mercurian Merchant Guild has already launched a protest against new limits placed on civilian travel through the contested region and the Venusian Bank has expressed concerns about the free-flow of capital. Informed observers say that both fleets are on high alert and some are predicting violence before the end of the new year.

— Zenith Orbital Network Lead News, 3 January 2208.

▼ 13:00 HOURS — 8 JANUARY 2208

"I believe you have some explaining to do, Mister Malachai." Director Kosama's precise diction in his native Japanese conveyed his displeasure to the entire room.

"There is no reason to be concerned, Director Kosama. The interests of the bank will be protected no matter what." Devon Malachai seemed unfazed by the huge boardroom he was standing in. A bay window at least fifteen meters in height rose behind the five directors of the mighty Venusian Bank, revealing the hostile landscape of the planet's polar region.

"I certainly hope so, Mister Malachai. Thanks to your carelessness, a reporter has uncovered Project Lancelot on Stevenson Station. Obviously, your plan of hiding your illegal genetic research project around Saturn has failed outright."

"Not entirely, Director. This..." Malachai consulted his notes, "...Roxanne Fujima must get back from Saturn before she can harm us. I expect she will wish to meet with executives at Zenith Orbital Network in Earth orbit in order to get the most money for her information. The journey should take her several months via commercial liner."

Kosama seemed relieved and his mood spread throughout the lavish meeting room. "Excellent. We will take steps to cut ties to Lancelot. By the time the news hits the airwaves, no one will be able to uncover our funding of the activities. We cannot appear to be breaking the Edicts, after all." The other directors murmured their agreement, but Malachai knew they were signing the death warrant of his career.

"Director Kosama!" Malachai took a deep breath, reigning in his emotion. He had spent the last ten years slowly moving up the strata of power within the Venus Bank. The directors were highly resistant to promoting a soldier and had, he was sure, been looking for an excuse to expel him. He would not give it to them. "You cannot cut off Lancelot; I have spent five years running this operation and I refuse to see it discarded so casually. Not when there's another solution; one that will seal this leak permanently."

"An assassination will only draw further attention to Lancelot and ourselves, Malachai. That option has already been discarded." For shadowy executives controlling much of the solar system's wealth, the directors apparently thought very small. Malachai did not.

He activated a portable projector and brought up a display of the solar system. Highlighted in red, a thin line arced from Saturn through Jupiter's L5 point — known as Newhome — and towards Mars. It was the standard course for a commercial liner running from Saturn or Titan given the current orbital alignment. A series of other lines that indicated the paths of military vessels from the CEGA Navy in the same regions.

"But what if Fujima was eliminated in a way that could not be traced to us or Lancelot?" Malachai smiled as the Directors listened to his plan.

"Fine, Mister Malachai. We will do it your way, but you will see to it personally."

Malachai swallowed, his mouth drier than it had been. "Of course."

▼ 22:00 HOURS — 21 APRIL 2208

"Saber One, report." Paris' voice popped through Helena's headset and his face appeared in a small corner of her Head's Up Display. She smiled every time she saw him, all decked out in his Jovian Armed Forces uniform. As always, he looked deadly serious.

"What's up baby brother?" Helena just couldn't get over it. 400 million kilometers from home and she was still watching out for the kid. And still driving him nuts.

"Lena! Don't break protocol!" The warble in his voice when he was upset was so cute.

"Oh, sorry. Saber One here." Helena affected a deep and comically serious voice, hoping against hope that her brother would crack up at his station on the bridge of the *JSS Daring*. "Do I sound serious now?"

"Lena!" Paris was trying to whisper into his mike, but Helena was pretty sure his bridge mates could hear him. "Be serious, this isn't a game!"

▷22:00 HOURS — 21 APRIL 2208 CONTINUED

"No, baby brother," she answered back in her real voice while maneuvering her *Lancer* interceptor into a barrel roll. "This is much more fun!"

"For God's sake, Lena!"

This time he sounded really mad. Maybe she should humor him just this once. "Okay, fine, not a game. Got it." She cleared her throat and adopted a military tone. 'Situation normal. Continuing on assigned patrol. Nothing to report."

The relief in Paris' voice was palpable. "Roger, continue along... Saber One, change of orders. *JSS Steadfast* reports a vessel coming in." Coordinates and other data transmitted from *Steadfast* appeared on Helena's console and put the bogey coming up from behind the formation. "IFF is commercial, but we don't have any record of a flight plan or the ship itself. Take Saber Flight and check it out. Current range is 10,000 kilometers and closing."

"Roger, *Daring* command." There, that should make him happy. She hadn't called him 'Daring command' for almost a week. Helena opened a comm channel to her wingmen; Darren and Keiko's faces appeared in her HUD. "Okay Sabers, time to earn our pay."

The three *Lancer* space superiority fighters that made up Saber Flight fired their maneuvering verniers in unison, spinning about to face the incoming vessel. The main thrusters then fired, bringing them onto the new course. Helena loved the feel of her craft accelerating and smiled as she sank into the molded pilot's seat. The tracked position of the target was relayed to her from the *Steadfast*, so she had no need to announce her presence with a sensor sweep. To further increase discretion, Helena cut thrust and maintained radio silence until her unit had closed to within 200 km.

"Okay people, tight formation." The other two *Lancers* closed range and Helena opened a channel to the target vessel. "Unidentified freighter, this is a Jovian Armed Forces fighter patrol, please identify and state your purpose."

"JAF patrol, this is independent cargo vessel *Beautiful Dreamer* en route to Ceres City from Newhome. Captain Aglaée DesSources commanding. My purpose is trade."

00:15 HOURS — 22 APRIL 2208 ▼

"Are you out of your mind?" Aglaée DesSources' face was writ large against the main viewscreen of the *Daring*'s bridge. Her fine features and fair skin were somewhat distorted by obvious irritation.

Captain Luther Columbus, commander of the *JSS Daring*, took a deep breath. He was getting a headache already. "Not at all, Captain DesSources. I am just stating the obvious: you will have to change course."

"That is completely out of the question. I am a free trader carrying on legitimate business between Titan and Mars and I have no intention of changing my flight plan and waste fuel to suit your whims. Bad enough I have to deal with your fighters on my viewscreen."

"This is a patrol operation of the Jovian Armed Forces, not a Nomad trade caravan. You will divert around us while we travel toward Ceres."

"No, I won't." DesSources seemed to be fighting back rage and took a moment to compose herself. "I will make it simple for you. I am heading for Ceres to catapult around the asteroid and conserve reaction mass. If I follow your orders, not only will I burn mass to change course, but I will miss Ceres and have to burn further to avoid flying completely off course."

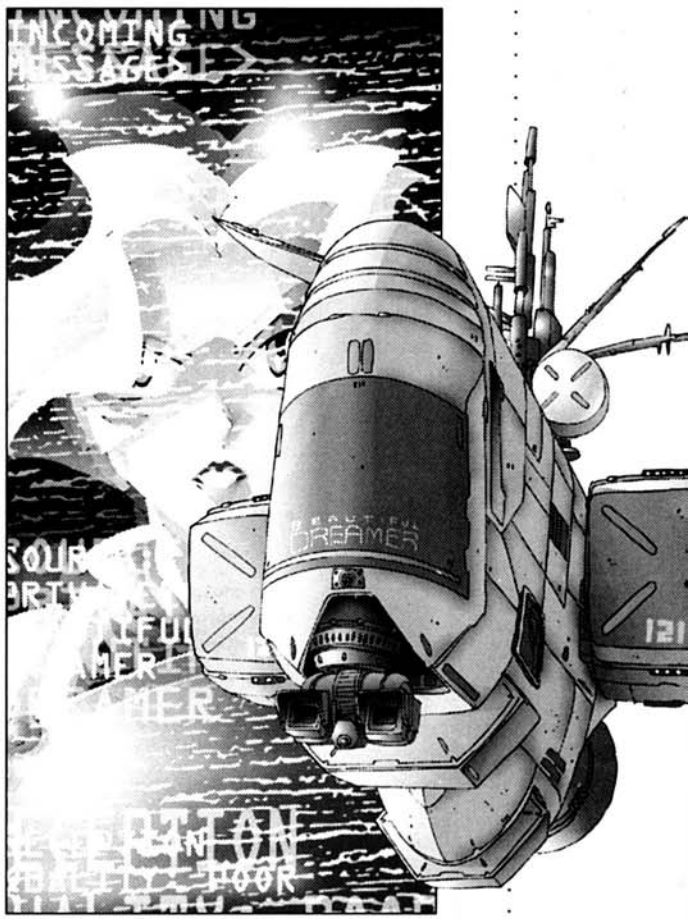
"Be that as it may—"

"I do not have that reaction mass to spare, Captain. It's this simple: let me through or call the Solar Cross, because I'm going to be stuck in the Belt for the next 15 years." DesSources let her statement sink in. "So there isn't very much to discuss, now is there?"

Columbus closed the communications channel and turned to his navigation officer. "Lieutenant, is she right?"

"It could be, sir. Assuming she's low on reaction mass it could be difficult for her to get back to Ceres once going around us. I wouldn't want to be out with that little mass left and so far to go, but traders are a weird lot."

"They are indeed." Columbus adjusted the webbing that kept him in place in the microgravity of the destroyer and opened up the channel again. "Proceed to Ceres, Captain DesSources."



▷00:15 HOURS — 22 APRIL 2208 CONTINUED

"Thank you, Captain." She cut the communications before Columbus could.

"Corporal Juno, open a channel to the group." A simple light indicated that it now was. "This is Captain Columbus to all vessels. We will be sharing space with a commercial vessel for a day or so. Close to escort formation and match velocities."

Soon enough, the tactical display showed the destroyer group beginning to respond. The three Thunderbolt-class destroyers — *Daring*, *Steadfast* and *Brave* — placed themselves around the freighter with *Daring* in the lead. The two Forge-class escort carriers — *Alexandra* and *Magdalen* — formed the rear of the formation, with flights of fighters and exo-armors darting to and fro.

It was going to be a long day.

▼12:40 HOURS — 22 APRIL 2208

"Red One to *Isonami* command. In position."

Captain Nera Ponderas of the CEGA Naval Forces spoke directly to the junior lieutenant piloting the *Wyvern Command* exo-armor. "Acknowledged, Red One." She called up her tactical display and checked that everything was well. Red, Blue and Gold Flights — consisting of *Wyvern* exos, *Wraith* fighters and *Syreen* exos — were ahead of the strike force. Coming up behind them were Ponderas' lead attack craft, Bricriu-class corvettes *Tacoma* and *Arzana*. Holding back during the operation would be her own ship, the Hachiman-class destroyer *Isonami* and a group of Tengu-class escort carriers. More than enough to deal with a commercial freighter, even if it hid some nasty surprises.

"Attention all hands, this is your commander. I remind you that these are fanatical terrorists we are dealing with. STRIKE is sending a team of killers toward our homeworld and will stop at nothing. We are the first and best line of defense between them and Earth." Ponderas had dealt with STRIKE before and knew they could be quite dangerous. She was thankful she would be getting the drop on them. According to her information, the freighter's holds would be stuffed with stolen exo-armors and weapons, all bound for the Moon.

Ponderas flipped an internal comm channel to the observation deck and signaled the *CSS Isonami*'s sole civilian passenger. "Mister Malachai, if you want to see the terrorists who killed your family get their just deserts, I recommend your turn on the monitor we provided you with." The Captain knew it was against protocol to let the Venusian watch, but he had provided the information about a STRIKE team using the *Beautiful Dreamer* as a cover for terrorist action. He had told the Captain in confidence that STRIKE had murdered his wife and child. He wanted vengeance and Ponderas could appreciate that.

"Blue and Gold Flights," she continued, "prepare to close on the vessel once operations have begun. Red Flight will close with you. *Arzana* and *Tacoma* will provide cover fire as needed.

"Okay, Red One. Light up the target for us."

Junior Lieutenant Luce Sonora punched a few keys and channeled power into her *Wyvern Command*'s sensor array, sending massive radar/ladar pulses across the vacuum of space. Her on-board targeting computer instantaneously started displaying and identifying targets — far too many targets.

"Commercial vessel — unknown class. Destroyer — Thunderbolt-class. Destroyer — Thunderbolt-class. Exo-armor — *Pathfinder*. Fighter— *Lancer*. Destroyer — Thunderbolt-class. Escort Carrier —"

"Oh, hell."

▼12:44 HOURS — 22 APRIL 2208

"CEGA battle group at 35 by 45, Captain. At least three flights of exos and fighters heading in and two Bricriu corvettes in attack formation."

Columbus responded quickly. "Put Saber, Dagger and Sword flights on intercept courses. Move *Steadfast* to shield."

Soon enough, a full tactical display was up on the main screen, revealing an impressive sight: a Hachiman destroyer, two Bricriu corvettes and a Tengu escort carrier. Three wings of fighters and exos — *Wraiths*, *Wyverns* and *Syreens* — were out there as well.

"What the hell are these Earth boys doing? Get me a channel to that Hachiman."

Paris Juno worked his comm station, hoping his hands wouldn't shake too much — this was the *real thing* — but got nowhere. His calls went unanswered. "Nothing, sir."

"Blast!" People were going to die and Columbus didn't know why. He did not like that at all.

12:57 HOURS — 22 APRIL 2208 ▼

"The lead destroyer is sending out a hail again, Captain!"

"Ignore it." Captain Nera Ponderas was not happy. This was supposed to be a quick attack against terrorists, facing at most a flight or two of stolen exo-armors. Now she was nose to nose with a Jovian Armed Forces destroyer group. Even with the *Isonami* in the fight it would have been a difficult battle — with it outside of the battle zone, a clear victory was nearly impossible. Fortunately, they were not here to destroy Jovian vessels; all they needed to do was eliminate the *Dreamer* and the armament in its cargo bays.

"Enemy craft identified, Captain," reported the sensor system officer. "Looks like the third destroyer group. Thunderbolts are *Daring*, *Brave* and *Steadfast*.

"All hands," she spoke into the comm system, "Jovian Armed Forces vessels have formed a defensive pattern around the terrorist target craft. We can only assume that they have entered into an alliance —"

"Captain, *Arzana* has been locked on by *Steadfast*!"

"*Tacoma*, burn in to cover Blue and Gold Flights. Time to contact with enemy fighters?"

"Eight minutes."

"Okay ladies and gentlemen, this is it. Red and Gold go after the enemy fighters. Blue close with the *Beautiful Dreamer*. I want that freighter targeted and destroyed. We can clean up the diplomatic mess later."

On the observation deck, Devon Malachai smiled nervously. His simple tactical display showed the superior Jovian forces — what were they doing there, he wondered. Still, he had chosen well. This Ponderas woman was the perfect CEGA Navy pawn: dedicated, simple-minded and deadly. With vision of protecting the homeworld and exacting vengeance for "that poor Venusian" running through her head, she would gladly face down the Jovian vessels and destroy the *Dreamer*, along with Roxanne Fujima.

He noted with some measure of relief that the *Isonami* was staying out of the line of fire. He had left the Venusian Home Defense Force because he was sick of risking his life for others. Let these CEGA fools do it for him, now.

13:04 HOURS — 22 APRIL 2208 ▼

"Engage!" Helena Juno pulled the joystick on her *Lancer*, firing lateral thrusters to change her facing. The flight of *Wyvern* exo-armors was now within the ten kilometer radius and closing at a massive relative velocity. The lock on was easy and she fired a salvo of 3 missiles. Her wingmen matched her almost move for move, before they broke up to take on the *Wyverns* individually.

It was only a few seconds before the first explosion. One of Keiko's missiles hit its mark, ripping into one of the CEGA armors. Point defense systems seemed to have dealt with the rest of the salvo, however. Helena fired thrusters to send her fighter into a complex pattern, as repeated blasts from enemy railguns zipped past her.

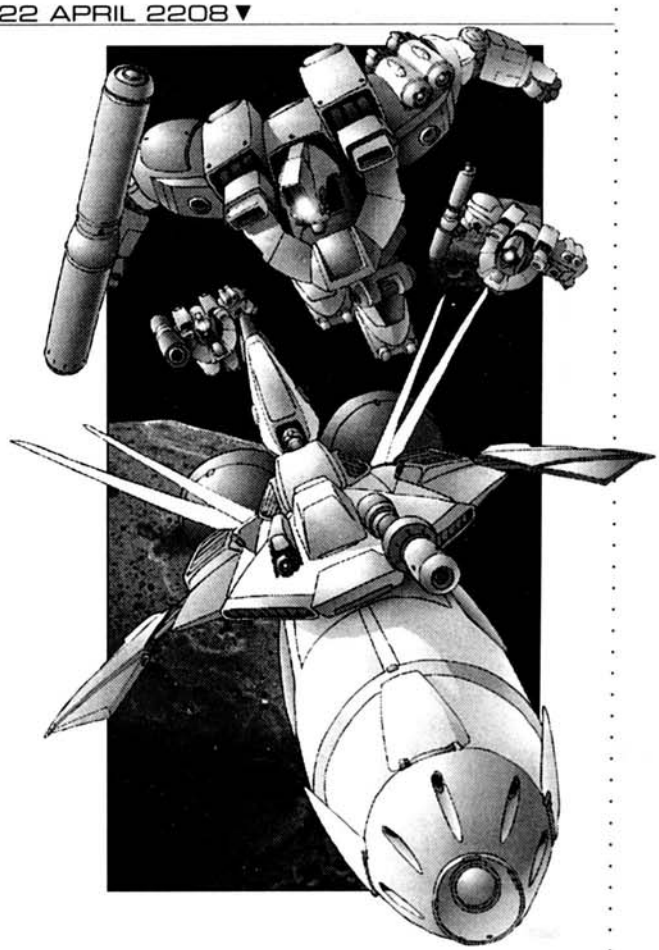
"Keep at it, Sabers! We've got to keep them away from the main ships." Helena knew that she could do only so much, however. This was only one flight of enemy craft, and they were already starting to get an edge despite their casualty. The *Lancer* was a powerful fighter, but *Wyverns* were simply more maneuverable. A flashing alarm flared to life in her HUD, warning that more enemy craft were on their way in.

A second later, *Daring* command confirmed her own sensors' readings. "Saber Flight, *Wraiths* coming at your five by two down. Dagger Flight move in to cover, ETA 30 seconds. Sword Flight track and kill *Syreens* at your one by one up."

Thirty seconds was a long time to be outnumbered and Helena pitched her *Lancer* into evasive maneuvers as the *Wraiths* came in. "Saber Two, *Wyvern* on your six, move to —"

Before she could finish, the CEGA exo fired its hypergolic bazooka again, ripping through Darren's fighter, which began to spin out of control, its insides flaring with explosive power. Helena swore under her breath, swinging to avoid a salvo from the two *Wraiths* that had dropped in behind her.

Where the hell were those *Pathfinders*?



▼13:21 HOURS — 22 APRIL 2208

"*Tacoma*, fire!"

Ponderas' order became a reality in a split second as several dozen fist-sized darts sprung from *Tacoma*'s twin kinetic kill cannon batteries. Streaking in at an impressive relative velocity, they crossed the eight kilometers now between the Bricriu corvette and the *JSS Steadfast*. The Jovian vessel tried to accelerate to avoid the salvo, but could not escape it all. At least five of the darts slammed into its side, punching through layers of armor and wrecking havoc within.

"*Arzana*, fire!" The second Bricriu-class corvette responded, firing its own salvo of kinetic kill weaponry. The *Steadfast*, despite the damage it had suffered, was moving now and came about in time to avoid much of the second blast. The civilian *Beautiful Dreamer* was not so lucky and its starboard cargo hold was ripped asunder by the super-dense flechettes. A cloud of glittering condensed vapor and debris streamed from the broken shell of the cargo bay.

Ponderas took a second to realize just what she was seeing. "Bloody hell! Get me a spectrum analysis on that cloud, what were they carrying?"

"*Steadfast* is firing, Captain," weapons control interrupted. The damaged Jovian destroyer had now veered enough to present its guns to the incoming CEGA warships. Its own kinetic kill batteries launched a large volley of darts, while its missile bays loosed several tracking warheads — all aimed at the *Tacoma*.

"*Daring* coming about, sir!" On the tactical display the lead destroyer was rotating to face them, its lateral thrusters burning white in the night. Its guns tracked the *Tacoma* with ease and opened up a second later.

The Bricriu-class corvette needed all its legendary agility to avoid destruction as a barrage of kinetic darts and seeking missiles barreled down upon it. Its Point Defense Lasers were firing madly at the incoming missiles, but the solid darts emitted no signal for the PDS to track. The corvette's maneuvering verniers and other thrusters flared to life as the ship attempted to avoid the incoming salvos. Its inertia was too great, however, and it could not avoid the *Steadfast*'s fire. Its port turrets were ripped to pieces by the darts. The *Daring*'s weapon fire arrived 45 seconds later, but that was enough time — the *Tacoma* had already moved just above the line of fire.

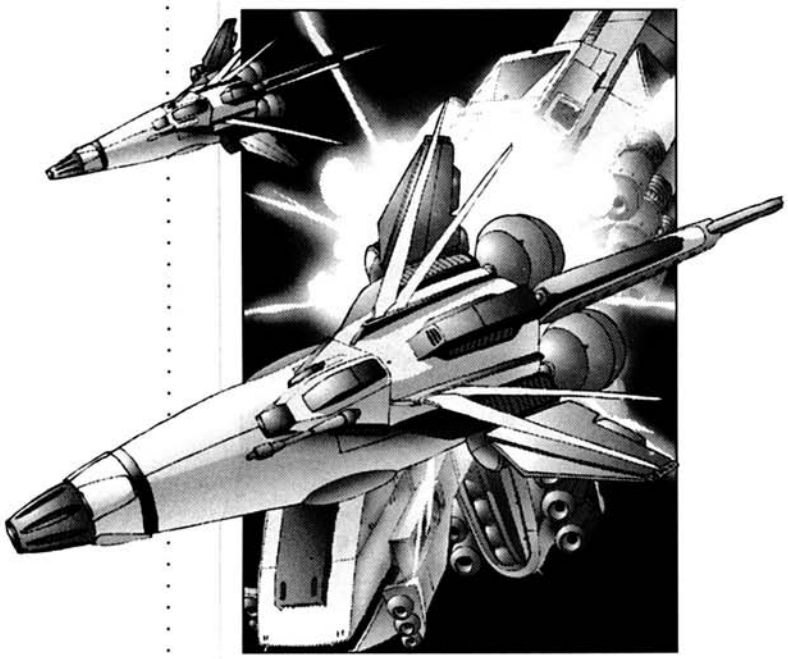
"*Tacoma*, return fire on *Daring*! *Arzana*, concentrate on *Steadfast* and *Brave*!" Captain Ponderas knew she had to hold off the Jovian destroyers. "Where is that analysis?"

"H_2O and hydrocarbons, Captain," the deck officer realized what was happening as well. "But I thought that ship was carrying exo-armors."

"Exactly." People were dying and she wanted to know why. "Get me Malachai!"

In the observation deck, Devon Malachai swore loudly. He ignored the intercom and floated about the deck, trying to readjust his plan, to calm himself down, anything. Well, he thought, she's just a soldier. She would follow orders. She had to.

▼13:29 HOURS — 22 APRIL 2208



"*Daring* command to Saber Flight." Paris' voice was tense, but sure. He was doing well. "Move to twelve by two down."

"Roger." Helena dove her *Lancer* in relation to the elliptic, taking her wingman with her. The *Wyverns* and *Wraiths* moved to follow, but the *Pathfinders* from Dagger Flight kept them off Helena and Keiko's back. "Remind me to thank Dagger One, little brother."

"Move to three flush and prepare for a run on Bricriu *Tacoma*." That Paris didn't berate her spoke volumes about the frantic pace on the *Daring*'s bridge. "Dagger Flight will continue to provide cover to your fighters during a —"

In the same instant, static burst through Helena's comm unit, her brother Paris' face vanished from her monitor and her tactical display listed the *Daring* as "HIT."

"Paris!" Frantically turning her head and adjusting exterior cameras, Helena caught a glimpse of the wounded destroyer, its side opened and spewing gas and debris. "Paris! Come in *Daring* command!"

"Saber One," a new voice, a new channel. "This is *Brave* command, we are assuming command of fighter operations; *Daring* reports casualties on the bridge. Move to three by one up and continue your attack. Target destroyer *Tacoma*, full missile spread."

▷ 13:29 HOURS — 22 APRIL 2208 CONTINUED

"Roger." Helena gritted her teeth and bit her cheek to channel her concentration. Her wingman Darren was dead and her brother was bleeding or dying, but all she could do was make those who had harmed them pay. Her tactical display showed the *Steadfast* and *Daring* as damaged and the two CEGA Bricriu corvettes coming in for the kill. *Tacoma* was closest and had inflicted the most damage so far. The navigational computer quickly calculated an approach. She rejected its choice and made her own.

"Saber Three, follow me; we're going for a lightning strike. Keiko, you're shield." The *Lancers* moved to a tight formation with Saber Two in the lead. They assumed an arcing approach, trying to maximize their velocity relative to the *Tacoma*. They would be passing by at a ridiculous speed, making it hard for the destroyer to lock on to them. They could still target the massive vessel, however.

As they raced toward the destroyer, they saw its guns open up again. Helena prayed that the *Daring* could avoid it. She had no time to check. "Keiko, on my mark… now!"

Saber Two launched a large salvo of small MMJ-2LR missiles, quickly followed by a second volley. Keiko added all her remaining wing-launched missiles, creating a swarm of warheads. The small anti-vehicular missiles were not a major threat to the *Tacoma* but its point defense lasers targeted them nevertheless. The tiny laser panels and turrets blasted away, trying to track the dozens of missiles. The PDS was doing a good job, but was being taxed to its limits; Helena had a window and she took it.

"Missiles away!" Helena opened up with her heavy HMJ-6 anti-ship missiles. Four powerful warheads streaked from their launchers as her *Lancer* darted only a hundred meters above the *Tacoma*'s hull. No escape was possible, no PDS could respond, and Saber Flight left a chain of explosive destruction behind it.

Streaking along the starboard side of the destroyer, the *Lancer*'s missiles hit the *Tacoma* in a picture-perfect line. The first shot hit the forward hull, ripping into the massive armored plates and causing severe interior damage. Then came the starboard guns; less armored than the hull, they suffered two direct hits and detonated in a swarm of fused metal and circuitry. The final missile was aimed at the destroyer's fusion engine, slammed into its body, and sheared off one its four massive drive flaps.

Helena and Keiko were past the destroyer in an instant, leaving the *Tacoma* a ruin. Reaction mass, atmosphere and debris were streaking out of the entire starboard side, creating a growing cloud of particles and ice crystals. The ship was beginning to spin, a few life pods ejecting from the somewhat undamaged port side.

13:46 HOURS — 22 APRIL 2208 ▼

"What are you doing?! Keep firing!" Malachai was floating in the observation deck, his furious gestures sending him floating about in the micro-gee environment. "You have to complete the mission." He was having a hard time keeping the quiver from his voice.

"Mister Malachai." Captain Ponderas' voice was cold and bitter. "Your little plan has already cost the lives of over thirty good soldiers. I have —"

"But the terrorists, you can't let them escape!" CEGA soldiers were fanatical about eliminating terrorists. He could still play that card. She had to fall for it.

"There are no terrorists, Mister Malachai." Her tone was sharp and cold, and he felt a knot tighten in his stomach. "That freighter is shipping water, methane and other simple supplies." She let that sink in, and watched as panic and anger played across Malachai's face before a semblance of calm returned. "A grave mistake has been made, Mister Malachai, and I suspect it is yours. I have given the cease fire order and told our forces to fall back. My decision is final; I think you should consider your next words carefully."

He felt the sweat on his brow. She just couldn't understand. The Bank didn't give second chances. If that little reporter made it to Earth, he was finished. How he hated that woman. His anger suddenly welled up within him then burst. "You cow! You're letting the ship escape! You don't realize—"

Captain Ponderas shut off the intercom and sat back in her chair. "Send MPs down there and put Malachai in the brig. We'll drop him off when we get back to base. Navigation, calculate the trajectories of the escape pods that made it off the *Tacoma* and plot an intercept course that keeps us away from those Jovian forces." Ponderas grimly realized that it wouldn't be hard to calculate; only two pods had made it off the doomed corvette.

"The Jovian forces are backing off as well, Captain. They seem to have accepted the cease fire. The terrorist vessel is still with them." A slight tone of criticism had crept into the navigation officer's report.

"Reign in the attitude, Ensign." Ponderas was already mad enough at Malachai and at herself for having believed him; she didn't need the bridge crew second guessing her. "Someone has been playing games with us."

▼00:00 HOURS — 23 APRIL 2208

"Ladies and gentlemen of the third destroyer group." Columbus' voice echoed through all the vessels under his command, his bandaged face appearing on comm monitors and display screens. "This has been a sad day for us."

The image on the comm screen shifted to an external image taken from the *Alexandra*. All the other ships in the destroyer group were in the shot and many bared the marks of combat.

Ten hours after the battle's end, the combatants were well away from one another. The *Steadfast* was limping along on a single fusion reactor, the whole destroyer group making for Ceres City, where they could take on supplies before heading back to Jupiter.

"The *Steadfast* and the *Daring* have both suffered during this exchange, as have our fighter and exo-armor forces. Today we count our dead and salute their bravery in the line of fire." Standing before the surviving officers of the *Daring*, Columbus' voice was solid and sure, but most could see the sadness in his features. "We have faced a brutal and unprovoked attack and defended the lives of innocents. We have shown the forces of the Central Earth Government and Administration that they cannot indiscriminately attack people undertaking legitimate business through free territories."

"Some of us have paid the ultimate price during this battle. Twenty crewmen of the *Daring*, 31 aboard the *Steadfast* and five exo and fighter pilots, will not be returning home. They will never see the crimson and orange of our planet again. To them we give thanks, for they gave their lives for ours. As is our tradition, Chief Hectors will read out the names of the dead and their bodies will be entrusted to the stars. God bless them and take them into His arms."

Helena Juno stood at attention in the pilots' mess, her magnetic boots keeping her to the floor despite the lack of gravity, and saluted as the names were read.

"Private Muriel Anders; Corporal Ethan Azona..."

She felts heat spread through her face as the list dragged on. The view screen displayed the draped bodies slipping out of the cargo bays of the ships they had once served upon. Some she knew, others she did not; they all hurt.

"...Lieutenant Katherine Fendel, Corporal Darren Gimble, Sergeant Didier Guillaume..."

One name down and one to go. Helena held her breath. She felt like fainting, or crying, or dying. Instead she steadied her salute and steeled herself.

"...Master Sergeant Vincenzo Itoglio, Corporal Paris Juno, Private Gabrielle Lan..."

▼17:35 HOURS — 3 JUNE 2208

"I can explain."

Devon Malachai had arrived in New Tokyo only an hour ago. In the long months since the failure of the CEGA assault on the *Beautiful Dreamer* he had done almost nothing except try to come up with some form of excuse as to why Roxy Fujima was still alive. The assembled directors of the Bank had yet to utter a word. Malachai opened his mouth to begin his long tirade when the chairman simply hit a key at his station. A video monitor burst to life in response.

"...Roxanne Fujima has more. Roxy?" The ZONet anchorman looked perfectly polished. The network logo was covered by a small date tag indicating when the broadcast was recorded. Malachai had already seen it more than once, but he knew he was being told to watch again.

"Thanks, Xavier. As you know the nations of the solar system live under mutually enforced Edicts that impose limits upon or ban outright certain dangerous forms of scientific research, including fields such as artificial intelligence and genetics. But just how sure can we be that the Edicts are being obeyed? For years we have heard rumors of illegal research stations operating with the approval of one nation or another. Proof, however, has been hard to come by — until now."

The image of the young Eurasian reporter shifted to hand-held shots of an advanced biology lab. "These images were taken with a hidden camera that I carried onto Stevenson Station in orbit around Saturn. This most distant outpost of humanity would be the perfect place to hide illegal research and that is just what I found."

Another shift, this time to a work station with modeled DNA floating in a holographic matrix. "These pictures of research into large-scale human genetic manipulation were taken in the facilities of Robora Technologies — in labs dedicated to a Project Lancelot, to be precise. Lancelot's funding and purpose remain unclear, but SolaPol investigators are currently on their way to Saturn to investigate the evidence provided by ZONet News."

The image froze, plunging the room into utter silence. The directors' faces were lit only by the mild orange light emitted by the large projected face of Roxy Fujima. How Malachai hated that face.

"This is only a minor setback. Lancelot's funding can be masked with ease and its resources relocated..."

"That has already been taken care of, Mister Malachai." The chairman's voice was cold and distant. "We have gathered here only to discuss what to do about you. The Bank is not accustomed to failure."

▷ 17:35 HOURS — 3 JUNE 2208 CONTINUED

"I haven't failed! Lancelot was worthwhile and will continue to be. Fujima will be made to pay for what she has done to us, as will those Jovian fools. Blood will run over this, I can promise you that!"

The directors stood up in unison and began to file out. The chairman himself waited a moment longer, uttering a few last words. "Vengeance is the resort of unstable madmen. It has become obvious that we operate on a level you are wholly unfamiliar with, Malachai. Consider this your termination notice."

"You can't do this to me —"

"We just did, Mister Malachai. We just did."

07:35 HOURS — 8 NOVEMBER 2210 ▼

"Shuttle 23 to *Valiant* command. Requesting clearance for final approach."

Lieutenant Helena Juno — she still wasn't quite comfortable with her new rank — kept the passenger shuttle in a straight trajectory, moving at 300 meters per second. Beside her, the Corporal assigned to pilot the craft looked a little nervous to have her at the helm, but she was a seasoned pilot; he really didn't have to worry.

"Shuttle 23, you are clear for approach and docking with *Valiant*. Please proceed."

Looking through the viewscreen, she maneuvered the shuttle onto an intercept course with the mighty strike carrier 13 kilometers away. The *Valiant* was virtually covered by maintenance and supply M-pods darting across its mighty hull. Helena decelerated to 90 mps and called back to the passengers. "There she is, Captain."

Luther Columbus smiled broadly as he caught glimpse of the ship that would be his. The other members of the command staff, all veterans of the third destroyer group, soon joined in. "Take a look, my friends, that is the ship that will be taking care of us from now on."

They sat in silence as the carrier grew in size. Its great hull was lined with massdriver catapults from which the fighters and exo-armors under Helena's command would launch. The habitation quarters were now in centrifuge mode. Extended from hull, they slowly rotated around its axis to maintain artificial gravity. Deep under the hull's armor was the bridge, where most people in the shuttle would serve. Huge batteries of kinetic kill cannons were placed on the hull's side, but the most impressive weapon was imbedded in the craft's body. The spinal laser, just below the missile launch ports, could cut through any vessel it encountered and made the *Valiant* a force to be reckoned with. She was spectacular and took their collective breath away.

Columbus, Helena and the others felt twinges of regret, however. Being chosen to command the first in a new class of vessels was a great honor, but leaving behind the *JSS Daring* and the third destroyer group was bittersweet. They had lived — and watched others die — on those ships and a little of the *Daring* would always stay with them.

Their reverie was broken by a flight of three *Pathfinder Alphas* coming from above. Their markings identified them as Tiger Flight, one of the two units now under Helena's command. The pilots and crew had been on the strike carrier for a few days. "Welcome to *Valiant*, Shuttle 23."

The three sleek exo-armors fell into formation around and slightly ahead of the shuttle, so that they were fully visible through the viewscreen. Once their velocity was set, they rotated in unison to stand erect and face the shuttle. On cue they all saluted. "Glad to have you aboard, sirs!"

Columbus smiled, but Helena beat him to the comm. "Tiger Flight! This is Lieutenant Juno! Resume standard formation and continue your patrol immediately."

The lead exo jerked slightly, responding to the movement of the surprised rookie pilot. "But ma'm..."

"Corporal, you are traveling at 90 meters a second toward a crowd of vessels and your attention is on us." Helena's voice was cold and clear. "That is a problem."

"Yes, ma'm." The exos resumed standard flight position and veered off. Helena slowed the shuttle to prepare for the final approach. She knew the captain would have something to say.

"You were rather hard on them, Helena."

"They're rookies, Captain. They have to learn." She breathed the words more than said them. "This is not a game."

▶ THE SETTING

1.1

The year is 2210. Mankind has been expanding into space since the beginning of the twenty-first century, establishing outposts in the solar system for resources and living space. Lagrange points are orbited by countless stations, factories and cylinder colonies, nearby planets have been explored and settled, and the terraformation of Venus and Mars has begun.

More than a hundred years ago, after centuries of environmental and social hardship, the global economy of Earth collapsed. Although it did not happen overnight, it did leave the planet in a state of turmoil and unable to properly care for its off-world colonies. They became independent, absorbing a steady flow of refugees from conflict-torn Earth and surviving as best they could. Through the twenty-second century, the former colonies became the settlements — or countries — of the solar system. The deceased United Nations reorganized under the name of United Solar Nations (USN) and was reinstated to serve as a neutral meeting ground for the governments of the various planets.

The resolution of the troubles on Earth in the late years of the century signaled the end of a dark period for all of humankind. The mother planet had risen from the ashes and, under the leadership of the Central Earth Government & Administration (CEGA), rebuilt itself into a political and military power. Regular contact between settlements slowly resumed as the twenty-second century drew to a close. It was thought to be the beginning of a new age of peace and prosperity — but the events of the early months of 2210 would shatter that illusion.

▼ THE ODYSSEY

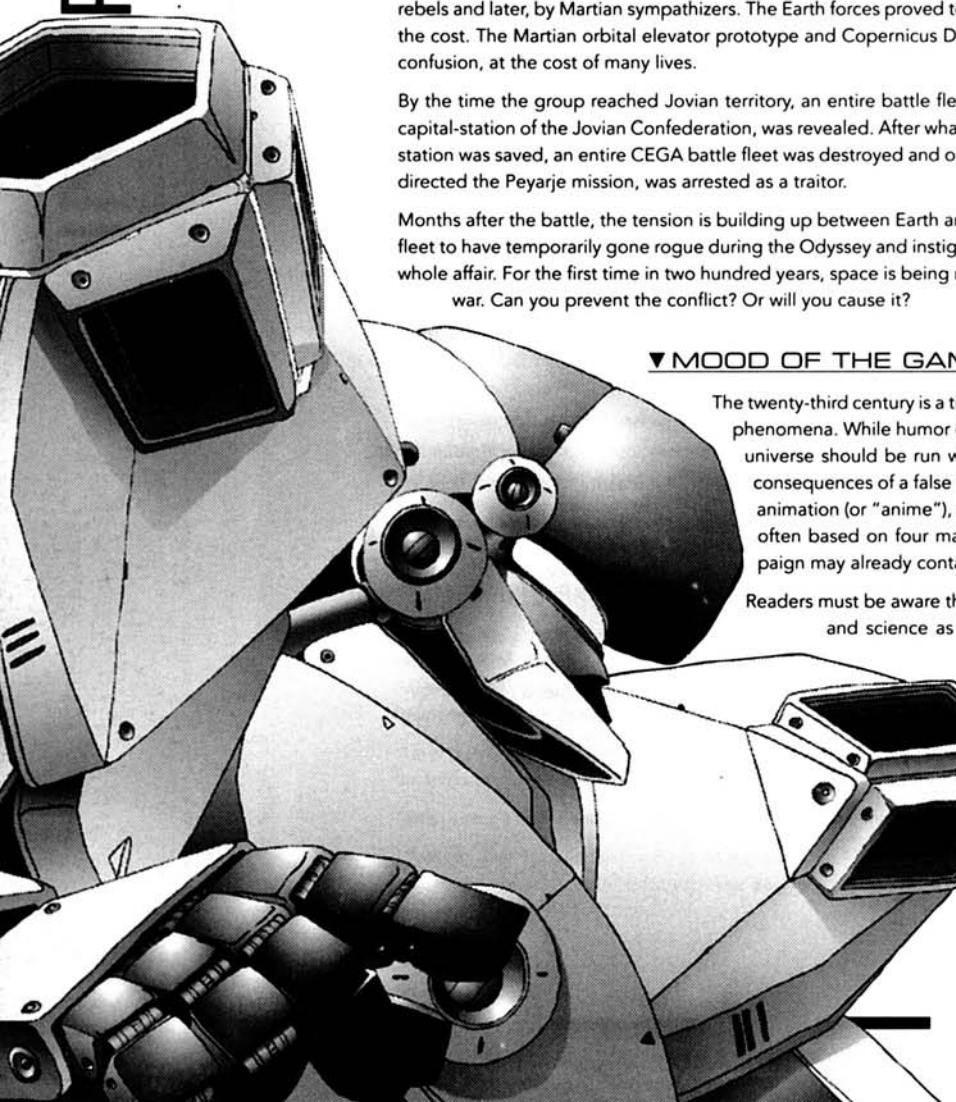
1.1.1

In the early 2200s, Terran scientist Doctor Agram Peyarje developed a "cyberlinkage" system for advanced control of machinery and vehicles. CEGA agents quickly realized that it could be used for military purposes and conscripted him. Fearful of CEGA's imperialistic plans, the scientist contacted Jovian operatives and requested political asylum. The Jovian Confederation's attempts to get Peyarje to their friendly shores launched a fantastic series of events that have come to be known as *The Odyssey*.

A small team of inexperienced Jovian Armed Forces pilots was sent to Venus, where the scientist was attending a seminar. They succeeded in helping Dr. Peyarje escape, but were discovered and pursued across the solar system by forces that were later revealed to be sponsored by both CEGA and Venusian interests. The fleeing group was helped first by Lunar-based rebels and later, by Martian sympathizers. The Earth forces proved tenacious, however, and tried to stop them regardless of the cost. The Martian orbital elevator prototype and Copernicus Dome on the Moon were both destroyed in the ensuing confusion, at the cost of many lives.

By the time the group reached Jovian territory, an entire battle fleet was at their heels, and a plot to destroy Elysée, the capital-station of the Jovian Confederation, was revealed. After what would later become known as the Battle of Elysée, the station was saved, an entire CEGA battle fleet was destroyed and one of the JAF's commanding officers, the very man who directed the Peyarje mission, was arrested as a traitor.

Months after the battle, the tension is building up between Earth and most of the settlements. CEGA officially declared its fleet to have temporarily gone rogue during the Odyssey and instigated a witch hunt to find the people responsible for the whole affair. For the first time in two hundred years, space is being militarized. You will now enter this world on the brink of war. Can you prevent the conflict? Or will you cause it?



▼ MOOD OF THE GAME

The twenty-third century is a time filled with excitement and promise as well as deadly phenomena. While humor certainly has its place, games taking place in the Jovian universe should be run with a serious outlook. Players must be aware that the consequences of a false move can very well be fatal to their character. Japanese animation (or "anime"), on which the **Jovian Chronicles** are partially inspired, is often based on four main elements: War, Death, Love, and Music. Your campaign may already contain the first three: just add a well-chosen soundtrack.

Readers must be aware that certain artistic liberties have been taken with history and science as we know them today. Although the Silhouette game engine is fairly realistic, the players will generally not have to deal with the "mundane" aspects of space life (fuel, oxygen, high radiation, orbits, etc.). These elements will come into play only if they move the plot along — otherwise, they drag down the game and transform a cinematic, high-action adventure into an evening of dice-rolling, calculations and paperwork (see *Campaign Styles*, page 223, for a more thorough discussion on this).

GAMING IN THE JOVIAN CHRONICLES ◄

1.2

This book includes introductory information on the **Jovian Chronicles** universe and the rules needed to play the game either as a roleplaying game, a tactical combat game, or a combination of the two. The layout of this manual was purposely made clear and simple for ease of reference during play, with reference icons and a detailed index.

Chapter 2: *World Cyclopedia* introduces the **Chronicles'** universe with a tour of the Solar System in the year 2210, while the third chapter describes six powerful organizations. The fourth chapter, *Silhouette Basics*, explains the game's basic mechanics and concepts. *Character Design* then describes the character generation process and the basic items and weapons that can be used by the characters during their adventures. It is immediately followed by *Character Action*, where all rules regarding roleplaying characters in the **Jovian Chronicles** universe can be found.

The *Mechanical Action* chapter explains the tactical rules for space, air and ground combat. *Mechanical Catalog* then examines the high technology of the twenty-third century, and also contains game statistics for many exo-armors, fighters and space ships. *Gamemaster Resources* contains ideas and tips to help you launch a **Jovian Chronicles** campaign right out of the book. The manual is rounded out by a ready-to-play campaign set on the mighty *JSS Valiant* strike carrier.

THE SILHOUETTE™ GAME SYSTEM ▼

1.2.1

Why the name "Silhouette?" Because it evokes many things that we hoped to build into the rules. A silhouette is simple; so is the game system. A silhouette marks the outlines of an object; the rules outline the game, helping to give form and definition to all situations. A silhouette is a shadow as the game system should be, to the point where players are not aware of it anymore. A silhouette is flexible and can change shape; so can the rules.

All rule systems have to make a trade-off between extreme realism and playability **Silhouette** is in the middle ground — it is based on true facts that were then simplified to the point where the game was fast-moving and fun to play. The system uses the traditional six-sided die to add a random element. The numbers and modifiers are small and easy to remember, and there are just enough of them to realistically represent any given situation.

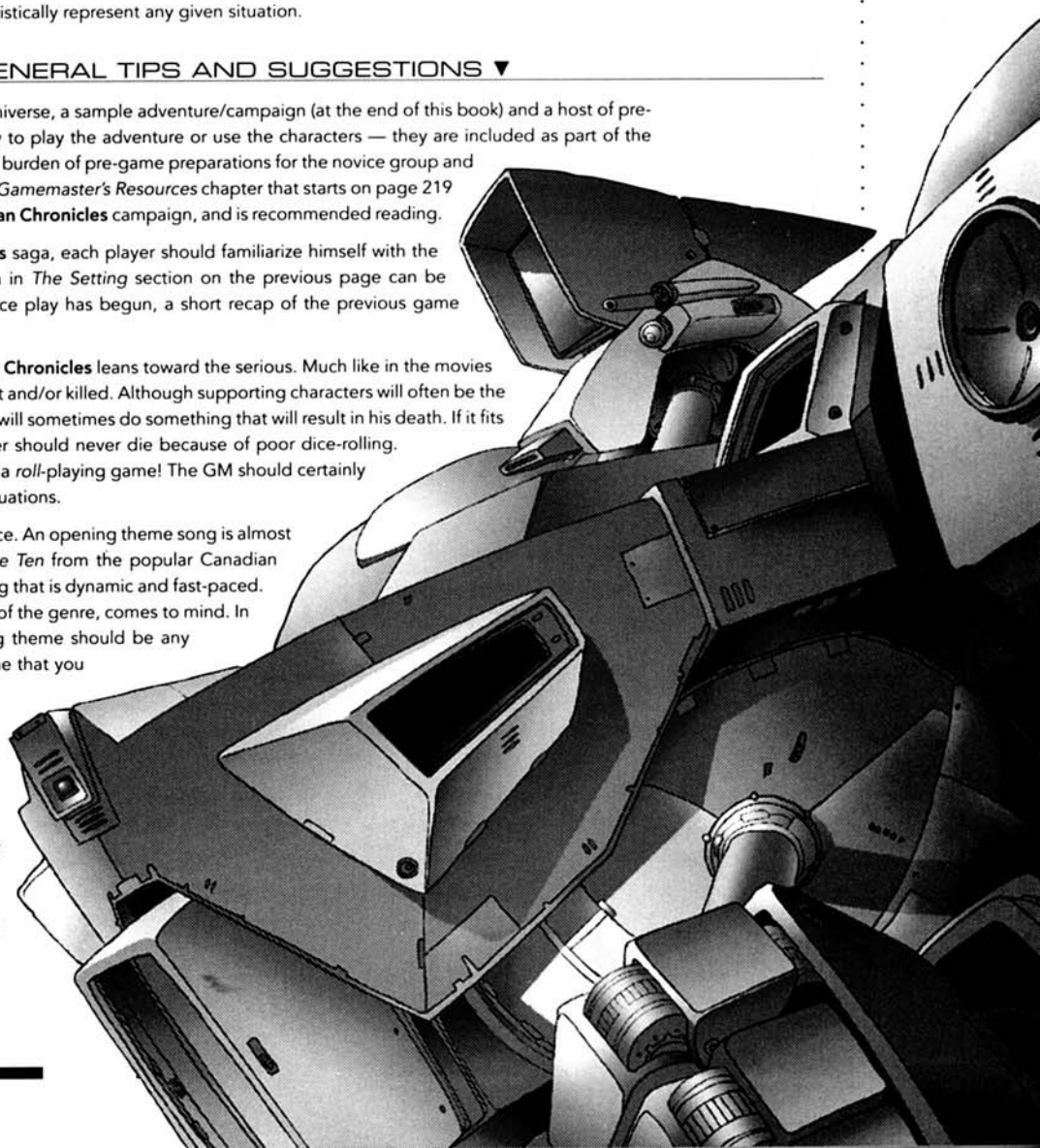
GENERAL TIPS AND SUGGESTIONS ▼

This book includes a complete gaming universe, a sample adventure/campaign (at the end of this book) and a host of pre-generated archetypes. It is not necessary to play the adventure or use the characters — they are included as part of the background material — but they ease the burden of pre-game preparations for the novice group and allow you to start playing right away. The *Gamemaster's Resources* chapter that starts on page 219 will prove useful to anyone running a **Jovian Chronicles** campaign, and is recommended reading.

Before starting an epic **Jovian Chronicles** saga, each player should familiarize himself with the Chronicles' background. The description in *The Setting* section on the previous page can be used, but feel free to use your own. Once play has begun, a short recap of the previous game session (or "episode") will suffice.

As stated before, the mood of the **Jovian Chronicles** leans toward the serious. Much like in the movies (and real life), people are going to get hurt and/or killed. Although supporting characters will often be the ones to buy the farm, a player's character will sometimes do something that will result in his death. If it fits into the story, it happens, but a character should never die because of poor dice-rolling. This is a cinematic roleplaying game, not a *roll*-playing game! The GM should certainly feel free to "fudge" the dice in critical situations.

Music will enhance your playing experience. An opening theme song is almost mandatory: we stronly recommend *Force Ten* from the popular Canadian rock group Rush, but you can use any song that is dynamic and fast-paced. The *Top Gun* soundtrack, another classic of the genre, comes to mind. In typical Japanimation fashion, the closing theme should be any moody and sentimental song: choose one that you like. Various fast-paced instrumental soundtracks can be used during play, especially during the fight scenes; the choice of music is of course left to the taste of the playing group. Sound effects can add great flavor too, if correctly done although they should never slow down the pace of the game. Aside from this, low lighting is recommended as it reduces chatter among players and provides a great atmosphere.



SOLAR SYSTEM OVERVIEW

The events that came to be known as the Odyssey caused a rude awakening for the disparate nations of the Sol system which had been comfortable in their isolation. The failed attack on Elysée by a "rogue" CEGA (Central Earth Government and Administration) battlefleet was an marked the realization that Earth's grasp was at last matching its scheming. No one believes that the slap on the wrist received at the Battle of Elysée will curb further such actions on the part of CEGA. Across the entire system, the human race prepares for a war that nobody wants to fight.

Nowhere is the tension greater than in the Jovian system. During the weeks following the near-disaster of the Battle of Elysée several arrests of high-ranking military personnel occured. The house arrest of General Avram Thorsen, who has confessed to the crime of collaborating with CEGA forces, definitely caught the attention of the public. Even with the demoralizing removal of one of its finest leaders, the Jovian Armed Forces have risen admirably to the challenge of a stepped-up defensive posture by increasing patrols and training operations.

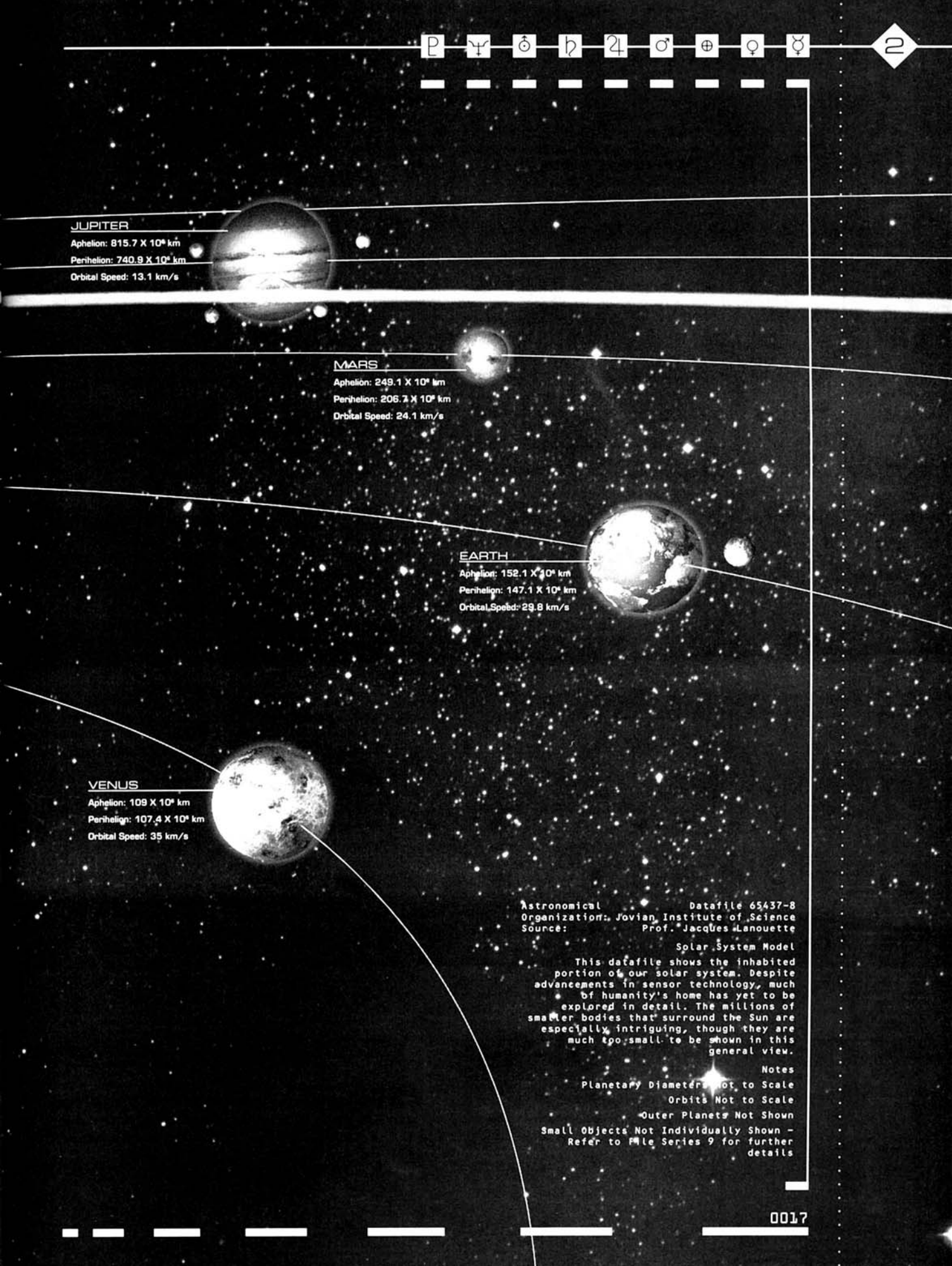
The situation on Earth curiously mirrors the state of Jovian affairs. While the deceased Admiral Russel Kleb, who led the attack on the Jovian Confederation, has borne most of the blame for the fiasco, there are some members of the CEGA council who refuse to let the matter rest and insist on witch-hunting other "responsible" parties. Military production in the Earth system, already at a high level, has been increased yet again, and recruitment rallies are taking place everywhere. Strategically, CEGA split its focus between crushing the remaining resistance to its rule on Earth and presenting a strong space-based military force with which to cow the human worlds.

The rest of the solar system watches the two powers intently, as yet unwilling to declare sides. Mars is still split by bickering between its two nations, although the destruction of the orbital elevator has put the entire planet in an unsavory mood toward CEGA. The Mercurians and their Merchant Princes are wary of any event that might make business difficult, and are taking preventive action. Lastly, the spying ears of the Venusian Bank lurk behind every wall in the solar system. The Bank's role in the politics of these dark times resemble an iceberg — they are far more massive and deadly than one would suspect at first glance.

For more than a century, the nations of the solar system lived in isolation, separated by the ocean of space. Mankind, however, has never been satisfied with what is readily available, preferring instead to reach afar for new acquisitions. As a result, the injustices of past centuries will be repeated, this time on a much vaster scale. Only time will tell if the creatures who could not share a planet can learn to coexist in an infinity of stars.







Astronomical Organization: Datafile 65437-8
Jovian Institute of Science
Source: Prof. Jacques Lanouette

Solar System Model

This datafile shows the inhabited portion of our solar system. Despite advancements in sensor technology, much of humanity's home has yet to be explored in detail. The millions of smaller bodies that surround the Sun are especially intriguing, though they are much too small to be shown in this general view.

Notes

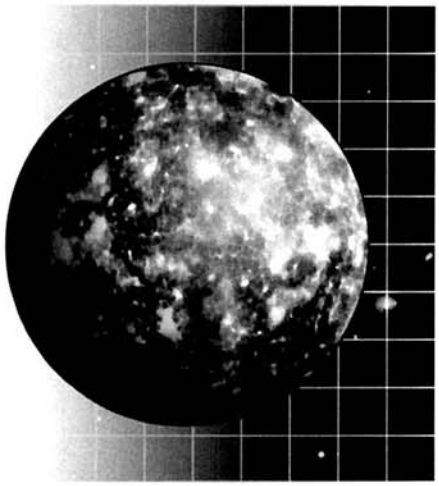
Planetary Diameters Not to Scale

Orbits Not to Scale

Outer Planets Not Shown

Small Objects Not Individually Shown - Refer to File Series 9 for further details

▶ MERCURY



Distance From Sun:	57,900,000 km
Revolution Around Sun:	88 days
Rotation:	58 days, 15 hours
Axial Tilt:	0°
Diameter:	4,878 km
Density:	5.4 x that of water
Mass:	3.3 x 10^{20} metric tons
Surface Gravity:	0.38 g
Escape Velocity:	4.18 km/sec.
Average Surface Temperature:	430°C on day side, -170° C on night side
Atmosphere:	trace
Hydrographics:	none
Population of Planet:	variable
Population of Orbital Stations (21):	29 million
Languages:	English, Spacer's Runic, Merchant's Tongue
Principal Exports:	industrial metals, uranium, labor force
Principal Imports:	food, water, manufactured goods, fuel

◇ OVERVIEW

Fewer than two dozen large stations orbit the solar system's hottest planet, hidden from the blazing solar radiation by Mercury's shadow. First colonized for the New Earth project, then expanded in the early twenty-second century by disgruntled Venusian salarymen, the Mercurian nation has grown rapidly over the last century to become the most influential trading power in the solar system. By remaining carefully neutral in all conflicts involving other settlements, and by making sure not to pick any fights of its own, Mercury has gained the grudging trust of the other solar nations, many of whom would rather pay to have their cargo moved for them than buy enough ships to move it themselves. The huge mag-sail barges of the Mercurian merchant fleet can be found in every corner of the solar system, ferrying all manner of goods between the planets, a constant reminder that the nation of Mercury extends far beyond the orbit of the innermost planet.

◇ CULTURE

The people who live in the shelter of Mercury's shadow are well aware of the precarious nature of their homeland. Although the Mercurians treasure the privacy afforded by their hostile environment, the close quarters and constant danger cause a great deal of internal stress on their society. As a result, nearly every Mercurian is subject to mandatory service in the merchant fleet, both to train young adults for the full responsibilities involved in living in space permanently and to make sure that everybody "gets out" at least once in their lives. This policy also ensures that every Mercurian citizen develops a healthy head for business. When coupled with the natural hardiness and ingenuity brought on by their life on the edge, these traditions makes Mercury's small population a system-wide power totally out of proportion to its size, a fact not lost on the increasingly arrogant Mercurians.

◇ POLITICS

The Mercurians rely on a simple democratic government in which an Administrator is elected by popular vote and serves for up to ten Mercurian years. Candidates are required to announce their desire for the position at least five years in advance, to allow citizens ample time to evaluate them. This also allows far-flung merchant crews a chance to get the news. This makes for a constant pool of candidates who try to impress the Mercurian people with their efficiency and intelligence. Fortunately, the pragmatic Mercurians have little tolerance for non-business-related political posturing. The current Administrator, Golan Fairbanks, is an ex-Guild captain who was elected a year ago after a close race. His efforts to moderate Guild control of Mercurian society have earned him many enemies among his former colleagues, but his daring and progressive economic poilcies have earned him the love of the general populace.

Mercury is the neutral settlement of the solar system, and refuses to align itself with anyone. As far as the Mercurians are concerned, taking sides is bad for business and must be avoided. Other nations of the solar system accept this attitude because of Mercury's value as an impartial trader.

◇ SCIENCE AND MILITARY

By dint of their unique environment, Mercurians have become the masters of high-temperature-materials engineering and solar power applications. Almost all of the nation's power is supplied by huge solar energy arrays on Mercury's surface and in its near orbit.

▷ SCIENCE AND MILITARY CONTINUED

Because there was so little to defend on or around the planet itself and since merchant ships and barges were unarmed by tradition, Mercury maintained only a token force of patrol-class military ships and fighters for many years. Recent events, however, have prompted Administrator Golan Fairbanks to beef up his nation's defenses as a precautionary measure. Observers on Helios Station, the capital, have reported heavy activity at military facilities, and Mercury has recently deployed the *Brimstone* exo-armor. For the moment, Mercurians maintain their position of careful neutrality, but only a fool would think that they are unprepared for a shift in the solar system's political structure.

COMMERCE AND INDUSTRY ◇



Having few exportable natural resources or manufactured goods, Mercury relies on its large merchant fleet to support itself. By facilitating the exchange of commodities between worlds, Mercury earns revenue for the expensive upkeep of its stations. Every ship and barge in the Mercurian merchant fleet bears the crest of the Merchant Guild on its hull (see *Mercurian Merchants Guild*, p. 47).

The Guild is an organization reminiscent of the guilds of Renaissance-era Earth. Membership in the Guild is limited to Mercurian citizens who have completed their National Service requirement, although not all Mercurians choose to become members. After leaving official service, Mercurians who desire neither the benefits nor responsibilities of Guild membership are still granted the right to travel as crew on Mercurian merchant vessels every few years as a form of stress relief but cannot call on the Guild for help if they get in trouble away from home.

RECENT DEVELOPMENTS ◇

True to its word, Mercury has remained neutral amid the increasing tension between the Jovian Confederation and CEGA. Undaunted by the prospect of all-out war, the Mercurian merchant fleet remains abroad, continuing to help keep the lines of trade and communication open between nations. Goods, people and information that cannot be delivered through national channels often find their way to their destinations aboard Mercurian ships.

The Merchant Guild pays close attention to the cargoes that are entrusted to its care, always on the lookout for information about the possible involvement of the Venusian Bank in the current crisis. Mercurians have never forgotten that their nation was born out of disgust with the policies of Venus; if that world is manipulating events once again, the Guild wants to be the first to know the details.

THE SURFACE ★

The power relay stations on Mercury's surface are a remarkable example of Mercurian stubbornness and adaptability. The living quarters and transmission facilities are hidden beneath the ground for nearly three months at a time during Mercury's 600-Kelvin day while the collectors soak up the sun's power. The stations become a bustle of activity after sunset, when microwave transmission towers rise from armored silos to beam stored power to the stations above and technicians emerge to perform maintenance and repairs on the huge arrays.

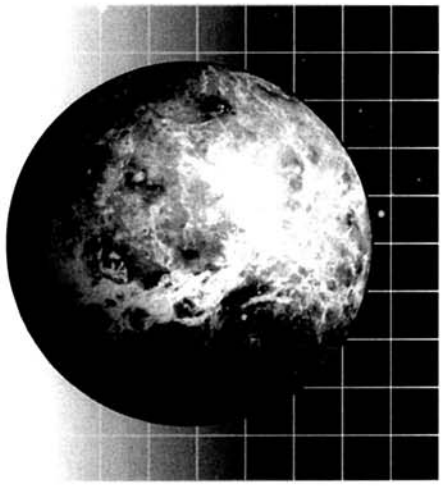
While this system might seem needlessly dangerous, the founders of Mercury's society, fearing possible Venusian reprisals, decided that power satellites were too vulnerable to sabotage. While the surface stations cost more and are difficult to build and maintain, they are easier to protect than orbital relays. Only half of the total power system is exposed to attack at any given time.

ON THE WINGS OF HERMES ◪

One of the basic choices a player must make about a Mercurian Player Character is whether he was raised aboard one of the space stations or under the surface of the low-gravity planet. This fundamental decision will affect the character's Build to a great extent. Mercurian Player Characters are merchants more often than not. Since they must all go through their mandatory fleet service, PCs should have a basic idea of how their service went, who they have met during that period, who they worked under, what they learned, etc. Playing a group of young Mercurians on their first trip can be a great premise for a campaign. It allows new players a chance to travel through the solar system, meet a wide variety of individuals, experience diverse cultures and get rich in the process. They may travel aboard their own spaceship — probably an old junker, refitted so many times that none of the original equipment is recognizable — carrying cargo, information or passengers without asking too many questions. Characters who are part of the Merchants Guild may be asked to transport questionable cargo or gather precious information, which may lead to several action-packed scenarios.

Non-Mercurian characters visiting Mercury's stations are likely to be closely watched. Mercurians value their privacy and do not want strangers sticking their noses in their businesses. Furthermore, visitors are often unused to the safety measures to follow aboard the stations or under the surface, and can easily be a risk to the settlement's safety. If non-Mercurian Player Characters visit Mercury, the Gamemaster can easily set up a scenario where they commit some form of security breach and have to survive it. Alternatively, they could become embroiled in some underground conflict between the Guild and the Venusian Bank, and have to weasel their way out without losing too many feathers.

▶ VENUS



Distance From Sun:	108,200,000 km
Revolution Around Sun:	225 days
Rotation:	243 days
Axial Tilt:	178°
Diameter:	12,100 km
Density:	5.3 x that of water
Mass:	4.8 x 10^{21} metric tons
Surface Gravity:	0.91 g
Escape Velocity:	10.3 km/sec.
Average Surface Temperature:	60° C at the poles after terraforming.
Atmosphere:	1.5 to 4 atm. (42% CO_2, 35% O_2, 22% N_2, traces H_2O, H_2SO_4, HCl)
Hydrographics:	2.3%
Population of Planet:	410 million
Population of Orbital Stations:	7 million
Languages:	Venusian dialect, English, Japanese, Cantonese
Principal Exports:	algae products, foodstuffs, commodities
Principal Imports:	machinery, computers

◇ OVERVIEW



Venus has always been a world of mystery, its secrets hidden for centuries behind rolling clouds of poisonous gas and surface temperatures hot enough to melt lead. Although Project New Earth converted the atmosphere with terraforming techniques late in the twenty-first century, the spirit of Venus' veiled threat has been passed on to its human inhabitants.

Project New Earth was sponsored, designed and paid for by a group of Terran corporations who foresaw the impending social chaos on Earth and decided that their positions were too weak to withstand the coming storm. They organized a mass emigration of resources to a new world, leaving the remaining zaibatsu to squabble over what would soon be a wasteland. The wisdom of that decision has been borne out — the corporations of Venus are now the richest in the solar system.

◇ CULTURE

The cities of Venus are quite spacious despite the need for protective domes and processed atmospheres. Life within the domes is strictly regimented in order to preserve working efficiency and discourage rebellion. Most Venusian workers never see the outside world, cared for as they are from birth to death by their teammates, supervisors and company. All that is asked in return is hard work and ambition.

Venus' official language is a curious creolization of Japanese grammar and English words derived from a century of intermixing corporate systems. The written form uses Roman letters in conjunction with the three forms of written Japanese, and is widely regarded as the most difficult language in the solar system to learn. Venusian children are, of course, taught to treat this as just another challenge to defeat.

With rigid education and the various communication networks, populations tend not to change languages easily. In the case of the Venusians, however, the linguistic change was intentional, a deliberate effort to make the language inaccessible to those who did not learn it from birth. Most children on Venus are taught Japanese first, and then instructed in the reading and writing of the Anglic languages. The alteration was sponsored by several major corporations who desired a more compact and versatile tongue. Many especially long or awkward Japanese words have been replaced with English, and vice-versa. While the space-based nations were developing Spacer's Runic for many of the same reasons, the Venusian government gradually instituted this new language, squashing the protests of traditionalists.

◇ POLITICS



Venusian society is based on the concept of the city-state. Each domed settlement is governed by the board of directors of the parent corporation that either built or owns the city. The specifics of administration vary from city-state to city-state, but the most common form of governing body is a small subcommittee under the direct control of the board. Dissatisfaction with corporate policies among the citizens moves up the chain of command by way of increasingly larger petitions. In rare cases, corporate CEOs have had to make rulings based on the signed complaints of entire city-states.

Venusian foreign affairs are mediated by the planetary council, a body of representatives sent from each major corporation. The number of councilors each corporation sends is based on the corporation's annual net worth. This rule is perpetuated by the Venusian Bank, whose true power is rumored to be many times what their already-large council delegation suggests (see *Venusian Bank*, pg. 50).

SCIENCE AND MILITARY ◇

Venusian technologies are among the most advanced in the solar system; what their own R&D departments cannot develop can be bought or stolen from other sources. As a result, they have managed to engineer (or reverse-engineer) nearly every scientific innovation of the past century. The Venusians, however, are just as mystified as the rest of the solar system by the workings of the Jovian Floater's multipolymerase protein (see *Jupiter: The Great Mystery*, p. 38).

The public face of the Venusian Home Defense Force (HDF) is a glorified parade band which performs air shows and barnstorming acts for the general populace. In reality, HDF pilots are experienced and well trained, and their exo-armors, exo-fighters and warships are the finest products of multiple Venusian military contractors. It is also suspected that the actual size of the HDF is far larger than everyone has been led to believe.

COMMERCE AND INDUSTRY ◇



The regular importation of foreign electronics and machinery to Venus is an illusion designed to fool the rest of the solar system into thinking that Venus cannot survive without their help. This sham gives Venusian traders an edge when dealing with other nations. Many a foreign corporate representative has been duped into thinking that Venus would get the short end of a deal. In recent years, Venus has used such skillful deception to make itself the solar system's money clearinghouse. Several large banks are in ascendance on Venus, of which the Venusian Bank is the biggest and best known. This situation has generated a great deal of resentment among the governments of other worlds, especially Mercury's, which roundly dislikes having any part of its revenue touched by its former masters.

RECENT DEVELOPMENTS ◇

Throughout the years, Venus has successfully downplayed its ties to CEGA, promoting an image of neutrality and openness. Doubt is surfacing, however, in the minds of many political insiders system-wide in the wake of CEGA's recent actions, despite a typically prompt and efficient Venusian media blitz distancing Venus from the Odyssey.

Locally, recent events have heightened the already-existing tensions between the Venusian Bank and other corporations who resent the Bank's near-total control of the planetary council and Venusian financial activities as a whole. Non Bank-affiliated economists voice concerns about a downward spiral toward a planet-wide monopoly by the Bank. Bank officials deny these allegations, and point out the increasing wealth of the accusing companies and the difficulty of establishing a monopoly in such a competitive environment as Venus.

TERRAFORMING ◭

The conversion of Venus from a corrosive hellhole to a tolerable environment for Humanity began on Mercury, where a series of automated massdrivers spent more than three decades seeding Venus with magnesium and calcium bricks which were then made to react with the carbon dioxide in the atmosphere to free oxygen and bind carbon to the surface. Giant fin-like structures, acting as heatsinks, cooled the polar ground for the Venusian arcologies. Now that the atmosphere has thinned noticeably, Martian-designed, genetically engineered bacteria are slowly continuing the job, and the process of atmospheric conversion continues to this day. One day, ice asteroids will be dropped from orbit to bring water, restoring the Venusian seas.

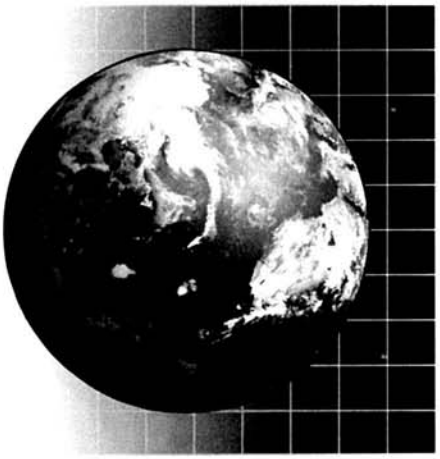
The result is no earth-like paradise, but at least the temperature range at the polar regions is somewhat acceptable to humans. The atmosphere remains dangerous to breathe, and Venus' lack of a magnetic field means that the plasma bowshock of the solar wind is practically overhead, but the Venusians are happy with their small triumph. Theoretical plans for a planetary-scale screen are in the works to reduce radiation on the surface.

PLANET OF MYSTERY ◪

Player Characters from a Venusian background can be part of the contented or discontented segment of the population. This usually corresponds, respectively, to the richer capitalists or the outcasts. Those from the first group tend to be sharp, well educated and politically inclined. The outcasts, while not always rebellious, tend to come from poorer backgrounds and often look for ways to change the system. Players can be from either one. Depending on that choice, their goal may be to further the interests of Venus in the solar system or to promote changes within their society to make room for the "lower" social castes. In the first case, PCs may work for a given city-state or for the Venusian Bank, going on missions that may take them throughout the solar system in order to find new sources of revenue or power. They may also wish to promote some level of chaos between the settlements, causing an arms race and reaping the rewards by stealing new weapon designs. Those Player Characters who belong to the outcasts may join some internal underground movement working against the strictly regimented environment or try to find some way to leave the planet and find a better future in space.

When players visit Venus, they should be careful to tread lightly and keep their heads above water. Venusians do not want anyone finding out what they are up to, so they act with a great deal of efficiency against nosy visitors. Sometimes, they also act that way with guests *before* they have a chance to be nosy...

▶ EARTH



Distance From Sun:	149,600,000 km
Revolution Around Sun:	365.25 days
Rotation:	23.93 hours
Axial Tilt:	23.5°
Diameter:	12,756 km
Density:	5.5 x that of water
Mass:	6 x 10^{21} metric tons
Surface Gravity:	1 g
Escape Velocity:	11.27 km/sec.
Average Surface Temperature:	18°C.
Atmosphere:	1 atm. (78% nitrogen, 20.5% oxygen, 1% CO2, 0.5% pollutants)
Hydrographics:	72 %
Population:	4.2 billion
Languages:	English, Chinese, Spanish, countless others
Primary Exports:	art, resources, labor force
Primary Imports:	manufactured goods, specialized food stuffs

◇ OVERVIEW

In the late twenty-first century, a series of social and economic disasters brought the civilization of Earth to its knees. The causes of the Fall are still debated today, with no clear answer in the offing. The fragmentary records of the time signal a worldwide computer network blackout, followed by stock market crashes and mass economic confusion. There is also evidence of a plague that struck down millions in the months of darkness that ensued.

Nothing from that time is certain; all that is known by the other planets is that all contact with Earth was suddenly lost, and none of the shuttles sent to investigate the situation ever returned. In later decades, telescopes showed massive ecological devastation caused by neutron bombs and uncontrolled biological warfare, while intercepted radio transmissions told of terrible atrocities and barbarism. The colonies were struck by the realization that they were now on their own. They turned their focus on themselves and spent the next half-century struggling to become self-sufficient.

When Earth re-established communication in 2184, no one expected to see a powerful, unified government like the Central Earth Government and Administration. Although nearly half the planet was still in a state of civil war, CEGA moved quickly to regain control of the orbital colonies and the Moon, and declared itself as a new superpower in the solar system. Unwilling (or unable) to face down CEGA in its own backyard, the other planets allowed CEGA to do as it wished, much to their current dismay.

◇ CULTURE

As the natural birthplace of humanity, Earth remains a fabulous mosaic of cultures, religions and languages. A century of warfare has only reinforced the bonds within societies, keeping old languages and traditions alive. Many of those same traditions have been abandoned for the sake of uniformity and survival on other worlds.

In modern times, Earth has become the artistic if not the political capital of the solar system. Every day, shiploads of merchant vessels laden with scenic paintings, religious artifacts and holovideo discs leave the cradle of humanity for the other planets who eagerly trade their best goods for a glimpse of their past. This, and the presence of the ancient monuments and holy places make Earth the envy of the solar system, at least artistically.

In other matters, however, Earthers are arrogant and condescending. The popular perception of offworlders is of country yokels who could only benefit from Earth rule. Even in the Middle-East and Asia, where war persists and CEGA rule is nonexistent, this belief generally holds true. Offworld visitors are seldom well treated away from diplomatic consulates. Although the common language of diplomacy in the solar system is English (a leftover from the days of North American aerospace supremacy, during which most official in-flight communications used English terminology), Earthers who can do so often prefer to belittle their visitors by speaking tongues used only on Earth, like Mandarin Chinese or Spanish.

◇ POLITICS

The Central Earth Government and Administration is an archetypal imperialist government. Dissatisfied with ruling the local subsystem, it aims to regain control over the various human settlements of the solar system which became self-sufficient by necessity during Earth's isolation. Citing heritage and the fact that, a century ago, Earth paid dearly to establish the settlements, they apply constant pressure on the other world governments of the United Solar Nations to surrender more and more control of their worlds to the CEGA council. Thus far, these demands have fallen on deaf ears.

▷POLITICS CONTINUED

Forty councilors drawn from Earth, the Orbitals and the Moon make up the CEGA council. Although anyone may run for a position on the Council, the election process is strongly biased due to its roots in the military government that preceded CEGA. Since CEGA is, according to its constitution, a supranational organization "divided by rebel influences," election votes from military personnel are weighed first, with the civilian votes serving only as tie-breakers. This much-decried policy has resulted in a pro-military and pro-imperialist council. The current head of the Council, charged with maintaining order during council meetings, is Aelfred Cyning, who has held the position for three years. Although he is an avowed expansionist, he has been quite impartial within the Council, allowing every faction to have its say.

Despite the constant badgering, Earth tries to maintain cordial relations with the rest of the solar system. Unfortunately for Earth, every planet has some reason to be wary of its hand of friendship. All Martians (even those in the Martian Federation, which is nominally allied with CEGA) are taught at an early age of their world's battle for independence against Earth, and Mercurians are concerned that CEGA's goals preclude the existence of a neutral trading power like themselves. While the Venusian Bank (and by extension, Venus itself) is pulling the strings of many members of the CEGA council, the events of the Odyssey Affair have aroused fears that the puppet may be developing a mind of its own. As for the Jovian Confederation, the unprovoked attack against their capital has engendered open hatred of CEGA among the populace of that remote nation. Although many voices on both sides advocate a peaceful resolution of the differences between Jupiter and Earth, diplomatic relations between the two nations have chilled significantly.

IGNATIUS CHANG ☆

Born amid war and political strife in Chinese-controlled Singapore in 2153, Ignatius Chang's family forced him into combat at an early age. He taught himself the meaning of honor, always making sure to treat his enemies with respect and humanity. His quick mind and natural charisma propelled him through the ranks quickly, and he became a general in the Chinese Army in 2181. His leadership helped China stalemate the North American/European forces, prompting the resumption of official peace talks.

After a formal peace treaty was signed, Chang found that he had become a well-known and highly-respected figure in the military ranks of his former enemies. When CEGA was formed in 2184 (without the membership of the Asian nations, who had demanded independence as part of the peace treaty), Chang realized the threat posed to his home country by the new regime. Hoping to spare his people unnecessary suffering by moderating CEGA's imperialism, he joined the CEGA Armed Forces and won a place on the CEGA council in 2196. Although his actions have made him an exile among his own people, he has managed to persuade his colleagues to use nonmilitary means to bring peace to the Asian continent. He was a staunch friend of Ranho Garand, the CEGA ace who was killed during the Odyssey Affair, and is now one of the loudest voices in the faction that advocates a peaceful path to CEGA domination.

SCIENCE AND MILITARY ◇

Much of CEGA's technology was developed by the Moon and orbital colonies during the Isolation. It is fairly advanced, but still a little behind Jovian or Venusian equivalents. Distrust of CEGA has prevented a free flow of knowledge, and CEGA spies have proven themselves to be less adept at "information retrieval" than Venusian ones. Nevertheless, Earth has made the best of what it has and has managed to make life reasonably comfortable for most of its population — a significant feat considering the size of Earth's population in relation to the other planets.

Earth's biosphere is slowly recovering. Until it does, CEGA has built huge, self-sufficient arcologies to house its people. The largest of these is Gaia City, built on the charred remains of the Boston Metroplex in North America. Serving as the home of the CEGA council, the massive complex rises over 500 meters high and sprawls over hundreds of square kilometers — a grand tribute to the monolithic power CEGA covets.

Much of CEGA's impressive work force is assigned to military projects, from basic research to mass production. CEGA's primary focus was, until recently, the construction of warships, a somewhat outdated attitude that nevertheless produced a fearsome space navy. The last few years, however, have seen a growing interest in exo-armor technology, culminating in the hideously expensive and technologically innovative *Dragonstriker* project. Considering the size of CEGA's navy, many foreign intelligence analysts dread the day when CEGA focuses all of its attention on exo-weapon development.

COMMERCE AND INDUSTRY ◇

The companies that fled to the Orbitals in the days before the Fall returned home to find their assets in ruins. Unable to recover the past, they took advantage of early diplomatic initiatives by CEGA among the solar nations to snatch up technology, real estate and other commodities. In the short time it took the solar system to wise up to Earth's true attitudes, these companies had regained a significant measure of their former glory along with a healthy amount of Earth-centric arrogance.

The Terran companies continue to demand special treatment, prime mining spots and other concessions from their "inferiors." This has led to several conflicts on Mars and in the Belt, where the settlers refuse to give ground on their home soil. These turf battles have mostly consisted of shouting matches and the occasional brawl, but it is only a matter of time before the Earthers raise the stakes.

▷ COMMERCE AND INDUSTRIES CONTINUED

With its half-poisoned biosphere, Earth must import food, minerals and Martian terraformers to help heal the planet. The Terrans dislike their dependence on the other worlds and are often unreasonably hard nosed when negotiating prices, a behavior the rest of the solar system would find amusing if Earth's attitude was not backed by an all-too-eager military fist. Many also suspect Earth of paying various mercenaries and pirates to steal goods in order to avoid fattening the coffers of nations they still consider colonies.

Most of the heavy industries are located either in low orbit or in the land surrounding the cities and spaceports. Earthside pollution is now much less of a problem than it was in the past and most of the polluting industries are now in space, where it is easier to recycle wastes due to the unlimited supply of solar energy. Besides, the vacuum provides much more energy and raw material, though the rarity of certain chemical compounds in space means that not all factories can migrate outside the gravity well.

◇ RECENT DEVELOPMENTS

CEGA is still recovering from the repercussions of the Odyssey Affair. Several high-ranking administration officials have been arrested and are scheduled for trial, and Admiral Kleb, leader of the invasion fleet, has been posthumously vilified. Most people in the solar system, however, including some CEGA councilors, find these "sacrificial lambs" unsatisfactory, and demand further investigations into the matter. One of the most vocal of these has been Councilor Ignatius Chang, who still mourns the loss of a longtime friend to the madness of Russel Kleb. Chang currently performs his duties from a hospital bed where he is recovering from an "accident" that occurred shortly after he presented controversial evidence at a press conference pertaining to Admiral Kleb's conduct. He stated that Kleb had been given judgment-impairing drugs, as part of a conspiracy within CEGA, shortly before the fleet departed for Jupiter. In any case, CEGA's already tenuous credibility as a peaceful neighbor has been totally shattered.

In an effort to redirect the public eye away from deranged CEGA admirals, Earth administration has launched a massive media campaign to blame the revolutionary group STRIKE for the destruction of both the Martian orbital elevator prototype and the massacre at Copernicus Dome on the Moon. In widely distributed advertisement and propaganda material, CEGA does its best to dispel the public perception of STRIKE as a kind-hearted group of freedom fighters and recasts it as a sinister organization of brutal terrorists.

CEGA council meetings are becoming increasingly heated affairs, with arguments between factions escalating into personal attacks and even (on two separate occasions) fisticuffs. The moderate faction, composed mostly of Orbital and Lunar representatives (Councilor Chang is one of the few exceptions), advocates peaceful negotiations with the other worlds and regards its opponents' promotion of the use of military force as completely abhorrent, not to mention potentially suicidal for all of them. The USN and SolaPol keep a wary eye on the situation and watch for signs of possible covert actions by either side.

The non-aligned nations of Earth (see facing page) have remained surprisingly silent on the whole affair. There have been numerous skirmishes on borders in Africa and the Middle East, but open conflict has thus far been avoided. Though the Asian Trading Sphere issued a half-hearted formal protest, few of CEGA's terrestrial neighbors seemed willing to face potential diplomatic problems by embarrassing the world government even more.

★ DARK REBELS

Formed in 2190 by a group of rebellious Terran senators and military officers, STRIKE's outward goal is the reunification of Mankind under one government (specifically, a Terran government not under Venusian control or influence). The inner workings and politics of this shadowy organization, however, are as much of a mystery to the solar system as the origin of the group's name. They have claimed responsibility for dozens of acts of terrorism over the past twenty years, and have been accused of many more. At the same time, rumors abound of shipwrecked crews rescued by STRIKE exo-armors and of other acts of altruism. Anyone can be found within their ranks, provided they show fanatical devotion to the Cause.

Many believe that leadership shifts regularly between forces of megalomania and moderation within STRIKE's power structure, an idea reinforced by the erratic behavior of the group. Others have suggested that STRIKE is in fact a blanket name taken by various organizations who share the same overall goal, though with widely different degrees of fanaticism. In the weeks following the Odyssey Affair (for which STRIKE has once again been both blamed and lionized), STRIKE has been very discreet. Government plants report of the rise in power of a charismatic new leader, who could perhaps succeed in cleaning up the act of the group and turn it into a respectable and powerful political entity. His identity remains unknown, with only a fragmentary report from a subsequently captured agent saying "...but he's supposed to be *dead*."

STRIKE possesses a staggering amount of equipment. Dozens of exo-armors and fighters have been brought over by defecting pilots, and while STRIKE has no known manufacturing capabilities, its members seem adept at repairing and modifying what they do have. They have few ships of their own, and many of these are converted civilian craft — something that helps camouflage troop movements. In addition, the scope and reach of some of STRIKE's operations hint strongly at several industrialized sources of parts, medical support and food, although these collaborators' identities remain unknown. SolaPol intelligence has recently used some of its assets to try and find out if one of the settlement governments is involved in the terrorists' source of material.

THE NON-ALIGNED STATES ▼

The ad-hoc world government that created CEGA may have successfully united much of the population of planet Earth, but not all countries were ready to yield to its authority. Though it now controls North and Central America as well as Europe and North Africa, the self-proclaimed government's forces were faced with continuous resistance as they tried to push the borders of the territory they controlled even further. By the late years of the twenty-second century, the situation had degenerated into a series of stalemates and blockades on more than five separate fronts. The situation reached an point of equilibrium, and none was willing to give even another meter of ground. Rather than risk prolonging needless bloodletting — but more importantly to conserve dwindling resources — a cease-fire accord was reached by the various alliances just prior to the formal creation of the Central Earth Government and Administration. Though sporadic, localized skirmishes still occur weekly on the borders, the general cease-fire has been successfully maintained for almost three decades now.

The Non-Aligned States, as the territories that share the Earth with CEGA are usually referred to, are composed of three main power blocks, all more or less stable. The Asian Trading Sphere is the largest of them. It is composed of an uneasy alliance between China, Japan, eastern Siberia and the remnants of other Asian countries, along with most of what used to be Indonesia. Though it lacks abundant indigenous material resources, the Trading Sphere has immense manufacturing power, both on the ground and in orbit, and a solid technology base. They have a few space stations in geostationary orbit over their territories, mostly for solar power collection, but no large vessels. Whether they have spacecraft capable of traveling beyond the Earth's immediate vicinity is unknown, though the CEGA Navy and other militaries keep a keen eye out for such vessels.

The South American continent remains independent of CEGA, though it has extensive trade relations with it (and other nations of the world). South America suffered the most from pollution and overpopulation in the twenty-first century, and still bears the scars today. The various modernization efforts made to properly introduce the poorer nations of the continent to the third millennium failed or were confined to the major cities. Most of the population lives in an odd state of semi-technological sophistication, where beasts of burden still climb up the sides of the Andes while their handler listens to the music booming from a cheap Chinese copy of an orbital-designed datadisk miniplayer. The majority of political observers expect most of the countries of South America to petition for entry in the CEGA within the next twenty to thirty years.

The greater part of Africa has also escaped rule by CEGA. Frontiers and artificial borders established long ago by colonial powers have broken down, and most of western and central Africa is now composed of balkanized mini-states regrouped in tribal and regional alliances, many supported by CEGA to keep the region divided. Eastern Africa has managed to remain somewhat more stable but is a client state of CEGA. Southern Africa is dominated by the stable and powerful Azanian Compact. The Capetown Spaceport provides relatively easy access to the Compact's few industrial facilities in orbit. Newly elected Azanian Prime Minister Maurice Mutawe has begun undertaking diplomatic initiatives in the solar system, including sending a party of observers to the USN assembly on Pyrea Station. Rumors of a diplomatic treaty with the Jovian Confederation are currently running through the halls of power, as are stories of a planned military response by CEGA.

The situation is obviously not as stable as it first appears to be. There is little doubt in the mind of political observers that the powers-that-be in the CEGA council will want to "tidy up" their own backyard at some point, and place increased pressure on the other Terran states. This will force the nations to join up or at the very least ally themselves with the government juggernaut — the consequences of independence could be dire indeed.

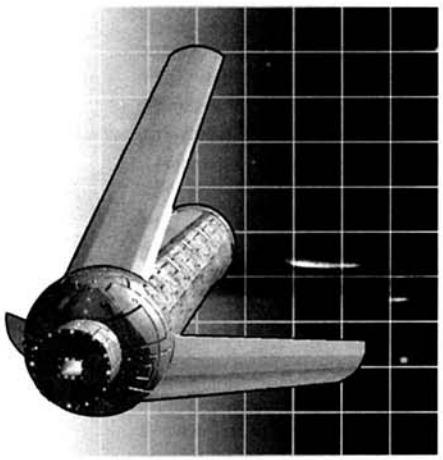
BIRTHPLACE OF MANKIND ◪

Playing an Earth native provides you with the advantage of familiarity. It is easy to find documentation and story ideas based on currently available information. It should be noted, however, that Earth has changed quite a bit since the twentieth century, and that while countries still exist, they have fairly different spheres of influence and cultures. Most importantly, there are three options for Player Characters: they can be pro-CEGA, anti-CEGA or neither. Pro-CEGA characters may enroll in the military and help support the war effort, or they may become traders. Many people join the CEGA Naval Forces in order to see space and veterans can sometimes find the resources to relocate to the Orbital Colonies. Anti-CEGA PCs may work at home as terrorists, or seek allies in the various off-Earth settlements. They may also join STRIKE (see previous page) and actively work against CEGA, but still to promote Earth's domination of the solar system. Lastly, neutral characters may simply set out to resolve the political problems on Earth, or simply make the best of an imperfect world. Mostly, they will not have an easy access to space and will focus their efforts on the planet and their personal lives.

There are several problems that need addressing on Earth, not the least of which is the amount of conflicts that rage over territory and limited resources. Racism and strife are rampant, and belie the illusion that CEGA is all-powerful. Many of the treaties that are signed are broken and new ones are signed on a monthly basis. Earth's political scene is chaotic to the extreme, and old racial hatred have not vanished here as they have elsewhere in the solar system. Player Characters will have their work cut out for themselves if they attempt to work for one military force or the other. In some cases, some PCs may opt to join a party they are opposed to and work their way up to change it from the inside.

Earth is not entirely a hellhole and it is only there that PCs can feel real wind and rain on their skins, or wake to the warmth of the sun. GMs should emphasize the wonder of these simple pleasures to those who have spent their whole lives in the thin and cold air of Mars or cooped up in a cylinder colony.

▶ ORBITAL SETTLEMENTS



Distance From Earth:	300 to 426,000 km
Revolution around Earth:	variable
Rotation:	variable; 24 hour days
Axial Tilt:	n/a
Diameter:	between 0.02 and 6 km
Length:	between 0.3 and 40 km
Mass:	10 to 4 x10^8 metric tons
Internal Gravity:	0 to 1 G
Escape Velocity:	variable, but always very low
Average Internal Temperature:	18°C
Atmosphere:	0.5 atm (55% N2, 40% O2, traces)
Hydrographics:	none to 30%
Population:	480 million
Languages:	English, Spacer's Runic
Primary Exports:	manufactured goods, labor force
Primary Imports:	resources, specialized food stuffs

◇ OVERVIEW

The O'Neill Cylinders that orbit within the Earth-Moon system are home to millions of people, many of whom are descendants of refugees from the collapse of Earth. As the global economy slowly disintegrated, many corporations and academic interests fled to the space stations, followed in 2081 by the provisional Terran government. After they lost regular contact with Earth, the colonies were forced to become mostly self-sufficient. The difficulty of this task kept them from paying any attention to the deteriorating planet below for nearly a century.

The Orbitals (as the newly independent colonies called themselves), well aware of their vulnerability and lack of resources, established good relations with the Moon (which was in much the same situation). Together, they survived and even prospered until the Central Earth Government and Administration rose from the ruins of Earth.

◇ CULTURE

Orbital society is almost as much of a melting pot as Earth's is; nearly every cylinder or torus has its own Earth-derived culture and traditions. Several stations are directly owned by the Terran corporations who had the good sense to flee Earth before the Fall. Many of these companies have also taken over administration of "orphan" colonies whose sponsors were wiped out, ensuring that maintenance and basic services are supplied.

In general, the stations are adjusted to follow the same seasons and day-night cycles as the country where most of its inhabitants originate. This has given rise to a sort of "weather-tourism," where people take the inexpensive station-to-station mass transit system to spend a few hours in a different climate or time zone. As a result, most Orbitals think of the weather as a commodity rather than something to be endured. Frequent visits to other cylinders have also given a more open-minded attitude to the majority of the spacers, among whom racism and discrimination are rare.

◇ POLITICS

The Orbitals are willing and respected members of CEGA, although the peaceful views of their councilors (a result of living a lifetime in such a precarious position) are often at odds with the Earth-born members of the CEGA council. The Orbitals govern themselves through a council made up of representatives from each station, although some stations prefer not to be involved in foreign politics. Horangi Seung, a businessman-turned-politician hailing from Pyrea, is the Orbital council's current chairperson.

Seung, by virtue of his career background, is a no-nonsense person. His primary concern is establishing policies that will benefit industries and orbital corporations, and he has little time or patience for intrigues and mind games for the sake of power. After all, power and influence can always be bought if required.

The difference in outlook between Orbital and Terran members of the CEGA council is generally traced to the settlements' more traditional civilian electoral process. Military personnel are not granted any special voting privileges in Orbital districts. As the number of CEGA Naval personnel steadily rises in the settlements, however, pressure is beginning to rise for military voters to receive a greater sway. These arguments have been given additional weight by a recent increase in STRIKE activities in Earth orbit, bringing CEGA's "rebel influences" charter into play. Orbital Chairman Horangi Seung has thus far held back any undesireable "reforms" of the electoral system, but has had to grant several concessions to the military to keep them mollified.

SCIENCE & MILITARY ◇

Orbital science is oriented toward space life. Their advances in life support and ship design and construction have proven invaluable to CEGA's military buildup, especially the Navy. Much of CEGA's space-faring forces are imported from the Orbitals in exchange for raw materials unavailable in near-Earth space.

The Orbitals never felt a need to overarm themselves. Apart from shuttles and armed Orbital Transfer Vehicles, the forces of the space colonies consisted of little more than a few corvettes and launches, most of them used as custom ships to inspect cargoes coming in from the Moon or the Belt. When CEGA took over, many of these capable vessels were incorporated in the fleets of its Navy.

COMMERCE & INDUSTRY ◇

The Orbital economy is one of service and manufacturing. Many of the cylinders were originally built by Earthbound companies before the Fall to house the staff of the orbiting factories. During the Fall, control of these stations shifted to those companies that had taken refuge in orbit. Today, as these companies reestablish their old hold on Earth, the factory colonies continue to perform their intended tasks for their new masters.

The best-known orbital spaceport is Pyrea. It is one of the main crossroads of the solar system, through which most of the traffic to or from Earth passes. In addition to hosting the USN Assembly and the Solar Cross' offices, Pyrea is also home to nearly six million people, making it one of the largest space colonies in the Solar System. Much of the station's local economy is centered around the large commercial shipyards that surround it.

In addition to Pyrea, the space between Earth and the Moon's orbit is filled with satellites, power grids and workstations. The large solar arrays established in the beginning of the twenty-first century continue to provide most of the Earth's power. The workstations are divided into two rough categories, the labs and the autofacs. Labs are small, zero-gravity installations were research and high-precision manufacturing is done. They are typically staffed by a rotating crew of scientists and workers. The autofacs are completely automated factories which take raw materials in one end and churn finished products out the other. They are staffed only by a small number of technicians to keep things running smoothly, and who often commute from a nearby station for their day's work.

RECENT DEVELOPMENTS ◇

A flurry of activity has been noted in the colonies over the past few months. Shipyards are tooling up for new designs as well as increasing the pace of work on ships already under construction. A large area around Earth's L5 point has been marked off by radio buoys and is constantly patrolled by CEGA exo-armors. Nearby observers have reported seeing unknown types of vehicles on maneuvers in the zone, which display extraordinary maneuverability. Among military tech buffs, rumors abound of a new, upgraded *Syreen/Dragonstriker* hybrid. CEGA officials refuse to comment, citing national security and warn that any intruders who violate the borders of the test zone will be met with deadly force.

The destruction of Copernicus Dome on the Moon has aroused fear in the Orbital population concerning their own vulnerability. Police patrols and security measures have increased accordingly, and there are talks and rumors of secessionist movements being formed in the back rooms of pubs and the dens of private houses. The present government is investigating these rumors because any attempt at secession could lead to a war with CEGA, which the under-armed Orbitals could not possibly win.

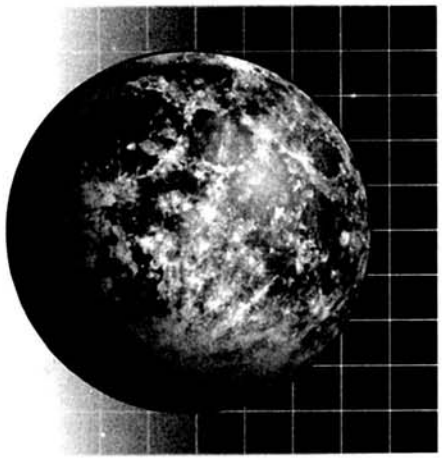
ISLANDS IN THE SKY ◪

Player Characters from the Orbital Settlements can come from a variety of backgrounds. The O'Neill cylinders have a reputation as idyllic, perfectly manicured environments and PCs can easily have grown in cylinders resembling 30 kilometer long suburbs. Other cylinders, however, have suffered from overpopulation and have seen slums grow up in certain areas. Some Orbitals also have trouble dealing with an idyllic locale and rebel. The domination of CEGA has only exacerbated these problems. All of the these outsiders make good choices for Player Characters. The colonies are also home to ZONet (see p. 51) and other major media networks, making them a good "home base" for a reporter or entertainer Player Character.

Gamemasters setting scenarios in the Orbital Settlements can indulge in games of intrigue and subtlety. Orbitals live in a heavily corporate culture and espionage is almost second nature to them. CEGA's reliance on technologies developed in the settlements has only increased the stakes of intrigue. The presence of the paparazzi and major media houses in the colonies also makes Orbitals very media savvy. Gamemasters could easily have a PC party become sudden media darlings or make them the victims of a supposedly true "exposé." PCs from a more straightforward culture (such as Nomads or Martians) may have a very hard time adapting to the fast pace and subtleties of Orbital society.

Orbitals also take their security very seriously, all aware that they live in controlled environments vulnerable to damage and sabotage, and police campaigns can easily be set in a colony. Security teams spend much of their time keeping an eye on outsiders, but there are some Orbitals who pose a threat to their fellows as well. PCs can become identified as threats very easily, and may have to find shelter somewhere in the colony. While these settlements are very large, their security forces know them inside out.

▶ THE MOON



Distance From Earth:	356,395 to 406,767 km
Revolution Around Earth:	27.3 days
Rotation:	27.3 days
Axial Tilt:	1.5°
Diameter:	3,476 km
Density:	3.342 x that of water
Mass:	7.4×10^{19} metric tons
Surface Gravity:	0.16 g
Escape Velocity:	2.38 km/sec
Average Surface Temperature:	-200°C
Atmosphere:	none
Hydrographics:	none
Population:	5.4 million (not including military personnel)
Languages:	English, Spacer's Runic
Primary Exports:	manufactured goods, raw materials, oxygen
Primary Imports:	complex hydrocarbons, specialized food stuffs

◇ OVERVIEW

The Moon was the first attempt at permanent space colonization. The closeness and material richness of Earth's satellite made it a logical choice for the large corporations that founded the first colonies. The settlements, all named after nearby craters, were built underground to protect them from radiation and have been steadily expanding for nearly two centuries. Even today, the mines of the Moon provide the Earth and Orbitals with much of their raw materials, mostly oxygen, processed water and silicates.

In addition to a permanent population of about one million, Luna is home to several CEGA military bases. Lunar cities have a martial atmosphere because of the number of soldiers that spend leave there. All inhabitants of the Moon maintain rigorous exercise regimens and take mineral supplements and advanced biocompounds to counter the debilitating effects of life in prolonged low gravity. Nevertheless, natives of the Moon (known as Selenites) tend to be very tall and thin (much like inhabitants of Mars).

◇ CULTURE

Selenites adapted to the rigors of self-sufficiency after the loss of support from Earth by becoming obsessed with scheduling and organization. From birth to death, an individual's life will be organized and scheduled. Creativity and imagination were discouraged in order to focus attention on staying alive. This attitude persists in modern times, although the resumption of Terran aid gives them a few scattered holidays.

The foreign visitor often has the impression that the Selenites are obsessed with work, and this is partly true. They do have free time, but are not noted for being "party animals." There is an exception to this, however: the 72-hour holiday known as the Festival. The Festival occurs every three months and is a three-day long, almost non-stop party. Randomly designated citizens are asked to remain on duty to take care of any emergency which might arise; they are also responsible for the clean-up. The system of selection ensures that everyone does an equal share of the work in the long run, though individuals often exchange "tours of duty" as if they were currency.

◇ POLITICS

The Lunar settlements use the same representative system as the orbital cylinders. A council made up of representatives from each domed city votes on all the major decisions that affect the people of the Moon as a whole. Smaller councils take care of local business, such as setting the production quotas. The current council is led by Chairwoman Clarice Seleung, a former geologist from Descartes. The lunar cities are members of CEGA, a choice motivated by a need for resources from Earth as well as by a healthy fear of reprisals had they rejected CEGA's offer.

Selenians are quite willing to trade freedom for security, with the exception of a few scattered rebel groups. These rebels might be dangerous if they could ever agree on what to do with freedom once they've attained it. The most infamous of the lunar freedom fighters is the group once led by Ismael Li, which has now scattered across the Moon in the wake of the Copernicus Massacre. Dozens of other, less active groups can be found in every lunar city, perpetrating minor crimes like vandalism and graffiti.

SCIENCE & MILITARY ◇

Selenites are some of the solar system's best miners. The Lunar Mineral Exploitation Consortium (LuMEC) dominates the Moon's commercial scene as one of the few pre-Fall companies to maintain its power during the hard times. Its huge massdrivers continue to be one of Earth's primary suppliers of raw materials for space construction. Contrary to popular belief, the lunar massdrivers make very poor weapons. They are buried into the ground and can only shift their aim a little, and even then, very slowly. Their usual targets are the masscatcher nets located at the Lagrange 2 orbital point behind the Moon. The masscatchers are the space age equivalent of the old sea-going barges: when the massive conical nets are full, a fusion-powered tug pulls them to where the material is needed.

Though the Selenites manufacture several types of weapons, they have few troops. There is not much to fight for on the Moon apart from the installations themselves. As a result, most of their forces are defensive in nature and organization.

COMMERCE & INDUSTRY ◇

Many other Lunar companies are military contractors who are gaining in importance due to the current political climate. The Lunar Aerospace Consortium is the most important of these companies, and is responsible for almost all of CEGA's exo-weapon production. In addition to producing *Syreens* and increasing numbers of *Wyverns*, LAC undertakes testbed research for CEGA. The *Dragonstriker* exo-armor is one example of their R&D department's expertise. Many more groundbreaking designs are surely in the works.

The other main lunar industry is the production of specialized raw materials for the space construction projects. Every day, large sheets of aluminum, bundles of silicates, as well as oxygen and water tanks are sent up to waiting cargo ships. Between 55% and 65% of the mining operations on the Moon are under the direct or indirect supervision of the Lunar Mineral Exploitation Consortium (LuMEC). The rest is divided between several smaller companies such as the Space Mining Co. and Groundhog Works. LuMEC is one of the rare companies whose assets remained intact during the transition to a post-war inter-system economy, thanks to the careful management of its resources. Its leaders have a very strong influence on the Moon's political scene and while they seem eager to obey CEGA, they are quite prepared to oppose it if necessary.

RECENT DEVELOPMENTS ◇

The massacre at Copernicus has aroused the ire of the Moon's civilian population against CEGA. Several acts of violence against CEGA soldiers have been reported, resulting in all off-base leaves being canceled indefinitely. All-out riots have been prevented by the narrowest of margins thanks to the calming words of Councilor Olga Kyushinova, who has also lodged a series of formal protests in the CEGA council chamber.

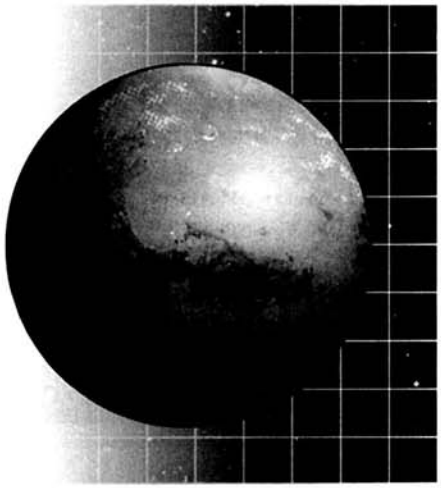
Ismael Li, the miner-turned-rebel who sacrificed his life at Copernicus to save a group of fleeing Jovians, has become a folk hero of sorts on the Moon. Government blackouts of information pertaining to Li have only resulted in increasingly heroic underground stories about the fallen leader. His last words — "My life for freedom!" — have become a rallying cry across Earth's largest satellite.

THE DESOLATE LAND

Like the Earth, the Moon provides the advantage of physical familiarity. We've all seen pictures and televised coverage of the Apollo lunar missions and references about Earth's satellite are relatively easy to come by. Players wishing to play Selenites must also give some thought to the culture they come from. In the 23rd century, the Moon is a settlement of hard-working people who do not value individualism or creativity. Certainly not typical stock for PCs. In all likelihood, a PC will be someone who has broken out of this mold. Have they suffered some form of trauma or shock, such as being orphaned at an early age or seeing an injustice? Are they simply free spirits, unable to fit into the Selenite mold of social behavior? One possibility is for a PC to be a survivor of the Copernicus Massacre. These characters will have seen the brutality of CEGA's most militant wing and may be seeking justice or even vengeance.

Gamemasters bringing foreigners onto the Moon can emphasize the gritty, working-class atmosphere of the resource frontier. Selenite communities tend to be no-nonsense affairs and Lunar inhabitants have a reputation as hard working and hard drinking people. Law and order are enforced by community peacekeepers or even CEGA soldiers if need be. Outsider characters should face resentment from those who do not share their "good life" and could easily become victims of violence during designated rest or relaxation periods. PCs can also hook up with rebel groups, who may honestly want their help or may wish to use them for some more devious purpose. Either way, PCs will probably have to prove that they are not CEGA spies.

▶ MARS



Distance From Sun:	227,900,000 km
Revolution Around Sun:	687 days
Rotation:	24.6 hours
Axial Tilt:	25.2°
Diameter:	6,787 km
Density:	3.9 x that of water
Mass:	6 x 10^{20} metric tons
Surface Gravity:	0.38 g
Escape Velocity:	5.15 km/sec.
Average Surface Temperature:	5°C after terraforming
Atmosphere:	0.6 atm. (75% CO_2, 12% O_2, 13% N_2, greenhouse gases)
Hydrographics:	11%
Population of Planet:	350 million
Population of Orbital Stations:	4 million
Languages:	English, German
Principal Exports:	manufactured goods, iron, aluminum, medical supplies
Principal Imports:	foodstuffs, complex hydrocarbons

◇ OVERVIEW

The terraforming of Mars was one of the greatest technological projects ever attempted by humanity. The first Martian colonists were dreamers, people who were willing to devote their entire lives to changing the face of a planet. As Mars grew in wealth and population, and as Earth collapsed, the corporate and government interests that had sponsored Mars' colonization attempted to take control of the planet in the hope of stealing its resources to rebuild their power on Earth. The great distance involved, and the Martians' own remarkable stubbornness, however, proved to be insurmountable obstacles. In 2085, Mars wrested its freedom from Earth's grasp. Independence had a price, however. The following years saw several civil wars erupt as the Martian Democratic Party fought to retain power in the face of a concerted opposition which disagreed with the Party's desire for a strong central government. Today, Mars remains a divided world.

◇ CULTURE

The Martian Federation is a totalitarian state founded by General Otto Kurtz after Mars' bid for independence. Life under the Martian Democratic Party is controlled and ordered. People are used to daily security checks and propaganda-as-news releases. Although Kurtz is dead, his legacy remains: German, his native language (and that of many early colonists), is an official language with English, and German ranks and titles are used in the Federation's military and business communities.

The Martian Free Republic, on the other hand, gives its citizens great personal freedom. It was created by convention between the Federation and the non-aligned frontier settlers, both of whom were tired of fighting over territory. The Federation agreed to recognize the newly founded Free Republic's independence and permit its people to live as they chose, but gained the right to set the borders of the nations. The Republic resents that agreement to this day.

◇ POLITICS

The Martian Federation claims two-thirds of Mars' surface. It is governed by Prime Minister Klaus von Braun, who rules with a firm but even hand. The Free Republic's bureaucracy is significantly more complex due to the convoluted system of checks and balances necessary to ensure freedom while still maintaining national security. Four separate elected councils make policy for the Republic. The president, Marcus Frehley, is primarily a figurehead since Republicans dislike the idea of a single, powerful leader. Both Martian nations send their own delegations to the USN assembly.

Border skirmishes on Mars are a frequent occurrence; both governments have preferred to ignore the incidents rather than expand the conflict. This policy was born of the need to remain on good enough terms to share the orbital elevator and other space resources. With the elevator's destruction, however, the Federation may start to pay more attention to the constant testing of its borders.

◇ SCIENCE AND MILITARY

Although research into bioengineering has stagnated over the decades, the Martians are experts in the few advances that field has generated. Their careful and meticulous research has produced strains of bacteria used for terraforming purposes on both Mars and Venus. Under the watchful eye of the rest of the Solar System, scientists from both Martian nations continue to investigate ways to make further use of bioengineered lifeforms for the benefit of humankind.

▷SCIENCE AND MILITARY CONTINUED

Both Martian countries have standing armies, although they are rather small and use old exo-armor designs purchased from the Jovian Confederation. The Martians have little use for exo-armors and rely primarily on desert-adapted exo-suits and hovertanks. Neither military has a significant space navy, possessing only enough small patrol craft to police the orbital colonies and the Orbital Elevator's Heaven Station (when it still existed).

The remains of Hell Station are located at Pavonis Mons, a large mountain located on the Martian equator. Phobos no longer exists in 2210. Due to the danger to the elevator at its orbital altitude of 6000 km, the moonlet was blown apart and used to build colonies and spacecraft. Most of the material went into large, thin orbital mirrors called solettas that were built to help warm Mars. These are constantly being expanded to help terraforming efforts.

COMMERCE AND INDUSTRY ◇



The Martians used the orbital elevator as a low-cost means of moving raw material and manufactured goods into space for transport to the rest of the solar system. Several outside interests own factories in the Mars orbit designed to take advantage of the elevator. Its destruction has raised their operating costs dramatically.

Several large mining/manufacturing companies exist on Mars. The largest of these is Martian Metals, a planet-spanning consortium that employs nearly a tenth of Mars' population. Mars also maintains a healthy pharmaceutical and medical trade with other nations based on its production of bioengineered bacteria. The rigors of the Edicts (see sidebar below) make it desirable for the solar nations to turn to the "experts" on Mars for their bioengineering needs.

RECENT DEVELOPMENTS ◇

The recent destruction of the Federation's orbital elevator was a great blow to that nation's economy. The Red Planet has not turned into a battleground, however; the two nations are now gathering their forces and quietly re-evaluating their positions in the hierarchy of solar nations. The Free Republic has aligned itself with the Jovian Confederation in the USN chamber and is considering a military alliance as well. The Federation is occupied with rooting out the perpetrators of the elevator disaster, and its suspicions are turning toward its sometime ally, Earth.

For the people of both Martian nations, everyday life has changed little. The repairs to the planetwide damage caused by the impact are proceeding apace, and the dust plumes thrown up by the elevator's fall have been compensated for by the terraforming teams. Soon, the only remaining sign of the catastrophe will be the gigantic wreck running along the equator.

A FEARFUL SILENCE ◮

The horrors of the Fall made it clear to humanity that unrestricted research into the basic nature of life was a formula for certain disaster. The result was the Edicts, a covenant written into the codes and laws of every place of learning in every nation in the Solar System. The Edicts prohibit all access to high-level information pertaining to bioengineering and nanotechnology, and likewise forbids research into these areas without specific government approval and constant public scrutiny. Offenders receive the most severe punishment possible in their nation. The penalties are intentionally harsh — a single accident has the potential to kill billions.

The Edict also applies to research into artificial intelligence. Creating new sentient life would be potentially devastating to Human society, considering the vast number of computers used in the twenty-third century.

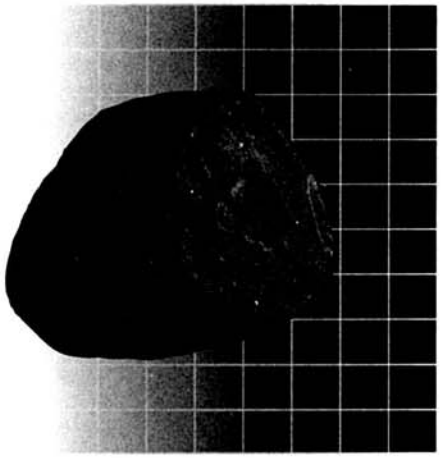
While painful for scientists to enforce, the Edicts have kept the misuse of genetic engineering and nanotechnology to a minimum. Although every nation maintains several "illegal" research facilities, these are always heavily safeguarded. Even so, one of the Solar Police's major efforts is to keep an eye on such installations.

RED SANDS ◪

Players wishing to play Martian characters need to make a choice between the two Martian states. Regardless of the choice, they will need to choose their stance regarding the opposing state and whether they wish to act on it. It is very likely that PCs will want to have some involvement and will either work against the other state as military personnel or terrorists, or in favor of a reconciliation. Some may favor a temporary truce in order to strike back against Earth (or STRIKE, depending on who one asks) for having destroyed their orbital elevator — especially those PCs who lost a family member in the tragedy. They may investigate tourists and visitors in hope of finding an ally who could help them in the fight against their enemies.

Gamemasters setting stories on Mars should not ignore the conflict between the two local states. Skirmishes, diplomatic incidents and threats of all-out war are commonplace and could easily form the basis of a scenario. Indeed, PCs could be accused of being spies or innocently aid one side or the other. Of course, PCs from a military background may well be on Mars for just that purpose — CEGA forces aiding the Federals or Jovian envoys to the Republicans. Mars is not only a planet of warfare, however. The locals are ambitious pioneers in the process of creating a new Earth for themselves. The rugged environment can be a deadly foe and the quest for resources can motivate many adventures.

▶NOMADS AND THE ASTEROID BELT



Distance From Sun:	variable
Revolution Around Sun:	variable
Rotation:	variable
Axial Tilt:	n/a
Diameter:	variable, usually between 0.5 to 2 km
Density:	variable
Mass:	variable, depending on mineral density
Internal Gravity:	0 to 1 g
Escape Velocity:	variable, but always very low
Average Inside Temperature:	18°C
Atmosphere:	0.5 atm (55% N2, 40% 02, traces)
Hydrographics:	none to 30%
Population:	2.4 million (est.)
Languages:	English, Spacer's Runic, variable
Primary Exports:	minerals, specialized labor force
Primary Imports:	resources, specialized food stuffs, water, fuel

◇OVERVIEW

The Asteroid Belt was first colonized as a mining venture in the 2030's. With the troubled times of Earth and the resulting introversion of the solar nations, the various Belt mining concerns lost money and faded away. Over the following century, the Belt became a place where refugees built new homes for themselves, far away from the stifling inner system and ignored by the solar nations.

These modern-day Nomads have colonized small asteroids, outfitting them with gravity wheels and thrusters to make them habitable. Their numbers have remained rather constant for the past few decades. As new groups of refugees move into the Belt, a steady stream of nomads decide to give up wandering and join one of the solar nations. Abandoned colonies are quickly reoccupied and refitted and continue on their journeys under new ownership.

◇CULTURE

Life among nomads is rigid by necessity due to the constant struggle for survival. In the close confines of the asteroid colonies, laziness and rudeness are considered the worst of weaknesses. The resulting strong work ethic, coupled with their expertise in jury-rig-style engineering, makes the Nomads highly valued throughout the solar system, except on Earth and Venus where they are regarded as little more than barbarians.

Although languages vary among the Nomad settlements, all Nomads are taught Spacer's Runic as a matter of course. This language, virtually unchanged since its creation in the mid-twenty-first century, has become a common tongue among Nomads (indeed, among all spacefaring folk), allowing rudimentary communication when spoken language proves to be a barrier. When traveling abroad, Nomads tend to use Spacer's Runic instead of their spoken tongue, which causes the mistaken impression among Venusians and Earthers that Nomads are mute dullards.

◇POLITICS

Every Nomad colony is directed in a different way. Some are ruled singlehandedly by "chiefs" while others operate on nothing more than mutual politeness. Laws and customs also vary widely. The only true inter-colony law that all Nomads adhere to is the age-old Golden Rule. They do not meddle in the affairs of others and expect to receive the same consideration in return.

On the international scene, approximately thirty of the larger colonies have formed a loose association in order to speak for Nomad interests at the USN Assembly. Most of the participating colonies are located in the Asteroid Belt, so their seats at the Assembly chamber are labeled "Belt." The colonies that choose not to participate in this token entry into politics truly do not care what goes on outside the boundaries of their tiny domains. Nobody speaks on their behalf, which is exactly how they want it.

◇SCIENCE AND MILITARY

Scientific innovation is not a great concern for most Nomads. Whatever they need can be bought or traded from other settlements or merchant ships. If, as is often the case, these sources prove unavailable, the Nomads are quite capable of jury-rigging a stopgap solution. As a result, many Nomad stations are labyrinths of exposed wiring and makeshift pipework.

▷SCIENCE AND MILITARY CONTINUED

As a rule, Nomads tend to exclude themselves from tensions between the solar nations. They are not merely neutral, but almost totally uninterested as well. Thus, the tribes have no standing military nor any sort of provision for one. If a crisis does arise, the Nomads are well prepared to surrender unconditionally if diplomacy and bribery should fail. Some of the larger and wealthier colonies maintain a few obsolete exo-suits and space fighters for border patrol against pirates, but these would prove to be little or no obstacle to a determined invasion force.

COMMERCE AND INDUSTRY ◇

The Nomads inhabit only a tiny fraction of the asteroids in the Belt and solar orbits; millions more are available to be mined for resources. Most Nomad colonies perform mining operations to some extent in order to generate income, or they transport low priority goods (for those whose home's orbit cross the path of two or more planets). Mercurian Merchant Guild ships pass through prearranged pickup points every few months to trade equipment, foodstuffs and water for processed minerals.

Many of the best mining asteroids in the Belt bear the identifying mark of one Nomad group or another, staking out a claim for future exploitation. Among Belters, claim-jumping is one of the most heinous forms of rudeness imaginable. This "advance claiming" of much of the Belt's resources restricts the mining operations of other nations in the Belt, although the Belters really have no means of defending their "territory" should a determined incursion occur.

Nomad-raised technicians and crewmen are much sought after, accustomed as they are to cramped living conditions and constant acceleration changes. Many Nomads leave home to work for companies or governments, saving their earnings for use upon their return. The Mercurian Merchant Guild has a special arrangement with the Nomads, allowing them to work aboard Guild vessels as highly paid non-members, although they are restricted to certain common areas of the ships to keep them away from Guild secrets. Caring little for such bizarre rituals, the Nomads are more than happy to take the Mercurians' money.

RECENT DEVELOPMENTS ◇

The Nomads continue to prefer isolation, but events seem to be conspiring against them. For decades, the Jovians and Martians have allowed the Nomads the first choice of mining asteroids, and have otherwise left them alone. Recently, however, representatives from Jupiter, CEGA and Mars have been visiting the major Nomad colonies and probing their willingness to become affiliated with one or the other. The tribes now feel trapped by the location that was once such a suitable sanctuary. If they accept the foreign proposals, they will be forced back into the international politics that they so despise; if they refuse, they fear that the nations will eventually move in by force. The current stance among the sponsors of the Nomad delegation to the USN is to gently explore a deeper relationship with Jupiter or Mars.

BIGGER IS NOT BETTER ◭

Although the Belt has hundreds of asteroids with diameters greater than 100 km, only the largest of these, Ceres (about 930 km in diameter) is home to a large population. Ceres City is generally regarded as the "capital" of the Belt, but only because it is where the affairs of the Belt's USN delegation are managed. Originally a large mining center, Ceres City (also known as Piazzi) is home to one of the largest massdriver arrays in the solar system. The difficulty of constructing rotating gravity wheels on a massive object has limited the colonization of the larger asteroids to the domain of the very wealthy. Also, living on large asteroids is too much like being tied to a planet for most Nomads.

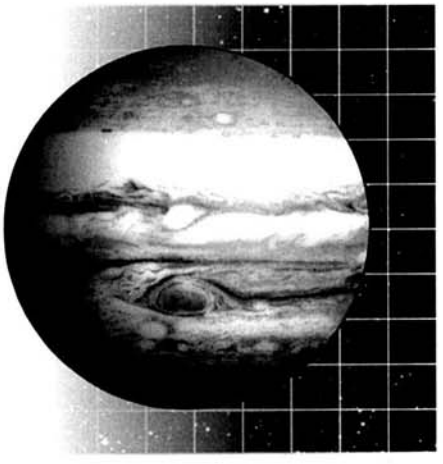
Most of the time, Nomad colonies are built as rings around small asteroids less than a kilometer in diameter. These asteroids are easier to move, making them more appealing to small groups of wanderers who prefer to keep their location a secret. More rarely, an entire asteroid will be hollowed and converted into a Vivarium-type colony cylinder. This, too, can be moved, albeit with greater difficulty.

THE NEW FRONTIER ◪

The Nomads of the Asteroid Belt are modern homesteaders, carving a living out of the resources found in space. Once in orbit, almost anyone can build a simple spaceship that will be more than sufficient to house a family as it travels to the new frontier. Many of these bands are outposts of cultures that have been largely assimilated or repressed elsewhere, such as African or Scottish Highlands culture. Often, they travel together in tribes, settling on an asteroid for a generation or two, fiercely defending their territory. Proud and resourceful, they make the perfect background for a Player Character. A group of players could decide to form a Nomad family and have adventures as they travel from one asteroid to another, or they could be a small band of orphans who lost everything in the small conflicts opposing CEGA and Jupiter forces in the asteroid belt, and who want to avenge those they lost. Another group of player may act as scouts-for-hire for Nomads, seeking new asteroids for them to inhabit when they leave their current home.

Gamemasters bringing a PC party to the Belt can emphasize the frontier atmosphere of the region. Unlike Venus, Mars or the Jovian Confederation, the Belt is not home to powerful nations and mega-corporations. Small bands of dedicated individuals have carved out a life for themselves. PCs seeking escape for oppression might well decided to set up in the Belt themselves. Mars, CEGA and Jupiter are all interested in exerting a certain control over the Belt, so the region has become something of a political and military hot spot.

▶ JUPITER



Distance From Sun:	778,300,000 km
Revolution Around Sun:	11.86 years
Rotation:	9.9 hours
Axial Tilt:	3°
Diameter:	142,800 km
Density:	1.3 x that of water
Mass:	1.9×10^{24} metric tons
Surface Gravity:	depends on altitude
Escape Velocity:	59.5 km/sec
Average Surface Temperature:	-130°C at cloud tops
Atmosphere:	86% hydrogen, 14% helium, 0.1% methane, 0.02% ammonia
Hydrographics:	none
Population:	540 million
Languages:	English, Spacer's Runic, French
Principal Exports:	electronics, manufactured goods, gasses
Principal Imports:	specialized foodstuffs

◇ OVERVIEW

The massive colonization of Jupiter's orbit was not a planned event. The first stations around the huge planet were thickly armored wheels crewed by highly paid technicians. These stations were built for the express purpose of mining Jupiter's rich gas resources. Other mining colony stations were built by the same companies in Jupiter's L4 and L5 points.

The Fall of Earth changed everything. Millions of refugees, fearing that war would spread throughout the inner solar system, fled as far as they could and settled in the orbit of Jupiter. Once there, they discovered that life without solid ground or a bright sun could be adapted to, and that the vast untapped resources that surrounded them would ensure comfortable lives for their children. Keeping that dream in mind, the Jovians worked hard over the next century to survive their harsh environment and build a civilization for their descendants.

The Jovian Confederation consists of three states of roughly equal size. Olympus, located around Jupiter itself, is the founding state of the Confederation and is where the Confederation capital of Elysée is located. The other two states reside at Jupiter's L4 and L5 points. These are over 800 million kilometers ahead of and behind Jupiter in its orbit and are home to thousands of asteroids. The asteroids are known as the Trojans, and the colonies constructed amongst them are referred to as the Trojan States. The two Trojan States are Vanguard Mountain and Newhome. Both were founded by expanding Terran corporations and were cut off from their headquarters during the twenty-second century. Both states joined Olympus in an equal partnership to cover each others' resource weaknesses. They formed the Jovian Confederation in 2113.

The Trojans are almost as far from Jupiter as the sun is. Despite this, the ties between the three states are very close. Being this far from the sun makes the Jovians much more in tune with each other than with anyone in the inner solar system. Over the years, an extensive network of refueling stations and communications relay outposts has been constructed, and a constant stream of ships and barges take advantage of the local unlimited fuel supply to provide a constant link between the Jovian settlements. Despite being the most spread-out nation in the history of Humanity, the Jovian Confederation is also one of the most stable.

◇ CULTURE

The people of the Jovian Confederation are living proof that people are infinitely adaptable and unpredictable. Despite living under some of the most cramped conditions in the solar system, the Jovians have developed an open-minded, easygoing facade which contrasts sharply with the barely restrained tensions on Mercury. The Jovians have adapted to the relative lack of privacy in their lives by maintaining a friendlier and more tolerant attitude toward one another. Recent generations of Jovians, born and raised in the colonies, seem to have fewer difficulties with close quarters than the first Confederation citizens did.

Relations between states are friendly but tinged with elements of cordial rivalry. Residents of Vanguard Mountain (the "leading" Trojan state) and Newhome (the "following" Trojan state) are regarded as country hicks by the inhabitants of Olympus. In turn, Olympians are thought of as imperialistic militants, and are ridiculed for their state's pretentious name.

The Confederation boasts the largest space-based population of all the solar nations. This is rather remarkable since most Jovian colonies are of the "Vivarium" type. Although the Vivariums' greater interior surface area allows these colonies to theoretically support nearly twice the population of standard cylinders, the massive shielding necessary for life around Jupiter reduces the Jovian stations' habitable volume in comparisson to their in-system counterparts, with a corresponding drop in population capacity.

▷CULTURE CONTINUED

The largest Jovian station is the capital of Elysée, which has a population of about five million. The other two hundred or so Jovian colonies are smaller, quickly built during the Confederation's growing years to support its burgeoning population. Although everyone has a place to live, many Jovian citizens are beginning to think that building colonies at a faster pace will increase the quality of life for all Jovians. Unfortunately, the energy being expended on the military and on simply keeping the currently operational stations in working condition precludes this otherwise desirable use of time and money.

The cramped living spaces on the Jovian stations are compensated by the excellent public gardens and parks provided by thoughtful designers. Jovian society has retained the hardworking attitude of its founders, so one's home is often little more than a place to sleep anyway. Nearly all Jovians spend their waking hours at the workplace, where great care is taken to enhance the comfort of the workers, or with friends in public places.

Class distinctions do exist in the Confederation, despite the fact that cramped conditions often force people of very different income brackets to live very close to one another (to conserve space, every family is granted a specific amount of living space based purely on the number of people who will live there). Although government policy forbids buying more spacious housing, the Jovian upper classes are easily able to afford personal yachts and other luxuries which set them apart from their poorer compatriots.

Although Jupiter has retained English as its primary language, much of the population is also relatively well versed in French. This is largely due to the work of Elisabeth Bisset, an early colonist-turned-poet whose diaries and poems about the outer solar system are regarded as the Confederation's finest works of literature. Bisset was part of a significant number of French and Franco-African miners sent to Vanguard Mountain and her works led to a certain francophile sentiment among the Jovian upper-class and then in education. Today, nearly all secondary school students study French for several years and read the classics in their original form. French remains the standard language of art in the Confederation. Earth is the only other place in the solar system with a substantial French-speaking population.

ALEX AND AVRAM ☆

Avram Thorsen was born on October 19, 2154, one week after the birth of Alexandra Itangre to the family next door. Although Avram came from a common family, he and the wealthy aristocratic Alexandra became friends before either could talk. As the two grew up, they gradually learned of the differences in their social stature from their respective parents. The Itangre family owned one of the oldest and richest gas mining companies in Jovian space; the Thorsens had been accountants for generations. Neither family wanted their child to be involved with the other.

As their future careers would show, however, neither child cared to be pushed around by authority figures. "Alex" and Avram defied their families and built a friendship that transcended material fortune. They stayed together throughout high school, each encouraging the other, and they shared the title of valedictorian upon graduation. Although the young adults had come to love each other deeply, both realized that their desired career paths differed; where Alex had always loved the subtle arts of politics and business, Avram much preferred combat of a more straightforward sort. So, scholarships in hand, Alex and Avram went their separate ways in 2171.

When the two met again ten years later, both were married and on the fast track to success. Their renewed friendship made them a formidable team feared by political and military rivals alike. Leaning against each other, Alex and Avram achieved their ultimate goals; Avram Thorsen became a General and GamDivCom (Commander, Gamma Division) in 2204, and Alexandra Itangre was elected President later that year.

The death of General Thorsen's wife in 2207 is now widely regarded as the point where he "turned." Jovian Intelligence Service investigations have traced his selling of national secrets to CEGA and the Venusians back to that time. After the Battle of Elysée, Thorsen turned himself in to his old friend, Alex, in her office. Evidently, things had gone too far even for him. He is scheduled for trial in a few months; clues into his motivations are expected to surface during the investigation. The General will likely face execution if he is convicted of treason.

POLITICS ◇



Each Jovian station is self governed by a chamber of representatives. A council of representatives is elected from the general populace of each colony every few years (the actual number varies from station to station). A separate representative is sent to the state capital, to speak for the station as a whole.

Each of the three Jovian states has its own local government, which manages activity and commerce within the state's boundaries. International affairs and matters that involve all three states are handled by a ruling council known as the Agora. Representatives from each state are sent to the Confederation capital of Elysée to serve on the Agora.

A president is chosen by general election every seven years to supervise the Agora and represent the Confederation. The current president is Alexandra Itangre (see sidebar). Since her election in 2204, she has been the source of many controversial decisions; to her credit, all of these have proven beneficial to the Confederation. In particular, her insistence on increased military spending in lieu of more colony construction is now regarded as a brilliant example of forethought, especially in the wake of CEGA's recent aggression.

▷ POLITICS CONTINUED

Many Jovian observers have come to realize that power in any form is their President's greatest pleasure. Already one of the richest people in the Confederation, she continues to make money from her corporate holdings and searches for ways to remain in office after her term expires in 2211. Her efforts to gain more control over the Agora are tolerated by the people, however, because her actions always seem to have the good of the general populace as their motivation. Some are not so certain of President Itangre's altruism, however, and wonder how long it will be before she exceeds her limits, perhaps giving in to temptation like her good friend General Thorsen.

◇ SCIENCE AND MILITARY



Jovian science is perhaps the most advanced in the solar system. The struggle to build a civilization from scratch in a hostile environment, coupled with subsequent military development, has resulted in a large number of innovations in the field of engineering; not the least of which is exo-technology. Jovians place great emphasis on education, believing that a knowledgeable nation will be less prone to the sort of insane warfare that devastated Earth. As a result, a very large proportion of the Jovian population is made up of government-supported research scientists and engineers.

The Confederation possesses a large military force, most of which originated after the loss of formal contact with the inner solar system. The Jovians wanted to place themselves in a position of power in order to provide a serious deterrent to any possible foreign aggression. The large military was necessary to counter Earth's huge navy as well as to effectively patrol the vast amount of space claimed by the Confederation as its own. Even so, much of the space between the states is devoid of any military presence; most patrols are centered around the refueling stations.

From a wartime standpoint, the distance between the Jovian States is more than a simple escort problem; it is a logistical nightmare. Jovian strategists have long known that should war break out with the inner solar system, they would be forced to fight on three fronts. Each state would be effectively isolated from the others.

Their solution was a stop-gap measure meant to last until a better alternative could be found. The Jovian Armed Forces were split into three separate armies of equal size, labeled Alpha, Beta and Gamma Divisions. Alpha Division was assigned to protect Vanguard Mountain, Beta was assigned to Newhome and Gamma was to protect Olympus. A headquarters, Khannan Base, was established in Olympus, but each Trojan State also had its own command center. In this way, each part of the Confederation would be able to hold its own in the event of an attack.

The inherent weaknesses of this defense meant that the strategists had to plan for a proactive role, as well. The result was an invasion fleet of several carriers and battleships that could, at a moment's notice, swoop into the inner solar system to take the battle to the enemy. This invasion force was also distributed evenly between the states; should one state fall, the others could still avenge it.

Although the modern situation is not as dire as the early Jovians had feared (Mars and the Belt have not fallen under the sway of Earth), it still warrants the maintenance of the JAF's constant state of readiness. New ships are still being built, most of which belong to the "invasion fleet" category of warship. Most notable among these is the *JSS Godsfire*, a supercarrier more than a third of a kilometer in length. More ships of this class have been laid down in the shipyards of the Trojan States, causing much consternation in the inner solar system, where many now fear a pre-emptive assault from a nation that once dreaded the same thing.

★ KNIGHTS IN SHINING ARMOR

Although all three JAF divisions are supposedly equal, observers note that since 2204, newcomers to the ranks have most often been assigned to Gamma Division. Most individuals eventually leave Gamma upon promotion, save for the best of the pilots (who then serve to shepherd the next batch of rookies). The three public heroes of the Odyssey Affair are assigned to Gamma Division, although they are currently on indefinite leave.

This "newbie policy" is a drastic change from the previous arrangement, in which each Division was assigned to one Jovian State. The change suggests that Jovian High Command has formulated a new strategy by which the Confederation will defend its three states. Curiosity runs high in military intelligence circles throughout the solar system. The attack on Elysée is still fresh in the minds of everybody, so it is a mystery as to why the Confederation is sending all of its veterans away from the capital.

Gamma Division supports the largest number of exo-armors in the service. Twelve squadrons are made up solely of the high-tech wonders, and new designs from JAW are almost always tested by Gamma Division personnel. This, coupled with the fact that Gamma Division retains for itself the best JAF pilots, lends the division something of a "Top Gun" aura in the public eye. Each of the twelve exo-armor squadrons has a distinct history and personality, from the easygoing camaraderie of the Jovian Flying Circus to the comically sinister Assassins. All twelve squadrons are media darlings, however, and there is a constant battle among new rookies to be chosen for permanent assignment to one of the squadrons.

Up until a few weeks ago, Gamma Division was commanded by General Avram Thorsen, the now-infamous Traitor of Elysée. His resignation has left Division morale at an all-time low and opened a power vacuum which has yet to be filled. Until a new division commander is selected, nominal control of Gamma Division falls to Khannan Base Commander Konrad Koudriopoulos, who is reportedly sleeping less than three hours a night.

COMMERCE AND INDUSTRY ◇

Most of the Confederation's major manufacturing industries are located in the Trojan States, where raw materials are abundant and easily accessible. The notable exception is Joshua's Station in Olympus, which is the second largest station in the Confederation and a major producer of electronics. Joshua's Station is a major trading center, serving as a port for the ships of the Mercurian Merchant Guild, which bring Jovian goods to the inner solar system. The station is also home to the famous Jovian Armor Works corporation (see sidebar).

Olympus' main export industry is gas mining from Jupiter, accomplished with the use of hundreds of automated skyhooks which skim hydrogen and helium off the top of Jupiter's atmosphere. Giant unmanned barges then send this fuel to locations across the solar system. Olympus is also the Confederation's major source of water, supplying the Trojan States with water collected from Europa and Callisto.

JOVIAN ARMOR WORKS ★

Jovian Armor Works is the best known aerospace company in Jovian Space, producing all of the JAF's exo-armors in addition to many types of weapons.

Founded in 2155, JAW has gained a reputation for reliability in all of its products. JAW's current CEO is Robert "Lil Bob" Hewer who inherited the position from his father. Where the elder Hewer was a loud, boisterous bear of a businessman, his son is an introverted engineer who is far more interested in building exo-armors than selling them. What this attitude bodes for the company has yet to be seen, as JAW's stock remains quite stable.

JAW's R&D department, unofficially known as the Skunk Works, is the JAF's premier contracted think tank. Its restricted research and testing bays on Joshua's Station are strewn with works-in-progress, often prototype exo-armors fitted with the latest in potentially useful gimmicks. Most of these experimental exo-armors have been struck by the so-called "Curse of the Skunk," by which an untested, one-of-a-kind prototype is somehow thrust into a combat situation and returned to JAW as a wreck.

Most longtime Skunk Workers have accepted the Curse as a fact of life, fitting each new prototype with extensive data recording suites in order to gather as much performance information as possible from the Exo's inevitable fate. The latest of the "Cursed" was the *Prometheus*, used by Madeleine Koudriopoulos during the Battle of Elysée to counter CEGA's *Dragonstriker* (the remains of which now secretly occupy the Skunk Work's crash investigation hangar). The remarkable performance of the Prometheus (despite its expected dismemberment) has resulted in the construction of several new *Prometheus*-class prototypes, each built to be superlative in one particular combat role. Considering the Agora's renewed interest in military research, the Skunk Work should have no trouble getting funding for these and other projects.

THE JOVIAN SUBSYSTEM ◇

Jupiter is gifted with more than sixteen satellites, although only four are big enough to be worthy of mention. The others have been exploited over the years for raw materials with which to construct new colony cylinders. The four major moons (Io, Europa, Ganymede and Callisto) are known as the Galilean satellites and are home to an increasing number of Jovian citizens. Three of these satellites (Europa, Ganymede and Callisto) are covered with thick crusts of water ice mixed with mineral impurities. With no reliably solid ground upon which to construct gravity-simulating carousels, inhabitants of these moons must live in constant low gravity. As the cylinders become more crowded, though, people are becoming more willing to leave the stations, despite the need for constant rigorous exercise in the low-gravity environment of these moons. Nevertheless, the population of the moons is a tiny fraction of the overall population of the Confederation.

Io is the closest major satellite to Jupiter, located deep within the powerful Jovian radiation belts. The moon is highly volcanic, with enormous geysers spitting plumes of sulfur reaching 1400 kilometers in height. This hostile environment means that the exploitation of Io's abundant sulfur deposits is carried out almost entirely by robot drones. Io is also home to an experimental power source, by which orbiting collectors take advantage of the five-million-ampere flux tube running between Jupiter and Io, converting a tiny portion of that energy into microwaves which are then beamed to a few test colonies for use. Although the microwave beam is dangerous, the promise of more usable power is an irresistible draw for the Jovian government and private contractors.

The second of Jupiter's Galilean satellites, Europa, provides much of the water used in the Confederation. Covered in its entirety by ten kilometer- thick sheets of ice which cover a worldwide water ocean, Europa has few permanent residents; most people stay for a few months at most to work at the water-processing stations that dot the surface. Several scientific stations are also on the satellite, eagerly searching the depths for signs of life using massive drills; Europa, with its water ocean and geothermal activity, theoretically supports the minimal requirements for life as we know it.

Ganymede is the largest moon in the solar system, and is the home of the Confederation's largest non-spaceborne colony. Nearly fifty thousand people inhabit the various mining towns and processing stations that exploit Ganymede's rich mineral and water resources.

Callisto, the outermost of the Galilean satellites, is primarily a mining and water-processing colony. A small Intersettlement Geographic Society observatory is also located there.

◇ RECENT DEVELOPMENTS

Even though the Jovian Intelligence Service continues to scour the solar system for the perpetrators of the attack on Elysée, much of the mystery surrounding the Odyssey Affair has been cleared up (as far as the public is concerned) by the exposure of General Thorsen as a traitor. Although his motivations remain unclear, he has confessed to allowing the CEGA attack fleet to enter Jovian space unchallenged. He denies, however, knowing what Admiral Kleb planned for the capital. His most notable crime is his "overlooking" of the Venusian floater-poachers that started the Odyssey.

The Agora has quietly granted a select group of scientists a large amount of money, several floater specimens, and a mandate to find out if the special properties of the beasts can be copied en masse. There are two hopes which have brought this about, one being the successful completion of the project with the attendant benefits; the other is the chance that duplication may be proved as unfeasible, which will give the Agora further political clout against the "heartless Venusian exploiters" who have been hunting the floaters.

Also unpublicized is Thorsen's subsequent ruthless endangerment of four Jovian citizens whom he had sent to Venus instead of a team of trained operatives. He did this in the hopes that they would be quickly eliminated which would subsequently end any further investigations into the Venusian activity on Jupiter. Those unwitting pawns, Madeleine Koudriopoulos, Adrian Allen, Roxanne Fujima and Nicholas Holly, survived their extraordinary trek across the solar system and their involvement in the Battle of Elysée. As a result of their actions, these four have become national heroes . The Jovian populace is comfortable with the official cover story — that the four were tourists caught in the wrong place at the right time. Further comment from the heroes is unavailable, however. The three members of the JAF were quickly promoted and are now on "indefinite leave" in an undisclosed location, and Fujima is as close-mouthed now as she was before the incident, despite receiving much public acclaim for her current work as a news-vid anchor.

Those in high offices in the Jovian government (President Itangre in particular), however, are well aware that the corruption and heroism of the preceding months go far deeper than the figureheads which have been presented to soothe the hearts and minds of the masses. Khannan Base Commander Konrad Koudriopoulos, enraged at the treatment of his daughter, has initiated a series of comprehensive security checks in an attempt to root out any further traitors in the military, although these have proven difficult to enforce with any degree of efficiency due to the massive flow of traffic through Khannan Base.

President Itangre, devastated by the betrayal by her oldest friend, has withdrawn into her duties, distancing herself from friends and family. She has demanded, and received, more funding for the JAF from the Agora. Due to her acquaintance with General Thorsen, Alexandra was subjected to a grueling interrogation (as were all of Thorsen's friends) for security reasons, which has soured her mood even more. People who know the president advise others to enjoy her absence while they can; when she comes out of her funk, they say, she will be on the warpath, and woe betide anyone who doesn't jump when she tells them to.

◮ THE GREAT MYSTERY

SCIENTIFIC FACTS

The greatest wonders of scientific discovery in the history of humankind, the Jovian floaters, are also the greatest mystery. Floaters resemble nothing so much as giant gas-filled jellyfish which drift in the upper atmosphere of Jupiter. The question of how such complex organisms could have evolved on a world with no surface and high radiation levels is the subject of much heated debate in the scientific community. Another fact has captivated the interest ofthe scientific and corporate communities. These creatures, like the primitive prions and viruses that inhabited pre-terraformed Mars, use almost exactly the same system of biochemistry as life on Earth, right down to the coding of amino acids by nucleic acid sequences.

The greatest bafflement centers around the multipolymerase protein produced by the floaters, so named because of its inexplicable ability to repair damaged DNA and RNA strands, returning them to their original state, regardless of the type of damage and despite the lack of any perceivable template for the protein to work from. The existence of the floaters themselves can be attributed to coincidence, for the possibility of such life had been postulated for centuries before their discovery. The existence of this protein (whose structure has proven unbelievably resistant to otherwise-foolproof sequencing techniques), however, threatens to shatter the foundations of all modern life sciences. Every known rule of cell biology has been violated by this polypeptide that seems to work on all life, regardless of planetary origin.

These disturbing findings have caused all research and study concerning the floaters to be classified top secret; despite widespread protests, only a few Jovian and Venusian researchers are currently in possession of all the facts. The floaters have been declared a protected species by the USN, and save for a few well-defended research stations, all entry to the creatures' herding airspace is blocked by JAF patrols.

The existence of the floaters has forced the scientific community to revise their theory on the possible origins of life. Already, researchers have intensified their efforts to find other alien lifeforms in the dark waters of Europa, and other locales are being investigated as well. The floaters' discovery has also given additional motivations to the backers of the large extrasolar antenna array. They hope to be able to find evidence of life in nearby systems by studying their chemical spectrum for traces of oxygen and complex organic molecules or, in the case of close-by star systems, by direct observation. Humanity is as interested as ever in knowing whether or not it is alone in the universe.

THE TROJAN STATES ▼

The Jovian Confederation is composed of three separate federations, among which Olympus, the one orbiting Jupiter, is the best known. Vanguard Mountain (the "leading" Trojan state) and New Home (the "following" Trojan state) have maintained a lower profile throughout the years, mostly due to their isolated position in space; the two states reside at Jupiter's L4 and L5 points, over 800 million kilometers ahead of and behind Jupiter in its orbit. Both zones are wells of gravitational equilibrium caused by the interaction between the massive gas giant and the Sun.

Over the millennia, these gravity wells have attracted large clusters of asteroids that are known as the Trojans. Colonies were constructed amongst them to better exploit the mineral wealth therein and were soon referred to as the Trojan States. Both were founded by corporations to provide a secure base of operation for their scientists and miners. When the corporate colonies found themselves inexplicably cut off from their headquarters on Earth during the twenty-second century, they were already mostly self-sufficient. In the mid-years of the century, both states joined Olympus, another former corporate settlement near Jupiter, in an equal partnership to cover each others' resource weaknesses.

The main resource of both Trojan states are the clusters of asteroids that are captured by the powerful combined gravity effects of Jupiter and the Sun. Most of the Confederation's major manufacturing industries are located in the Trojan States, where raw materials are abundant and easily accessible. This mineral wealth is also traded with Olympus for water and volatiles skimmed from Jupiter and its moons.

Vanguard Mountain Station is the oldest settlement found at the L4 point of Jupiter's gravity well. It was constructed through the hollowing out of a one of the largest asteroids in the cluster. After centuries of additions, Vanguard Mountain Station now resembles a mass of metal spires with their heads held together by a large ball of metal and stone. The rest of the Vanguard Mountain state is comprised of many small stations with most built directly out of the hide of an asteroid, but a few being the standard Jovian Vivarium-type colony cylinders.

Newhome is the youngest member of the Confederacy, and as such has not fully incorporated its psyche with that of the other two Jovian states. This manifests itself in two ways: one aspect is found in the overachievers who drive the culture of this Trojan state forward and volunteer for military duty with zeal, while the other is of those people who try to maintain their own ideals and mannerisms in an evolving society.

Residents of Vanguard Mountain and Newhome are regarded as country hicks by the inhabitants of Olympus, while the Trojans view Olympians as either arrogant buffoons or as glamorous urbanites, though not with malice. The fact is that the residents of the three states have few real differences between them, most of which are minor things such as the slight twangy accent of Vanguardians or the use of a few chosen slang words by Olympians.

When the JAF was reorganised, Alpha Division was assigned to protect Vanguard Mountain, Beta was assigned to Newhome, while Gamma division was to protect Olympus. Each Trojan State has its own command center which would allow it to defend itself. In this way, each part of the Confederation is able to hold its own in the event of an attack. The generally accepted wartime strategy of the Confederation is for the attacked state to hold off its attackers while the other two send whatever reinforcements they can spare from their defense. Once the reinforcements have been launched, the two states would also send fleets to attack the offending inner-system nation. Through this, the attacked state has a reasonable chance of at least surviving an attack while the other two states wreak their vengeance upon the aggressor, hopefully causing enough damage to force a retreat.

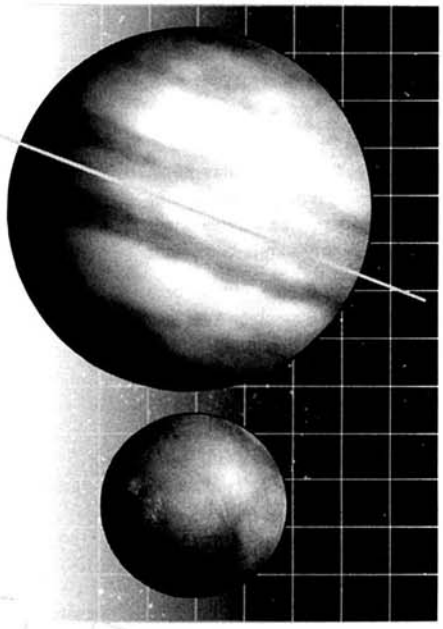
ON TOP OF THE GRAVITY WELL ◪

As the title of the game suggests, the Jovian Confederation is the "default" starting point for characters and campaigns. It offers a wide range of possible character types as well as many different environments to explore. Pages 208 to 217 of this rulebook presents a basic campaign setup in which the Player Characters are Jovian Armed Forces pilots aboard the *JSS Valiant*.

Jovian Player Characters will live in one of the most technologically advanced and pleasant societies in the solar system. The government is not very heavy handed internally and the standard of living is generally high. Players should give some thought, however, to the darker sides of Jovian life. The battle of Elysée has convinced many that the confederation should become more active on the interplanetary scene and the JAF has been flexing its muscles more and more. Player Characters should also choose which one of the Jovian states (and stations) they hail from. Those from Elysée will be used to a great deal of intrigue and politicking, while a native of Vanguard Mountain may have a more working-class outlook. Jovians who live on Ganymede, Callisto or Europa present an interesting alternative. Rugged explorers, miners or scientists, they may feel alienated from those who live in the vivarium colonies, who often do not consider them "real Jovians."

Gamemasters bringing players to the Jovian Confederation should emphasize the wonders of life around Jupiter. The Confederation is home to libraries, parks and luxury accommodations that Nomads may never have seen before. Intrigue is also abundant and GMs could involve the characters, perhaps in smuggling a prototype out of JAW Skunk Works. The armed forces are also an increasingly important part of Jovian society and can serve as the center for many plots in the Confederation. PCs who arrive as traders may find their vessels searched or detoured for security reasons, or could get caught in a battle. The Jovian diplomatic corps is another useful plot element. Ambassadors dart across the solar system and diplomatic packages are ferried through more or less reliable channels. Such a package falling into the hands of the PCs could launch a scenario or even a campaign.

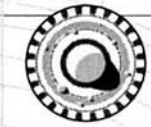
▶ SATURN AND TITAN



Saturn	
Distance From Sun:	1,430,000,000 km
Revolution Around Sun:	29.5 years
Rotation:	10 hours, 39 min.
Diameter:	120,540 km
Density:	0.9 x that of water
Mass:	5.69 x 10^{23} metric tons
Average Surface Temperature:	-140° C in upper clouds

Titan	
Distance From Saturn:	1,221,900 km
Revolution Around Saturn:	16 days
Rotation:	15.94 days
Diameter:	5,150 km
Density:	1.9 x that of water
Mass:	1.35 x 10^{20} metric tons
Average Surface Temperature:	-175°C
Atmosphere:	92% nitrogen, 8% methane
Hydrographics:	55% hydrocarbon seas
Population:	40,000
Primary Exports:	complex hydrocarbons, specialized food
Primary Imports:	technology

◇ OVERVIEW



Titan, the largest moon of Saturn, is a frigid world enveloped in mysterious, red-orange clouds. It revolves in near-total darkness around its giant parent, a billion kilometers beyond the asteroid belt, making it by far the most remote human settlement in the solar system. Only the lure of vital resources — and profit — could have convinced human beings to establish a foothold in such an inhospitable location, and Titan offers both in abundance. Its icy crust is covered by huge seas of organic chemicals (mostly ethane, HC_3), the only natural "oceans" in the solar system beside Earth's. This liquid wealth is lifted out of Titan's light gravity well to mighty orbiting refineries, where it is converted into valuable compounds and shipped for sale throughout the solar system.

Saturn also supports a small population of scientists who monitor and maintain the automated research stations that orbit each transjovian world. The current permanent population of explorers numbers about four hundred and is located in two Intersettlement Geographic Society-sponsored bases.

◇ CULTURE

Titan's population is small, and almost wholly devoted to the economic exploitation of the ethane seas. Titanian society is a 23rd century version of the "company town," where every aspect of life revolves around the Titanian Hydrocarbon Corporation (THC), the powerful Jovian firm which manages the exploitation of the Saturnian system. Most of the 40,000 Titanians live in Station T, the oldest and largest of the moon's four orbital colonies. Personal quarters are spacious, since the station was designed with future staff expansions in mind. The company's headquarters are located on the *Silver Tower*, a smaller energy-generation station surrounded by executive quarters.

The major division in Titanian society is between those who work in the surface collection coastal bases and those working in the orbital station. The space-dwelling "drifters" enjoy a better social status and perks, but the ground-based "lifters" consider themselves the true force behind THC's success. Both lifters and drifters are level-headed, practical and acquisitive. They have opted to undergo temporary deprivations in order to return home as rich men and women after their two-year stint. Some are enthralled by the "frontier" way of life and opt for multiple stints — these are the ones most likely to be called "Titanians" by others. Most of the workers are of Jovian origin, though they are also a good number of Martian and Mercurian employees.

The inhabitants of Alcott and Stevenson (the IGS bases on Titan and orbiting Saturn, respectively) are a tolerant lot, more interested in observing nature and making discoveries than in proving whose home nation is better. By common agreement, English is the official language, although the large cross-section of cultures in close quarters has resulted in the adoption of words and phrases from a dozen different tongues. Neither is religion an issue: a sparsely-furnished chapel is available for use, and as far as religious dogmas go, the researchers have adopted a policy of tolerance. A research director is assigned by the home office every few years to supervise the upkeep of the bases as well as oversee the various ongoing scientific experiments.

POLITICS ◇

Since THC is a Jovian corporation, the orbital colonies and the extraction bases on the Titanian surface are considered "overseas" territories of the Jovian Confederation. Titan itself is international territory, of course, but THC treats the moon as its private property. This has led to increasing tensions as THC gradually spreads its influence, ferrying vital resources to the Confederation and its allies and threatening to bankrupt numerous inner system chemical companies. In a recent speech, CEGA councilor Balthus Ashita denounced the exploitation of Titan as "an instrument of economic warfare," and pushed for several quota restrictions and increased import fees.

Titan's de facto ruler is Bernardo Chandrasekhar, the visionary, 59-year-old CEO and majority shareholder of THC. Company policy is decided by a 21-member Board of Directors (subject to Chandrasekhar's unofficial veto), while day-to-day life on Station T lies in the hands of a small council of elected delegates. These are called "tribunes" by many employees, who privately refer to Chandrasekhar as "the Emperor."

SCIENCE AND MILITARY ◇

Titan is a system-wide leader in chemical engineering and pharmaceutical research. Despite the isolation, a three-year tour of Saturn has become a sought-after plum for many of the solar system's brightest young researchers. Titan has no formal military force, but THC's Corporate Security Division has Confederation police powers. The CSD is equipped with modern light exo-suits and aerospace craft, many of which are modified for the rigors of Titan's atmosphere.

Several life-support and recycling innovations created by the base crews have been successfully marketed in the inner solar system, providing some friendly competition for Nomad inventors (several Saturn base crewmembers are, in fact, Nomads themselves). Although profits from their work are funneled immediately back into research funds, the base crews are more pleased by the fact that their inventions are in wide use.

COMMERCE AND INDUSTRY ◇

Regular technology shipments from Jupiter keep THC's twin refining stations *Demeter* and *Aesclepius* operating at peak efficiency. Using patented high-energy synthesis processes, the factories convert Titan's ethane, water ice and nitrogen into rare compounds for a fraction of the cost incurred by Venusian and Terran firms. Plastics, drugs, lubricants, resins, synthetic foods and liquid fuels are just part of THC's wide range of products.

Most of the finished chemicals are shipped in massive, temperature-controlled cylinders to the Confederation and the Martian Free Republic. The Martian Federation and the Mercurians are also important customers. In addition, THC recently signed several long-term contracts with settlements in the Orbital habitats orbiting Earth, despite CEGA's attempts to scuttle the deal by imposing taxes on imported organic products.

RECENT DEVELOPMENTS ◇

Since 2209, there has been a sharp increase in pirate attacks against THC's transports. In the last nine months, one tanker has been crippled and looted in the Belt, and three others have been damaged. Chandrasekhar has considered requesting JAF escorts for his shipments, or even a JAF base in the Saturnian system. President Itangre, however, has advised him that such a move would play directly into the hands of THC's enemies in the current political climate.

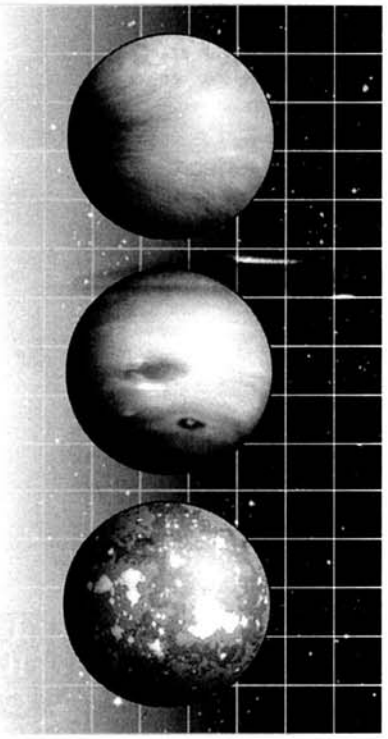
The events surrounding the Odyssey Affair have failed to produce any real tensions among the base crews. More prevalent is a general sense of exasperation with governments in general. Why, they think, can't everyone just grow up and concentrate on science and the betterment of life? The various governments have not tried to exert any influence on the Saturn bases yet either; as far as they are concerned, the outer planets are too far away to be of any political or economic value and they appear to be content in letting people of opposed nations live together peacefully out in the middle of nowhere.

LIVING IN THE FROZEN SEAS ◪

Titan lends itself well to adventures "on the frontier." When you're living this far away from civilization, you can't just hop on the next ship to avoid problems — you have to deal with them as they come. As a result, any character that has some Titanian experience in his background is likely to be strong willed and very capable of taking care of himself. THC employs a wide range of people, from the hardy miners that perform the actual collecting and refining of the raw materials, to the pilots and crew that man the shuttles and tugs, to the meek accountants taking care of the numbers end of the operation. These are all valid professions which the players can choose from, and which can generate their own sets of adventures.

Titan cheaply supplies bulk hydrocarbons to the rest of the solar system. A good Earth analogy would be the various Alaska settlements, or the drilling platforms located in the North Sea. Most of the adventures taking place there will be of the "cabin fever" variety — stuck in a small place with people who disagree (perhaps violently) with you. These run the gamut from catching a saboteur hired by a rival corporation, to fighting with your best friend over a matter that would be nothing elsewhere, to surviving a terrible accident on the shore of the methane sea. Anything new and fresh can become a cause for dissent among co-workers.

▶ THE OUTER REALMS



Uranus	
Distance From Sun:	2,875,000,000 km
Revolution Around Sun:	84.01 years
Rotation:	17 hours, 12 min.
Diameter:	51,120 km
Density:	1.2 x that of water
Mass:	8.7 x 10^{22} metric tons
Average Surface Temperature:	-221° C in upper clouds

Neptune	
Distance From Sun:	4,504,300,000 km
Revolution Around Sun:	164.79 years
Rotation:	16 hours
Diameter:	49,520 km
Density:	1.7 x that of water
Mass:	1.03 x 10^{23} metric tons
Average Surface Temperature:	-230° C in upper clouds

Pluto	
Distance From Sun:	5,900,000,000 km
Revolution Around Sun:	248.43 years
Rotation:	6 hours, 24 min.
Diameter:	2,280 km
Density:	2.1 x that of water
Mass:	1.2 x 10^{19} metric tons
Average Surface Temperature:	-238° C

◇ OVERVIEW

Beyond Saturn, the distances between planets increase dramatically as the light of the sun fades to a minuscule pinpoint. Out there float the two remaining gas giants along with the tiny double planet of Pluto/Charon. Far too cold and distant to be worth any sort of major colonization attempt, the outer realms are visited only by explorers and scientists.

Of the former, a percentage never return to the inner realms. The lure of the unknown causes many to push their reserves just a bit too far, and the professional explorers who do return abound with tales of derelict ships and probes drifting around in the vast open void. Nonetheless, the rumors of transjovian asteroids filled with rare and lucrative minerals and of ships ripe for the picking draw a fair number of foolhardy adventurers to its cold embrace.

The latter, however, find the outer planets fascinating. Apart from the celestial bodies themselves, the scientists now have unlimited access to the stars: the great distances from the light and heat of the Sun means much better astronomical observation conditions. Unfortunately, the distance from the Sun means that gathering power takes a much longer time, unless very large screens and reflectors are set up. This causes the price of building a station to be far beyond the range of most people interested in doing so.

◇ SCIENCE

Of great interest to the scientists is the ongoing project to build a large telescope array at the far reaches of the solar system. By using a network of computer-controlled, maser-linked, free-floating antennae, the resulting system will have a synthetic aperture equal to the one of an antenna with the diameter of the solar system. Expensive and technically complex, this monstrous ring of telescopes (when completed) will be able to take full advantage of its dark and frozen surroundings to further the search for planets around other stars.

The project is currently behind schedule and somewhat underfunded. Though the IGS sponsors the crew and regularly updates the rest of the solar system as to their progress, raw material and specialized components are always in short supply. Some are worried that the project is being deliberately set back — the linking masers would make powerful, if inefficient, weapons, and many of the antennae could be turned *inward* for even better results. None of the system's planets would want to be on the receiving end of the listening power of such a marvel. While all of the governments are interested in what is beyond the Sun's reaches, they simply cannot fully trust each other to respect the advantages that the telescope might accrue, thus each is slow in delivering any promised materials. There are also rumors that some of the pieces that have been sent do not quite work as they should, raising the issue of potential contractor frauds.

PIRATES ▼

The solar system of the 23rd century is a very structured place. Everyone has a job and a purpose, and must stick to those limits for the sake of the whole society. People who cannot peacefully abide within such strictures are swiftly and mercilessly cut off from society. Removal of the offender from the public eye takes many forms; these range from the rehabilitation clinics of Jupiter to the firing squads of the Martian Federation. In the modern solar system, the only place for such outcasts to run and hide is in the vastness of space. To survive, they turn to piracy, preying upon unarmed spacecraft.

CULTURE ◇

Pirate culture is impossible to categorize; any given pirate is where he or she is for a unique set of reasons. Some are brutal and trigger-happy, others are motivated by pure profit, but most are merely trying to eke out a living on the fringes of a society they find distasteful. The large number of social protesters and clinically insane individuals does, however, lend the pirate "nation" as a whole a broad range of curious eccentricities, from tie-dyeing to group recreational drug use.

While inimical to the ordered societies of the solar system, most pirates are sympathetic, even familial, to others of their kind. Although some rivalries naturally exist among these sorts, meetings between pirate groups usually more resemble family reunions than business conferences.

COMMERCE AND INDUSTRY ◇

No central organization exists between pirate groups largely because they are scattered across the solar system, operating from hidden bases. Most pirate groups have only one or two ships equipped with outdated weaponry, although some mercenary groups in the employ of Earth or Venus have received some *very* advanced technology.

The pirates' targets are most often slow and unarmed merchant vessels, from which they steal needed supplies and equipment. Such activities are not considered a major threat by any government, and "piracy expenses" have become a common sight on Merchant Guild ledgers. Occasionally, however, a particularly brutal and/or greedy pirate group will kill the crew of a boarded vessel and steal the entire ship. In these cases, punitive military expeditions are mounted to "discipline" the offending group. For the most part, the solar powers think the pirate groups are not worth the time and expense involved in hunting them down.

SISTER MARISA ☆

Once a Catholic nun, Sister Marisa abandoned her order in disgust when she found out that the Vatican, like CEGA, had become a puppet of the Venusian Bank due to massive accumulated debts and the work of a few corrupt officials. Driven rather batty by this shattering of her world, she became a pirate to "minister to those in need of succor from the dark forces of the Bank," as well as to keep herself one step ahead of angry Bank enforcers eager to silence her.

Sister Marisa remains at large, and has gained a folk reputation as a modern "Robin Hood" in the solar system. Although she has denied the laws of Mankind, she has kept her personal vows sacred, and continues to wear the habit as a sign of her loyalty to a higher power. Her cutlass and gunbelt tend to ruin the image of a cloistered nun, however.

WHAT A COLD, LONELY PLACE ◪

Player Characters hailing from the Outer Realms are few and far between because the population is virtually non-existent. There are those who call the empty expanses home, however, such as dedicated explorers, scientists and pirates. Players should give considerable thought as to why their characters identify with this inhospitable place and what draws themthere. Possibilities include the lure of adventure (such as bounty hunting or piracy), scientific curiosity, or a desire to flee from something back home.

Most if not all of the adventures taking place in the Outer Realm will occur aboard a ship — there are no settlement out there, other than a few tiny research stations (though these could work wonders for "cabin fever" scenarios, just like Titan). Characters that have traveled beyond Saturn are likely to be scientists or part of the crew of an exploration vessel. What these adventurous souls find out there is left entirely to the imagination of the Gamemaster, but could include secret military bases, derelict ships, other explorers and various natural phenomenon.

The potential for discovery and academic fame are greatest in these far-flung reaches of space, but a minor mechanical malfunction which would be simply a bother in the well-traveled lanes of space can become a life-threatening menace out here. A traitor or saboteur hidden aboard an exploration ship or part of its crew can be similarly lethal, and a little high-tension drama is something which gets Players to show their potential.

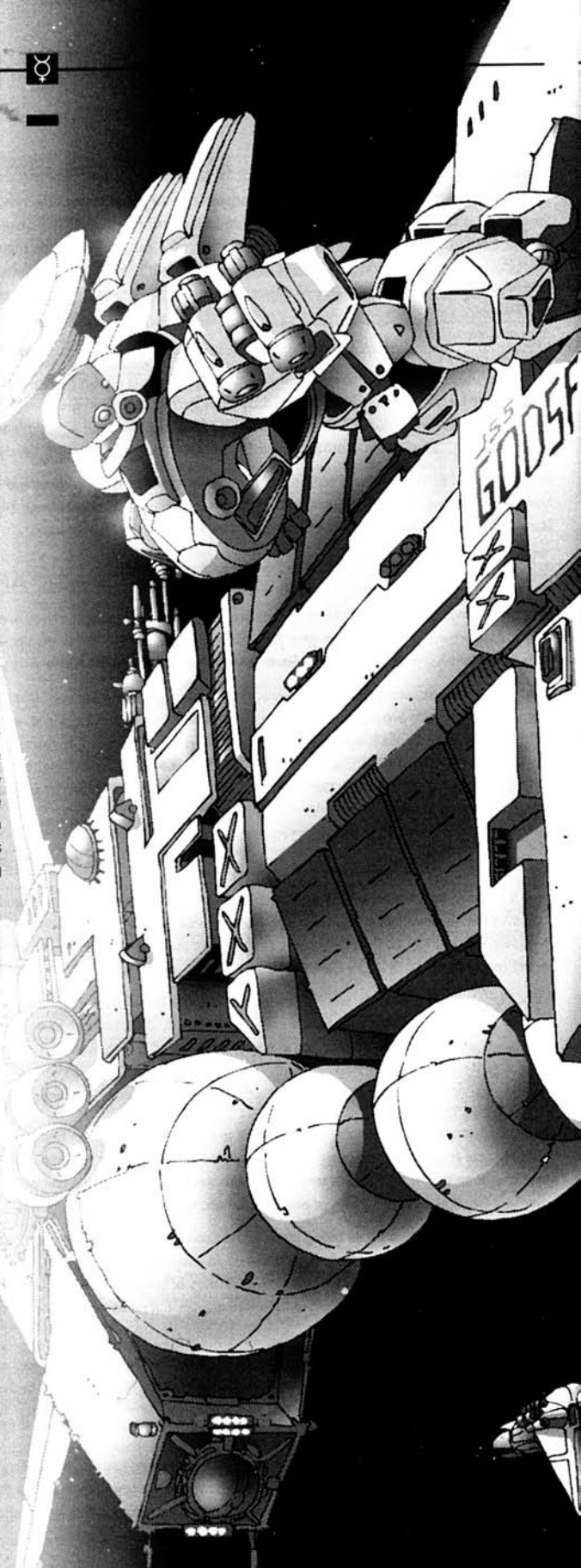
The Outer Realms are a good setting for more intimate roleplaying opportunities. Since all the Player Characters are stuck together on a ship, they will have to interact with one another and any NPC crewmembers. The Players and the GM can easily begin subplots and resolve others during these stretches. One of the greatest schticks for deep exploration vessels is for a genetic experiment to go awry and escape the labs, hunting crewmembers one after the other.

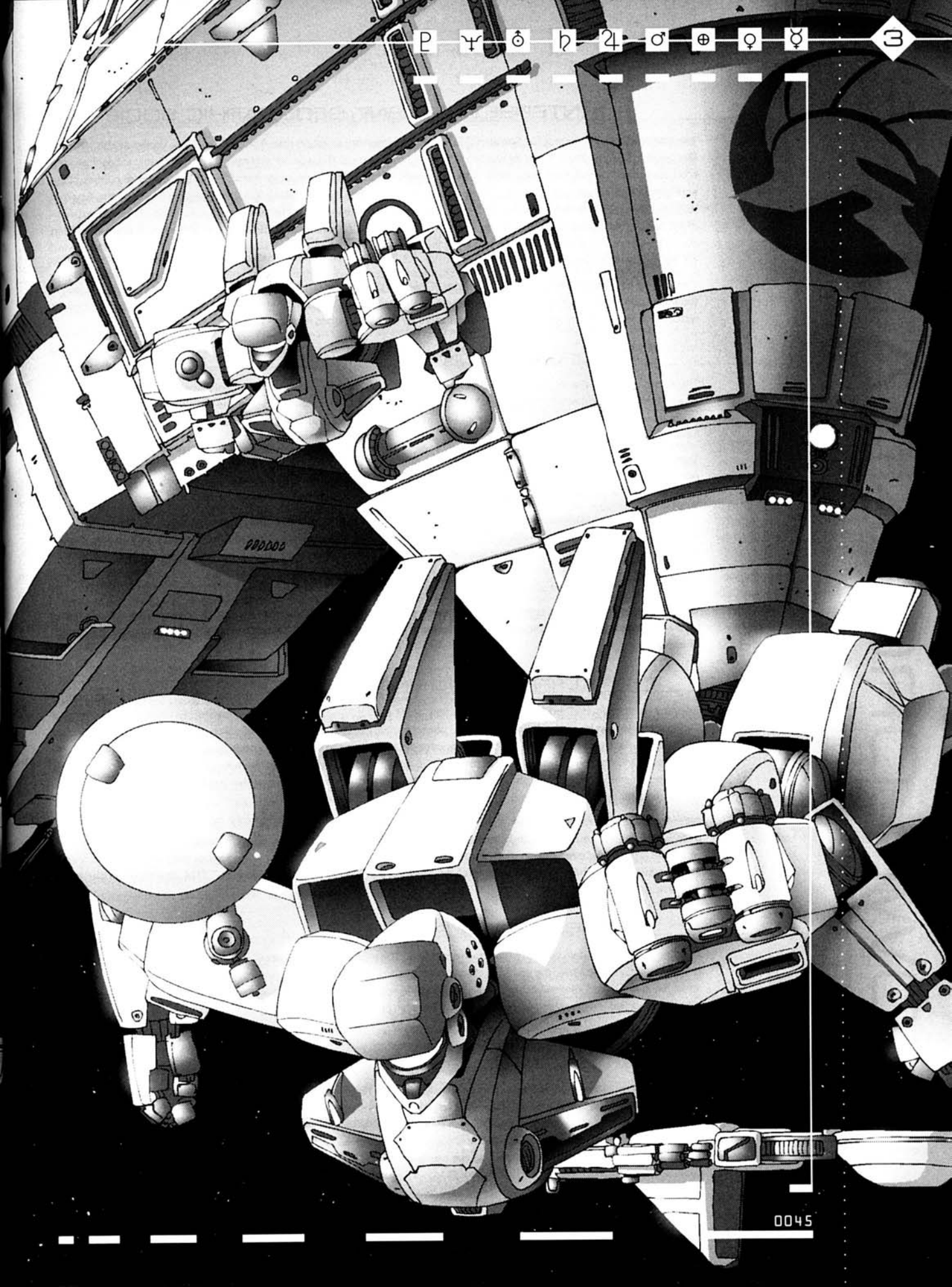
▶ KNOWN ORGANIZATIONS

The solar system of the twenty-third century supports a vast number of corporations and interest groups, many of which have influence over the entire spread of human expansion. Some, like the Solar Cross and the United Space Nations (USN), exist to serve the need for neutral peacekeeping forces in the solar system, providing common grounds for healing or diplomacy. Others are shadowy secret societies that sustain humankind's age-old love of mystery and one-upmanship.

The six organizations introduced in this section represent the merest fraction of human groupings. However, they do provide an adequate cross-section of the more important driving forces behind the governments and people of the solar nations. The aforementioned Solar Cross and USN are both popular and highly respected organizations which draw their membership from the entire human race. The Venusian Bank and the Mercurian Merchant Guild are less permissive in their membership, and far less open to public scrutiny. The Zenith Orbital Network is a commercial current-affairs broadcast network that reaches the entire Solar System. The final group, the Intersettlement Geographic Society, is a purely scientific organization that wants nothing more than to be permitted to do its research in peace.

Recent events have forced many of these organizations to go against their basic desires in order to keep up with the flow of politics. Specifically, the Solar Cross, USN and IGS are finding themselves pressured from all directions to choose sides in the conflicts between nations, while the Venusian Bank and other secretive groups are finding few alternatives to acting openly and directly in order to maintain their strong positions in the solar system's power structure.





▶ INTERSETTLEMENT GEOGRAPHIC SOCIETY



The Intersettlement Geographic Society (IGS) is a much larger organization than it was when it was known as the National Geographic Society. Then, it had its hands full trying to catalogue all the wonder and majesty of Earth; now, it has the entire solar system with which to occupy itself. Although much of humanity is now quite homogeneous in terms of culture, dress and behavior, there are still pockets of uniqueness left in the solar system. Many IGS photographers wander the Asteroid Belt and the Independent States of Earth, recording the traits of the various cultures therein. Exploration of the vast expanse of the outer solar system is also a strong focus of the IGS. Most nations are too busy paying attention to themselves and each other to bother with exploration, leaving the IGS and occasional university collaborators to plumb the secrets beyond the settlements of humankind.

The Society has retained its centuries-old credo: "Only what is of a kindly nature is printed about any country or people." In the increasingly bitter social and political climate of the solar system, the IGS' strict adherence to this policy has made it welcome in every nation; its publications often serve as excellent public relations material.

◇ ORGANIZATION

The home offices of the IGS are located on Phoenix Station at Earth's L4 point. The organization left Earth along with the United Nations a short time before the Fall. During the period of isolation that followed, the IGS was one of the few sources of communication between worlds, informal as that interplay was. By the time the Mercurians had rebuilt the trading ties between nations, the IGS had already opened branch offices all over the solar system.

The IGS maintains a small fleet of exploration ships that chart and investigate the solar system outside of Jupiter's orbit. Although the ill-fated *Beagle II* was the best known of them all, over a dozen other vessels continuously ply the lonely space around the outer planets, their captains and crews isolated from civilization for years at a time.

The IGS has also set up dozens of observatories. Of particular note are the telescopes located at the poles of Earth's Moon, where permanent darkness at crater bottoms results in temperatures only about forty degrees above absolute zero. These devices have proven extremely adept at spotting very cold, distant objects, while being less difficult to maintain than space-based telescopes. The IGS telescope, however, must share ground with CEGA spy stations, which use exactly the same equipment for very different purposes.

The IGS remains a nonprofit organization. It is funded solely through public donations (much of which, admittedly, come from corporate interests) and the sale of *Interplanetary Geographic* magazine, which is distributed system-wide in a variety of formats.

◇ CURRENT CONCERNS

Recent events have strained the IGS' responsibility to its credo. The incredible canyon created by the fall of the Martian Orbital Elevator has been the subject of several photographic documentaries, many of which cannot help but point out the fact that the disaster was, in addition to being manmade, a direct result of the angry political climate of the solar system. As a result, CEGA is becoming increasingly critical of IGS activities. Other governments are less concerned about the writings of the organization, with the notable exception of the Martian Federation, where the last four issues of *Interplanetary Geographic* have been placed on the Banned List.

Although the multinational crews of the IGS bases near Saturn are getting along fine, conflicts have sprung up among some of the exploration teams closer to home. Many of the teams assigned to telescopes and signal monitoring stations are wracked by paranoia; everyone suspects everyone else of being a spy. In the telescope arrays at the poles of Earth's moon, Jovian crewmembers have been locked out of the observatory. The same has been done to CEGA and Venusian personnel on Europa and Callisto.

★ RELIGION IN SPACE

As religions go, two hundred years is a mere moment in time. The major traditional beliefs of humanity have undergone some changes and denominational splits over the years to reflect slightly differing perspectives on humankind's move away from the homeworld; the major faiths and deities remain unchanged. No nation in the solar system has an official state religion, although some continue to celebrate traditional religious holidays like Christmas, Ramadan or Hanukkah.

There are a few colonies scattered about the solar system which are owned by religious groups. The majority of these are small stations with less than a thousand inhabitants, but some of the more well-organized groups have purchased huge cylinders where tens of thousands live out a harmonious existence.

As in previous centuries, there are always minor cults and splinter religions springing up; these are especially prevalent in the more isolated colonies and in nomad tribes. Instances of religious behavior that is radically out of line with the mainstream are rare; in the hostile environment of space, most severely deluded people manage to kill themselves through carelessness or ignorance long before they can harm others. The occasional exception is the stuff of nightmares for national authorities. The release of nerve gas into the Montblanc colony cylinder near Earth by a lucid and intelligent fanatic in 2174 is one example of religious fervor taken a step too far.

MERCURIAN MERCHANT GUILD ◄



When the first Mercurians established their fledgling nation, they were concerned with the difficulty of maintaining privacy while trading with the other solar nations. Because of the planet's proximity to the sun, most ships could only approach Mercury while hiding in its shadow. This limited the number of windows to Mercury, making it something of a chore for captains to plot their way there. Thus, the seclusion gained was counterbalanced by Mercury's poor location.

The Mercurians' solution was at once logical and innovative: why try to make Mercury into a trading center when the other planets would do a far better job? Up until that point, trade between nations was sparse at best; self-sufficiency was the order of the day. The solar nations were rather surprised when, in the 2120s, they were each visited in turn by ships affiliated with the "Mercurian Merchant Guild," and politely invited to participate in formal trade with the rest of humanity using the Guild's members as middlemen and couriers. Although some nations (notably the Jovian Confederation) were initially suspicious, the numerous benefits to be gained eventually earned the Mercurians the patronage of the entire solar system.

The Merchant Guild is Mercury's main source of income. It is extremely dependent on the cooperation of the solar nations; without the other nation's port facilities and financing, the Guild would be rendered powerless. This vulnerability is the source of the Mercurians' famed neutrality and their efforts to make allies of everyone.

ORGANIZATION ◇

The twelve Merchant Princes who make up the Guild's board of directors are elected to their positions by a vote among all Guild members, and keep their positions for life. There are actually thirty Princes; the "extras" command ships and trade places with their counterparts back home every year or so. This ensures that a full voting council is always available at home while simultaneously keeping the Princes active in the business of the rest of the solar system.

The structure of the Guild is unknown to non-members. Secret handshakes and codenames (usually related to money or wealth) help to keep the inner matters of the Guild concealed from outsiders despite its constant exposure to public commerce and exchange. All members are required to learn Merchant's Tongue, a rapid-fire language that is frequently updated in order to retain its value as a private code. Members are briefed on the changes whenever they return home.

The Merchant Guild has developed quite a sense of superiority over the years; its members constantly remind everyone within earshot that it was the Guild that rebuilt the bonds of diplomacy between worlds, a tale the solar system is rapidly tiring of. The internal security officials of many nations often grumble that the Guild also served as a conduit for the Venusian Bank to extend its reach across the solar system.

CURRENT CONCERNS ◇

The Merchant Princes are distressed by reports of the Venusian Bank's deep involvement in the recent Odyssey Affair. The twelve "home" Princes have spent much of the past few months in close consultation with Mercurian Administrator Golan Fairbanks, trying to find an equitable balance between maintaining national security, keeping up the face of neutrality and finding out exactly what the Venusians are up to. The Guild has assisted Fairbanks in the transport and storage of a significant force of exo-armors for the purposes of Mercury's defense should war prove unavoidable. In return, the Guild is requesting that Corvus, the Mercurian Intelligence Agency, be put at its disposal in order to help keep an eye on the rest of the solar system. Administrator Fairbanks has given limited approval; he is concerned that the Guild may become for Mercury what the Venusian Bank is for Venus. Nevertheless, many outgoing Guild ships are carrying Corvus agents.

On the international front, the Guild is strongly protesting (to the USN) the boarding and searching of several of their ships by both CEGA and Jovian personnel. However, the protests are mostly aimed at CEGA, since the Guild is sympathetic to the Jovians' current state of paranoia. The fact that, unlike those of CEGA, the Jovian security forces have been exceedingly polite and respectful to the Guild crews also contributes to the Guild's acceptance of that Confederation's activities.

MANY NATIONS, ONE TONGUE ★

The pioneers who built the first offworld colonies came from countless nations and cultures; the only language everyone was familiar with was English, so English was what everyone spoke. Much like the immigrants to North America in the 19th century, the colonists in the settlements attempted to keep their individual languages alive by speaking them to others of the same persuasion, and by teaching them to their children. However, they met with marginal success at best; not only did the pressures of fitting into society require children to speak English, but smaller cultural enclaves and increasing numbers of mixed-culture marriages meant that traditional languages were less likely to be spoken at home. Thus has English remained the language of choice of the human race.

A few new languages have been born of the age of colonization, often for reasons of conscious practicality. The most notable of these is Spacer's Runic, so called because its written form uses characters composed of only straight lines and dots, much like the old runes of Europe, to facilitate writing with improvised tools and surfaces. Spacer's Runic is a mix of sign language, Morse code and a complex system of written symbols meant to serve as an alternate or emergency form of communication when speaking is not an option. As such, grammar is less important to the language than specific meanings of individual words. Spacer's Runic is often taught alongside English to children in space-based community.

▶ SOLAR CROSS



All colony cylinders have well-equipped medical centers, but they are generally meant to administer to the colony and its local space. The Solar Cross is a neutral corps dedicated to providing professional medical care to people traveling or inhabiting the vast reaches of international space. The hospital ships of the Solar Cross are considered non-aggression zones; no combat activity whatsoever is permitted in and around these vessels. This edict is enforced by all nations and spacefaring groups for their mutual benefit; no one wants to waste resources providing escort for hospital ships. Problems do occasionally arise, though, when pirates and criminals elude authorities' pursuit by entering a hospital's safe zone.

In times of war, the Solar Cross is allowed to inspect POW camps and prisons to ensure the humane treatment of prisoners. The organization is also granted immunity in battle zones, provided that its ships are readily identifiable. Since the Solar Cross has never operated during wartime, no one knows if it will be able to enforce these rights. The recent incident at Copernicus, however, has cast serious doubt as to its ability in this matter.

◇ ORGANIZATION

The Solar Cross' main offices are located in the USN complex on Pyrea. Its current Director is Dr. Paolo DesSources, a former CEGA citizen in his late fifties. The majority of Solar Cross personnel are scattered across space, crewing the organization's massive hospital ships. Most spaceports have small SC offices which serve as a recruiting centers as well as accounting stations for the hospital ships. The Solar Cross is funded and equipped by the entire human community. Each nation voluntarily contributes large amounts of money, materiel and personnel. The Jovians provide mostly shuttles and exo-suits, CEGA offers ship hulls, the Martians donate pharmaceuticals, etc. The Solar Cross does not lack in quipment, but could always use a greater number of qualified personnel to serve as crewmembers aboard the hospital ships.

People who volunteer for Solar Cross service are a special lot, willing to ignore political differences and cramped conditions to perform their duties. While the monetary benefits are small, the prestige and respect are enormous; lasting out an extended tour aboard a hospital ship indicates that an individual demonstrates excellent teamwork, compassion and skill under stress. Solar Cross veterans seldom have trouble finding well-paying work in their chosen fields. Unfortunately, few people are willing or able to give their time and energy in this fashion, so the Solar Cross is eternally understaffed.

◇ CURRENT CONCERNS

The distress beacon from Copernicus on Earth's moon drew the immediate attention of the SCS *Teasdale*, a hospital ship patrolling nearby. The ship responded immediately, burning to the Moon on the quickest available vector. When it arrived, however, the beacon had been shut off, and the *Teasdale* was warned off by a CEGA frigate. Unwilling to be intimidated, Captain-Surgeon Ivan Oldziey faced down the CEGA captain. The bluff worked and the *Teasdale* was allowed to send Mobile Surgery Shuttles to the Moon's surface. The CEGA crew, already unhappy about their orders to "suppress" the Copernicus rebellion, "overlooked" the Solar Cross' presence on the Moon. By the time CEGA sent more ships, the Solar Cross had already advertised its activities and findings to space, making a cover-up impossible. As a result, news of CEGA's ruthless massacre of Copernicus' population reached the entire solar system. Karen Hyrath, the CEGA captain who permitted the *Teasdale* entry into Lunar space, was subsequently court-martialed and dishonorably discharged.

This incident has noticeably soured CEGA's attitude toward the Solar Cross while simultaneously endearing the organization to the rest of the solar nations. Although accusations of favoritism have arisen, the Solar Cross maintains that its only purpose is to provide medical aid to those in need, regardless of cause; if CEGA did not want the SC around, public relations officials say, then they should not have put so many people in a state of requiring that aid.

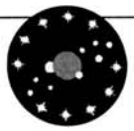
★ HOSPITAL SHIPS

The ships of the Solar Cross are immediately recognizable by their pure white paint scheme broken only by the organization's insignia emblazoned upon the hull. Banks of spotlights keep the ship and surrounding space well-lit, and, coupled with the radio beacon that constantly broadcasts the ship's location, serve to advertise the presence of neutral medical aid.

Donated as they are from various nations, most Solar Cross ships are one-of-a-kind refits. They all have several elements in common, however. They tend to be very large, since they must be able to act as fully functional hospitals and patient care units while at the same time supporting a large enough complement of daughtercraft (usually exo-suits, shuttles and old exo-armors outfitted as rescue units) to effectively patrol a large area of space. Interior space is often given over almost entirely to medical facilities; crew areas are small and designed to serve double duty as patient wards when necessary. Small gravity wheels are common, which operate when the ship is not under acceleration and permit doctors to perform operations that would be difficult or dangerous in microgravity conditions. Finally, the ships are all unarmed; the 100-kilometer neutral zone surrounding each Solar Cross vessel is enforced only by the cooperation of the zone's beneficiaries.

The ships usually have assigned routes, patrolling the major trade lanes. They can be called away to respond to sudden emergencies, but most situations are handled by rescue teams in shuttles, allowing the mothership to be where it is supposed to be, should other emergencies arise.

UNITED SPACE NATIONS ◄



The United Space Nations (USN) is a chartered organization whose purpose is to promote humanitarian relations between nations. However, its scope is greater than that of the old United Nations; it is more concerned with interplanetary rather than domestic politics. Thus, the various non-CEGA states on Earth are afforded little power in the USN Assembly. The existence of only eight voting positions in the USN has greatly simplified matters of organization. Sadly, this situation also makes it difficult for nations to stay neutral in disputes since every decision will have some effect on every member. Over the years, two "voting groups" have developed, although they are not formal associations. The Jovians, Martian Free Republic and Mercury tend to vote together, while CEGA, Venus and the Martian Federation form an opposing group. The Belt and the Independent States on Earth are wild cards; their decisions are motivated solely by their shared desire to be left alone. In recent months, however, these two members have been siding with the Jovian faction, increasing CEGA's frustration.

The chambers of the USN are located on Pyrea Station. An entire section of the colony cylinder is recognized as neutral territory for the use of the USN, complete with its own docking facilities and housing area.

ORGANIZATION ◇

The USN Assembly is made up of delegates sent from every participating nation. Earth and Mars are the only worlds that send more than one team of representatives to the Chambers at Pyrea; Mars sends two, and Earth supports a whopping twelve recognized governments in addition to CEGA. The CEGA group contains representatives from the homeworld, the Moon and the orbital colonies. For the purposes of international representation, the nomads have chosen to send one team to speak for all of them, although nomad tribes are not bound by their representatives' promises.

When decisions in the Assembly must be made, a vote among nations is taken. Each recognized nation is allowed one vote, with the exception of the twelve non-CEGA Terran powers, who must share one vote between them. This policy is maintained mostly to appease CEGA, which does not want its rivals for the control of Earth to have many times its voting power in the USN. CEGA, in turn, is allowed only one vote between Earth, the Moon and the Orbitals.

The USN is administrated by a Chairperson who presides over Assembly sessions and commands the Solar Police. Required to give up all citizenship or ties to any nation in order to symbolize neutral arbitration, the USN Chair is nevertheless one of the most powerful people in the solar system, as he or she is the tie-breaker when the Assembly is deadlocked on an issue.

CURRENT CONCERNS ◇

Chairwoman Mogesha Johari has found the past few months quite harrowing. Every Assembly session has been wracked by arguments and accusations, which she has had to mediate. The increasing tension between nations has aroused concerns that talks may eventually break down, causing the USN to be disbanded. Chairwoman Johari has only words as her weapons; the USN can bring no force to bear on governments that refuse to attend, and SolaPol's work to expose hidden plots and backroom politics seems to only compound the anger crisscrossing the solar system.

Although her former African republic is part of CEGA, Johari bears the latter no special affection and is in fact openly dubious concerning CEGA's claims that those responsible for the Odyssey have all been apprehended and punished. Although she is trying to remain impartial, in keeping with her oath, she cannot help but identify with the inhabitants of Copernicus and Elysée, who have suffered unnecessarily at the hands of CEGA. She is also secretly suspicious of the Venusians' involvement in the matter, a concern shared by SolaPol Director-General Janus O'Grady.

O'Grady has shown his uneasiness by activating several deep-cover moles in the power structures of CEGA and the Venusian Bank, an unprecedented expenditure of high-value resources. With so many active agents in one place, the discovery of any of them would virtually guarantee the exposure of several others in the resulting dragnet. Evidently, O'Grady believes that the potential benefits outweigh the risks; with his experience, no one is questioning his analysis.

THE MAILED FIST OF PEACE ★

HISTORICAL FACTS

The founders of the USN realized that unlike its predecessor, this new international organization would need more than a World Court and a few peacekeeping troops to maintain order among the solar nations. Since the old UN had obviously failed in its task of encouraging civility among humans, the USN would have to take the next logical step and *force* the solar nations to behave, while still maintaining a group of USN Guards for use as standard peacekeeping forces. The Solar Police is the result of this doctrine, acting as the eyes, ears and hands of the USN as it attempts to manipulate the solar nations.

SolaPol is widely recognized as the finest intelligence agency in the solar system. Its agents are everywhere, working undercover as deterrents to any misbehavior. Although every nation wants to know what its enemies are up to, none wants to be spied on in return. Consequently, several nations are becoming increasingly hostile to SolaPol's meddling and are work to restrict SolaPol activities.

The Director-General of SolaPol is Janus O'Grady, who has held the position for twenty of his sixty years. Of mixed Irish and Greek descent, O'Grady is outwardly cheerful and friendly; however, a blistering temper lurks just beneath the facade. Rumor has it that O'Grady was an assassin in his earlier years, working for an unnamed interest. His mastery of four martial arts and his affection for sharp objects seem to bear out this theory, although no confirmation or denial has ever passed his lips.

▶ VENUSIAN BANK

The Venusian Bank is largest of the Venusian Corporations and controls a staggering portion of the financial infrastructure of the solar system. Its goal is to make as much money as possible. The amount of money the Venusian Bank has made to date makes it richer than any nation in the solar system. It virtually controls the government of Venus and stands as the true power behind the CEGA council. It would seem obvious that the Bank plans to continue expanding its wealth and power across the entire solar system. Few politicians know how to deal with the situation; the line between capitalist expansion and imperialist encroachment is thin at best, especially since the Bank is a corporation with the power of a nation.

The Venusian Bank is by no means a united house. Much of its high-ranking personnel is busy trying to undermine one another, thus hampering the Bank's efficiency. It also has a rather feudal structure; each arcology is an independent entity loyal to the Bank. Citizens tend to be loyal to their home arcology, however, since the Bank itself is an abstract concept.

◇ ORGANIZATION

The executive structure of the Venusian Bank is a closely kept secret. The main Board of Directors is based in the main Bank arcology of New Tokyo. A large portion of the city is sealed off from the rest of the arcology and guarded by Home Defense Force commandos. Only the Directors and their trusted support staff are allowed to enter this luxurious zone. The actual number of Directors is unknown to the solar system, as is the actual definition of the term. At least four thousand people live in New Tokyo's restricted zone, but their names, ranks and relationships to one another are a complete mystery. It is most likely, however, that a hundred or so of these people form the Bank's "high command," with the rest operating below them in some capacity. To date, no intelligence agency has successfully penetrated the Directors' inner sanctum.

The true power at the head of the Bank is an enigmatic figure known as the Chairman (or Kaicho). The mystery surrounding his or her nature is complete; many of the Directors question its very existence, postulating an "inner circle" of ten or so individuals who use the identity of the Chairman to further shroud their own true natures. Careful searches for support personnel, homes and other expected resources have turned up nothing. However, no one fails to pay *very* close attention to missives with the Chairman's name on them. Real or not, the Chairman's word is shadow-law on Venus.

◇ CURRENT CONCERNS

The Venusian Bank is discreetly searching the solar system for scientists willing to violate the Edict against secret biological research. Several have been brought to Venus already, where they are paid princely sums for their studies of the Jovian floaters. No real breakthroughs have been made, however, and the Directors are getting impatient. The recent discovery that the specimens are dying despite every effort to keep them viable has added a new element of urgency to the work.

The Directors are even more worried about lack of public outcry directed at the Bank in the wake of the Odyssey Affair, despite Admiral Kleb's revelation of the Bank's involvement. Rather, the solar nations' anger appears to be directed solely at CEGA. The Directors can only assume that the solar nations are taking action of a more covert sort. The failure of their intelligence services to turn up any agents in recent security crackdowns has only increased the Directors' paranoia.

The Bank is currently scaling back many foreign-based projects, including funding for further *Dragonstriker*-class exo-armors. The loss of control that doomed Project Methuselah has made the Directors leery of placing too much trust or power in the hands of untried pawns. They are also beginning to doubt the wisdom of provoking armed conflict in the solar system; now that the Bank is recognized as a major player, Venus has become a viable military target for both CEGA and the Jovian Confederation.

★ OPERATION METHUSELAH

HISTORICAL FACTS

When the first Jovian floater specimen arrived on Venus for study, Venusian Bank directors were dubious regarding the potential economic value of the creature. Their doubt turned to wonderment, however, when their scientists reported the lifesaving properties of the remarkable protein complex extracted from the dissected lifeform. Economic gain paled in the face of the possibility of near eternal life, and so was born Operation Methuselah.

Many Venusian Bank researchers protested the Project on ethical grounds, since the floater species might well be exterminated by such exploitation. In addition, they said, the multipolymerase's ability to repair radiation-induced DNA damage was no guarantee of any capacity to overcome programmed cell death. These voices were quickly silenced and replaced with more agreeable ones, and the Project proceeded.

The Bank spent a vast sum of money on Project Methuselah, financing the construction of a secret research station on Jupiter, stealthy supply ships to maintain the facility and state-of-the-art laboratories on Venus to study the floater specimens. The Bank also paid handsome bribes to government officials in the Jovian Confederation and CEGA.

The failure of Project Methuselah did little financial harm to the company; while the station, supply ships and bribes were write-offs, the Bank had what it wanted: about a dozen floaters had already been transported to Venus for study. More damaging to the Bank, however, was the exposure of its involvement in the Battle of Elysée by Admiral Kleb in his final moments. It is likely that the Bank will never fully recover from the system-wide distrust that revelation generated.

ZENITH ORBITAL NETWORK ◄



3.6

One of the most widely watched and influential news and information video networks, Zenith Orbital Network (ZONet) is based in Kolis Station, an O'Neill cylinder station at the L4 point in the Earth-Moon system. ZONet was founded in 2174 as a local broadcast network servicing the orbital settlements at L4 and L5, as well as sending broadcasts to the Earth and Moon. In 2189, ZONet was acquired by Hannah Gutierez, a wealthy Orbital businesswoman who saw the potential for a commercial, system wide network. After extensive renovations to its facilities on Kolis and substantial internal restructuring, the refurbished and upgraded ZONet went on the air on March 7, 2190, addressing its first newscast to the citizens of the entire Solar System.

Over the last twenty years, ZONet has become an important part of interplanetary society. From the underground colonies of Mercury to the distant stations on Titan, the round-the-clock broadcasts from Kolis are watched by billions of people. ZONet's ability to reach such a broad audience comes thanks to serious capital investment in a network of relay satellite stations designed to boost broadcast signals (and help deal with interference from solar flares). Time lag between planets means that no ZONet broadcast is truly "live" when seen from outside the system of origin, but the two-hour Lead News broadcast (from 12:00 to 14:00 GMT) is still the best place to get international news. Other current affairs, entertainment, scientific and popular culture programs fill the schedule.

ORGANIZATION ◇

Zenith Orbital Network is a corporation with shares traded on the CEGA stock exchange in Brussels. Hannah Gutierez remains the main shareholder, but her interests are now represented by a proxy; Gutierez is 77 and finally seems to be retiring. The current president and CEO is Wolfgang Pfell, former head of ZONet's news and current affairs division. Pfell is assisted by a series of executive vice-presidents and division heads, each in charge of one of the major domains of ZONet interest (e.g. news, entertainment, scientific affairs). By far the largest division is news and current affairs, which not only accounts for fully fifty percent of resources at ZONet broadcast center on Kolis, but is in charge of the various field offices. ZONet maintains offices (usually staffed by about a dozen reporters, producers and technicians) at each of the national capitals, as well as on the Moon and major regions on Earth.

The news department also directs the activities of special corespondents, one or two-man teams of reporters sent to remote areas to seek a story. Some of these teams have their own vessels, but most find passage on commercial liners. The life of a special corespondent is an exciting one, allowing the reporter to go where the action is. ZONet corespondents are seen as brave and honest, going into the heart of danger (such as border disputes on Mars or pirate colonies in the Belt) for the sake of the story.

CURRENT CONCERNS ◇

ZONet is mainly occupied with the business of providing system-wide news coverage and remaining the top outlet for such news. As a part of the Gutierez Media family, ZONet works in collaboration with other major media corporations such a Phoebus Pictures, IXT Telecommunications and Morris Electronic Publishing. Zenith nevertheless faces competition from a growing number of rival broadcasters, including the intersettlement service of the Jovian Public Access Network and lunar-based OmniNews.

The degree of competition has forced ZONet to make tough decisions and some feel they have sacrificed accurate coverage for ratings. Part of ZONet's competitive edge is its apparent ability to get reporters anywhere and at anytime to bring breaking stories to the world at large. This access becomes difficult when local powers decide they are better served by silence. One way to break the silence is to accommodate the wishes of local authorities and "spin" the truth somewhat. Several members of the Martian Federation, under the cover of anonymity, have claimed that ZONet reported false evidence of STRIKE involvement in the devastating destruction of their Martian orbital elevator to cover up the role of the Martian Free Republic.

LIVE FROM ELYSEE ★

For the past two years, ZONet has enjoyed unprecedented access to the government of the Jovian Confederation and its representatives. Elysée bureau chief Marion Fynn has conducted regular interviews with top Jovian officials, including several with President Itangre herself. Fynn and Itangre seem to have a friendly and open relationship on camera and the weekly "Live from Elysée" broadcast has become very popular with politically aware viewers; it has also been the place Itangre or her ministers have often chosen to announce new foreign policy initiatives.

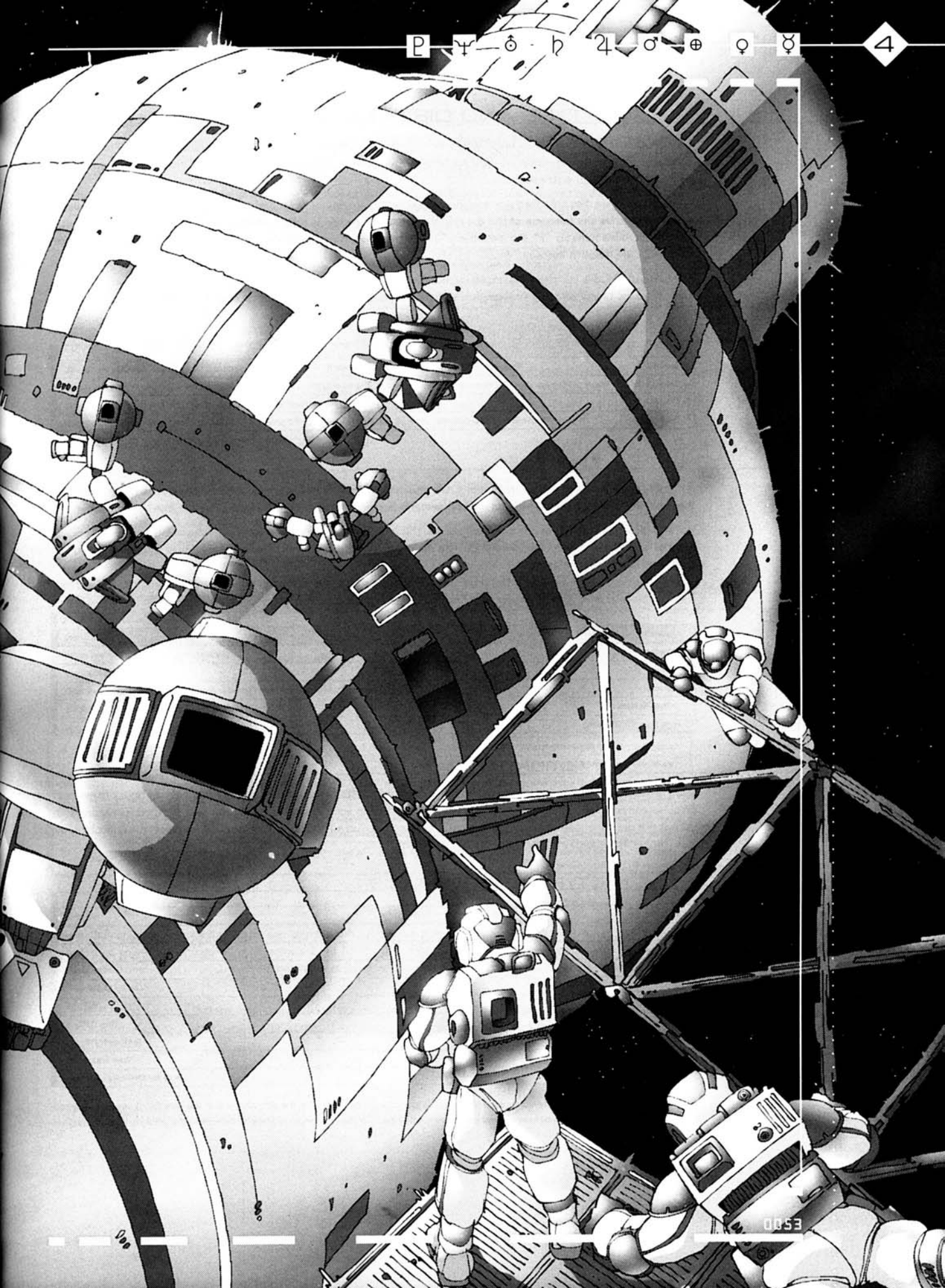
Up until recently, the two women enjoyed a cordial, professional relationship off camera as well. In the last few months, however, Fynn has been looking into the details of the Odyssey Affair. She believes that her superiors at ZONet may have suppressed evidence of Jovian involvement in the destruction of the Martian orbital elevator. She has also been digging into the President's past with accused traitor Avram Thorsen. Itangre is less than pleased by these inquiries and has substantially reduced her contact with Fynn.

HISTORICAL FACTS

SILHOUETTE BASICS

Like all of the other Dream Pod 9 games, Jovian Chronicles is based on the proven Silhouette game engine, which uses the traditional six-sided die to add a random element to the various situations covered by the rules. As was mentioned before, all rule systems have to make a trade-off between extreme realism and playability, and Silhouette is no exception. Its main purpose is to give a framework to build the action on, not hamper it with a straightjacket of constricting formulas and special case rulings. The basics of the system are designed so that gameplay is fast-moving and exciting, while still remaining believable.

The Silhouette rule system is also an extremely flexible game engine. Depending upon the gaming group's preferences, it can serve as a roleplaying game, a tactical vehicle combat game, or a smooth integration of both. Roleplayers may wish to ignore the tactical sections of these rules; similarly, wargamers should feel free to use only the vehicle rules system. Players may also adjust the "realism" of the campaign, from a mostly accurate simulation of reality right up to a movie-like flash of action and adventure (see page 223). No matter the type of game played, however, the notions introduced in the next four pages will always remain at the base of every Silhouette game session.



▶ DICE AND DIE ROLLING

4.1

The Silhouette system uses everyday six-sided dice (sometimes refered to as "1d6") to add a random element to the game. The same dice rolling convention is used for both the roleplaying and wargaming aspects of the rules, so this is not repeated in the respective rule sections.

When two or more dice are rolled simultaneously, their results are **not** added together. **Instead, the highest value rolled is considered to be the outcome of the die roll. If more than one "6" is rolled, each extra "6" adds one (1) to the total.** If every die rolled turns up "1", the die roll is a Fumble and counts as an overall result of zero. Unless mentioned otherwise, **all** die rolls are rolled in this way.

The totals of die rolls are often influenced by modifiers. Modifiers are added to the total of a die roll. If negative modifiers lower the total below zero, the final result is zero. Modifiers are not applied to the dice roll on Fumbles.

◫ DIE ROLLING EXAMPLES

Example 1:	**Player A rolls two dice. The dice read 3 and 5. The total of the die roll is 5 (the highest individual die result).**
Example 2:	**Player B rolls five dice. The dice read 1, 6, 4, 6, and 6. The total of this die roll is 8 (the highest roll + 2 for the two extra sixes).**
Example 3:	**Player C rolls three dice. All three dice read 1. He has fumbled the die roll.**
Example 4:	**Player D rolls two dice and has a +2 modifier. The dice read 1 and 5. The total of the die roll is 7 (highest roll + 2).**

▼ FUMBLES

4.1.1

A Fumble is a mistake or mishap that often spells disaster for a player. It is not necessarily caused by the incompetence of the character, and may be the result of environmental factors. No matter what caused the Fumble, the total die roll is zero.

In the tactical game, Fumbles produce clear results. This is hardly the case in the roleplaying rules due to the mind-boggling number of possible actions and outcomes. The effects of each separate roleplaying Fumble must thus be decided and described by the Gamemaster.

◫ TACTICAL SYSTEM FUMBLE EFFECTS

Situation	Fumble Effect
Initiative	**lose automatically; if both Fumble, reroll**
Attack	**miss automatically**
Defense	**hit automatically unless attack also Fumbles; for damage purposes treat roll as 0**
Active Sensors	**fail to achieve Line of Sight automatically**
High Speed 180° turn	**crash; roll 1d6 — take Light (1-4) or Heavy (5-6) damage**

▼ ACTION TESTS

4.1.2

Many actions involve an element of chance. Did the shot hit? Do the sensors detect the enemy ambush? Is the spy's disguise convincing? Is that dose of poison sufficient to kill? In such situations, an **Action Test** is called for. Action tests consist of a die roll whose result is compared to a fixed value called a **Threshold**. Threshold values reflect the difficulty of the task. Higher Thresholds indicate more difficult situations.

◫ TYPICAL THRESHOLDS

1	**Moronic**
2	**Routine**
3	**Easy**
4	**Moderate**
5	**Challenging**
6	**Difficult**
7	**Very Difficult**
8	**Extremely Difficult**
10	**Near Impossible**
12+	**Pray for Divine Intervention!**

Because of the peculiar probability curve of the six-sided die system used by Silhouette, the difficulty level of the Thresholds increases dramatically after 7, i.e. the progression between Threshold levels is not linear. The above chart should help to determine the difficulty level of any given test.

▷TYPICAL THRESHOLDS CONTINUED

If the die roll — with any situation modifier added — surpasses the chosen Threshold, the test succeeds. The degree of success is defined by the **Margin of Success (MoS)**: a value equal to the die roll (plus modifiers) minus the Threshold. The magnitude of the Margin of Success reflects the success of the action test. For example, a MoS of 1 is a marginal success, while a MoS of 6 would be a spectacular success.

If the die roll, again with modifiers added, is less than the Threshold, the test fails. The degree of failure is defined by the **Margin of Failure (MoF)**: a value equal to the Threshold minus the die roll (plus modifiers). A high Margin of Failure indicates a miserably failed action test. For example, a MoF of 1 would be a close call, while a MoS of 6 would be a definite (and potentially deadly) failure.

If the total die roll and the Threshold are equal, a draw occurs. In roleplaying situations, draws are often interpreted as marginal successes or ambiguous results. In combat, draws tend to favor the defender. In the tactical rules, draws favor the defender.

OPPOSED ACTION TESTS▼

Sometimes two individuals will oppose each other's actions. Attacks can be dodged. Guards may notice people sneaking past them. Negotiations obviously require more than one participant. When two or more individuals oppose each other's actions, an **Opposed Action Test** is called for.

Each opponent makes a die roll using the appropriate Attribute or skill. The highest result wins the test. The Margin of Success of an Opposed Action Test is equal to the winner's roll minus the loser's roll. If more than two participants are involved, separate Margins of Success are worked out between each of the participants as needed. Tied rolls result in draws. In general, draws are wins for the resisting person.

RATINGS, SKILLS, AND SKILL TESTS◀

In both forms of the game, people are rated in terms of their skills. A skill is a learned talent or ability which is often improved with practical experience. Only a few skills exist in the tactical game while no theoretical limit exists for the number of skills in the roleplaying game. Skill levels transfer directly from the roleplaying system to the tactical system and vice-versa.

In addition, it is a common practice in the tactical game to rate an individual, such as an exo-armor pilot, in terms of his general training. For example, an exo-armor pilot rated as Veteran is assumed to have skill level 3 in all relevant tactical game skills (Piloting, Gunnery, etc.).

Skills are useful in determining the outcome of skill tests, a common form of action test. **In a skill test, the number of dice rolled is equal to the skill level of the person involved.**

SKILL LEVEL VALUES◫

Skill Level	Training Quality	Description
0	Untrained	Little or no skill. Cannot use this skill in tactical game.
1	Rookie	Basic training. Common skill level for hobbyists and other amateurs.
2	Qualified	Standard skill level for anyone who earns his living using the skill.
3	Veteran	Hotshots and old professionals. Represents years of experience.
4	Elite	True professionals. Individuals whose skill commands fear, respect, or envy from all in their professions. Most individuals never achieve this skill level, even at the peak of their careers.
5+	Legendary	The best of the best. Living legends and heroes from the history books (or the movie screen, for skill level 6 and up).

RATINGS▼

Items or individuals are often assigned ratings to indicate how effective they are at a certain task. Both a vehicle's Maneuver score and its speed are ratings, as is a person's Build Attribute and his Stamina trait. Many ratings, such as a vehicle's Maneuver or an individual's Attributes are **Zero-Average Ratings**. They are the ones presented in the plus/minus format (for example +1, 0, -2).

This type of rating assumes that the rating will be used as a modifier for die rolls. An average score is unexceptional, and is therefore rated as a zero. Any below average scores are rated as negative numbers and any above average scores are rated as positive numbers.

4.1.3 end of section 4.1 dice and die rolling
4.2 RATINGS, SKILLS, AND SKILL TESTS
4.2.1 end of section 4.2 ratings, skills, and skill tests

▶ GETTING INTO ROLEPLAYING

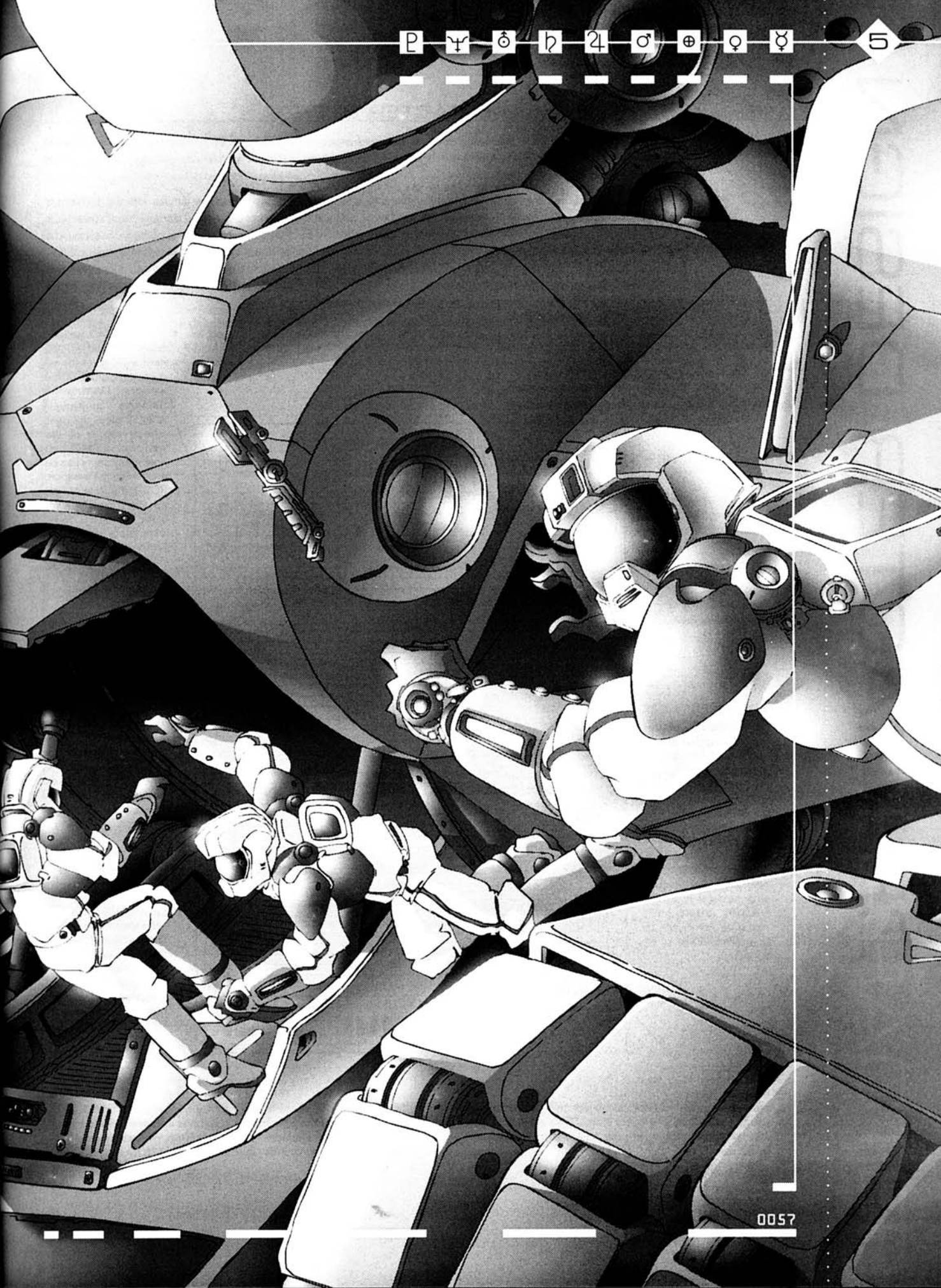
If you already know what a roleplaying game is, feel free to skip ahead to the next section. If you are unfamiliar with roleplaying games, read on.

In simple terms, a roleplaying game (or RPG) consists of a group of people creating an interactive story. Like an actor in a movie, each Player takes the role of a character. These characters are called, not surprisingly, Player Characters or PCs. A group of Player Characters is generally referred to as a party.

One Player does not have a character. Instead, this person, called the Gamemaster or GM, serves in a role that is analogous to the movie's director. It is the Gamemaster who sets the stage for the game's events. In addition to designing the setting of an adventure, the Gamemaster is responsible for stocking the setting with an interesting cast of villains, allies and extras. These additional characters are called Non-Player Characters or NPCs. During a game, one of the Gamemaster's primary tasks is to slip into the role of any NPC that interacts with the Players. The Gamemaster's final task is to guide the game's progress and arbitrate over any conflicts.

Roleplaying games are not divided into specific matches. Instead, RPGs consist of sessions, scenarios (often called adventures or missions), and campaigns. A session is simply a period of time, often around two to four hours, that is allotted to play. The length of a session is determined by the schedules of a gaming group's Players. A scenario is analogous to an episode of a television show. During a scenario, the primary plot of the story unfolds. The numerous subplots of a story often advance, but they are not the focus. During a scenario, some character development should occur, but major changes are unlikely. A campaign is a series of scenarios that are linked together to shape a larger story. Campaigns are similar to television or movie series.

So what makes roleplaying games any different from improvisational acting? The key difference is that roleplaying games are just that, games. Acting is done with the purpose of entertaining others. Games are played for the purpose of entertaining oneself. Games also have rules and involve an element of chance, and roleplaying games are no exceptions. The abilities of characters are described using various statistics and labels. This information, along with plain-English descriptions of the character's possessions and background, is recorded on a character sheet. Dice are used to add a random element to the game and keep everyone, including the Gamemaster, guessing about the outcome of the scenario. This chapter presents all the steps for designing Player Characters, while the next two give the rest of the rules for the Gamemaster.



▶ THE CHARACTER SHEET

In **Jovian Chronicles**, information about characters portrayed either by the Players or by the Gamemaster is recorded on documents called character sheets. These sheets list each character's basic abilities, personal knowledge, possessions and vital statistics (name, height, weight, etc.).

Taking a look around the different elements on the character sheet is a good way to become familiar with the decisions to be made when making a character. The sample shown below contains the statistics of a typical starting Player character, in this case a young Jovian pilot called Aurore Gaumond. Explanations about the various record fields of the sheet surround it, with page references pointing at the full rules. A blank character sheet can be found at the end of the book on page 228 — it may be photocopied for personal use. Players are also encouraged to get a separate note book to keep a journal of their cxharacters' thoughts and activity. With this method, a more detailed background and personality can be designed for the character, making him or her more than a mere collection of numbers.

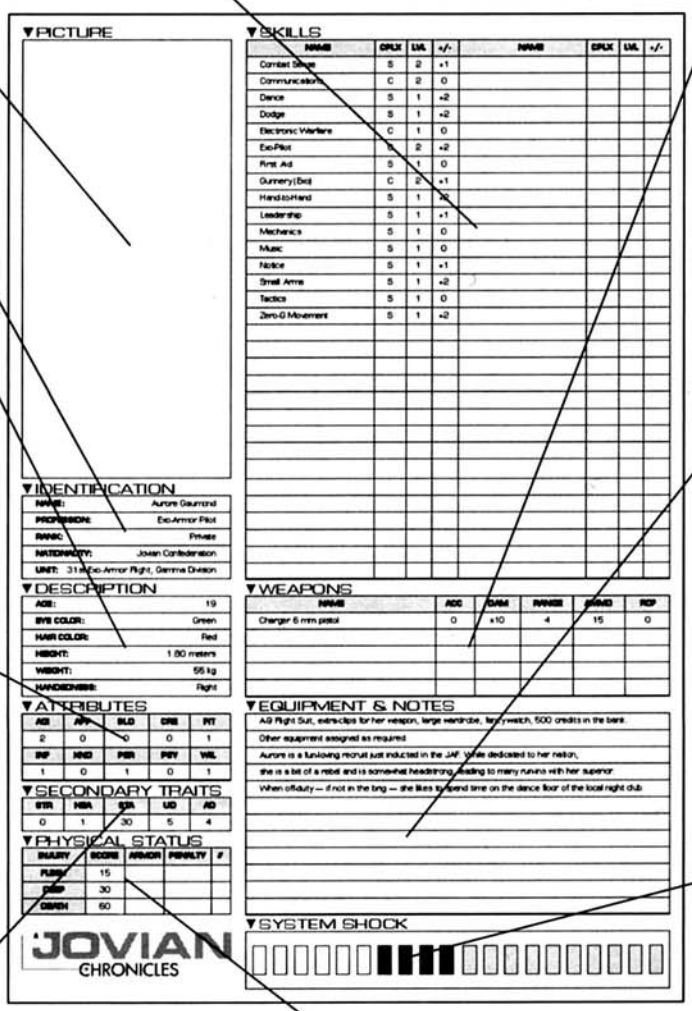
- The learned abilities of the characters, called Skills, are noted in this table. The CPLX column is used to indicate with an S (for Simple) or a C (for Complex) the level of complexity of the skill. The players should put in the LVL column the level of the skill. The +/- column is used to indicate the value of the attribute associated with each individual skill. See p. 69 for details.

- Picture of the character (optional)

- Civil identification

- Physical description and measurements

- The ten basic Attributes (agility, appearance, build, creativity,fitness, influence, knowledge, perception, psyche and willpower) of the character are noted here. The values range from -3 to +3 and usually average 0 for normal individuals. The costs increase exponentially and characters with several high Attributes often have negative Attributes to compensate. See p. 61 for details.



- The character's weapon statistics should be listed here. ACC gives the accuracy modifier of the weapon; DAM is the damage multiplier; RANGE gives the basic (short) range of the weapon. AMMO lists how many shots can be fired with the weapon. ROF is the Rate of Fire, a statistic used for automatic fire. See p. 96 for a complete listing of the weapons.

- This table contains the characteristics of any equipment which the character is carrying. It can also be used to jot down some basic notes on the personality and the background of the character. It is recommended, however, to write a more detailed and complete background on a separate sheet or notebook.

- These boxes are used to keep track of the System Shock status of the character. This value is modified by the various injury-related penalties and calculated based on the Health Secondary Trait. See p. 68 for details.

- The five Secondary Traits (STRength, HEAlth, STAmina, Unarmed Damage and Armed Damage) of the character are noted here. They are calculated from several basic Attributes and/or Secondary Traits. They cannot be increased without increasing the basic Attributes. See p. 63 for details.

- The current status of any wounds received by the character are noted here. The Flesh Wound Threshold is equal to half the STA Secondary Trait. Deep Wound score is equal to the STA score. Instant Death occurs past twice the STA Trait. A column is also available to note the armor that the character is wearing. Flesh Wounds cause a -1 penalty while Deep Wounds cause a -2. See p. 116 for details.

ATTRIBUTES ▼

5.1.1

The first vital statistics are Attributes. Attributes are zero-average ratings (a rating of zero represents a "normal" person) used to describe the character's innate mental, physical and social strengths and weaknesses. Attributes are summarized below and fully detailed in *Attribute Descriptions*.

ATTRIBUTES ◫

Name	Abbreviation	Description
Agility	AGI	Physical prowess and coordination
Appearance	APP	Physical comeliness
Build	BUI	Physical size and mass
Creativity	CRE	Mental innovation and quick thinking
Fitness	FIT	Physical conditioning and endurance
Influence	INF	Charisma and persuasiveness
Knowledge	KNO	Education and logical thinking
Perception	PER	Alertness and ability to discern details
Psyche	PSY	Mental health, empathy and luck
Willpower	WIL	Mental endurance and conviction

SECONDARY TRAITS ▼

5.1.2

The Secondary Traits are a group of five ratings that are neither Attributes nor skills but are dependent upon them. All Secondary Traits are computed from Attribute and skill ratings. They are detailed in *Secondary Trait Descriptions* and are summarized below.

SECONDARY TRAITS ◫

Name	Abbreviation	Description
Strength	STR	Raw physical strength
Health	HEA	Physical well-being and resistance to disease
Stamina	STA	Physical endurance
Unarmed Damage	UD	Damage inflicted in hand-to-hand combat
Armed Damage	AD	Base damage in melee combat

SKILLS ▼

5.1.3

Skills are a measure of learned abilities and range from 1 to 5 in terms of ability. The four columns of the Skill List are Name, Complexity, Skill Level and Modifiers. *Complexity (Cplx)* is a rating of how difficult a skill is to learn: skills are either Simple or Complex. *Skill Level (Lvl)* is the same term that was described earlier in the *Silhouette Basics* chapter (page 55). The *Modifiers (+/-)* entry is where the total of all relevant modifiers to the skill roll (if any) are noted — this includes the governing Attribute (e.g. Agility governs Piloting) for easy and quick reference.

INJURY LIST AND SYSTEM SHOCK ▼

5.1.4

Injury levels and System Shock are a measure of how much physical punishment a character can receive before debilitating wounds occur. The numbers indicated are compared with the total damage received to determine the extent of injury in combat. See *Injury List and System Shock Description* and *Chapter 6: Character Action* for more details on combat.

WEAPON LIST ▼

5.1.5

This is a list of the weapons carried by the character (if any). The list includes columns for weapon type, damage, ranges (short, medium, long, and extreme), and other notes. Note: personal weapon damage is on the Personal Scale, not the Vehicle Scale (see *Character Action*, page 126).

EQUIPMENT LIST ▼

5.1.6

Below the Weapon List is the Equipment List. Prized belongings and items that are carried by the character should be listed here. The Armor points of personal armor should be noted in brackets after the item name, for example Flak Vest (+20).

end of section 5.1 the character sheet

▶ CHARACTER DESIGN PROCESS

5.2

Before sitting down to actually roleplay, players will have to create their own characters. These can be almost any type of person, although the following process assumes characters above the average, but not to the level of the elite. Gamemasters may wish to adjust the number of Character Points and Skill Points (see below) available to reflect the setting of their campaign.

In order to keep the character generation rules as clear and concise as possible, the full descriptions of the various Attributes and skills have been grouped together at the end of the chapter (page 64).

▼ STEP ONE: CONCEPTUALIZATION

5.2.1

The character must first be imagined. Is it a he or a she (you need not play a character of your own gender)? Is he tall and muscular or lean and intellectual? The *Defining a Character* table offers a few questions that will help you.

The more answers you provide, the more detailed (and alive) your character will be. Once the character's look and feel are determined, you should choose a name. If time and talent permit, a drawing of the character is always a nice addition.

◫ DEFINING A CHARACTER

Ⓐ	What is the character's gender?
Ⓑ	What is the character's physical appearance?
Ⓒ	Does the character have a distinctive physical trait?
Ⓓ	Describe the psychological traits of the character.
Ⓔ	Does the character have any good habits?
Ⓕ	Does the character have any bad habits?
Ⓖ	How old is the character?
Ⓗ	Where is the character from?
Ⓘ	What was the character's family like?
Ⓙ	What relationship did the character have with his family?
Ⓚ	Does the character have any current personal relationships?
Ⓛ	What is the character's occupation?
Ⓜ	What is the character's lifestyle like?
Ⓝ	Why does the character do what he does?
Ⓞ	If a military type, what is the character's rank?
Ⓟ	Which organization(s) does the character belong to?
Ⓠ	What are the character's personal goals?
Ⓡ	Does the character have any secrets?
Ⓢ	Who are the character's friends and rivals?
Ⓣ	What is the character's name and/or nickname?

▼ STEP TWO: SELECT ATTRIBUTES

5.2.2

Once a concept is decided upon, players should purchase Attributes to flesh out the rough mental image of the character. A certain number of Character Points (CPs) are available to purchase Attributes. The cost in CPs of an Attribute rating is listed in the *Attribute Costs* table. Purchasing very low stats "gives back" some CPs. A rating must be purchased in all ten Attributes. None are truly more important than the others, and all have their uses. If any CPs are left over, each point becomes one Emergency Die (see *Emergency Dice*, page 124) or a Skill Point, at the player's choice.

Joe Average, the man on the street, has only 10 CPs available. This is just enough to purchase 0 (normal, average levels) in all Attributes. Children receive between 0 and 10 points, based on their age and level of development. Player Characters are heroes, so they receive more points than the average person — exactly how many depending on the style of play of the campaign (see Campaign Style, p 223.).

Silhouette also allows the creation of characters from low or null-gravity settlements by modifying the limits of certain Attributes. The *Off-world Characters* section, page 63, contains the rules to do so.

◫ ATTRIBUTE POINTS AVAILABLE

	Joe Average	Player	Major NPC
Gritty Game	10	20	30
Adventure Game	10	30	50
Cinematic Game	10	50	70

ATTRIBUTE COSTS

Attribute Rating	Character Point Cost
+5	*36*
+4	25
+3	16
+2	9
+1	4
0	1
-1	0
-2	+1*
-3	+4*
-4	+9*
-5	*+14**

* These values are added to available CPs instead of being subtracted. Values in *italics* may only be attained by Light Worlders and ZeGees (see page 63 for more details).

STEP THREE: SELECT SKILLS

Players should now choose skills for their characters. Each Campaign Style (see *Campaign Style*, page 223) gives a certain number of Skill Points (SPs) to purchase Skill Levels with. A skill cannot be purchased at a level higher than its governing Attribute plus two. For example, if John's Agility is +1, he cannot purchase the Dodge skill at any level greater than 3. If the governing Attribute is -2 or lower, the skill can be purchased at level 1 for double the normal cost.

The *Skill Costs* table lists the skill point costs for Simple and Complex skills and the minimum value required in the governing Attribute. Starting skill levels are generally low but can be improved through experience.

SKILL POINTS AVAILABLE

	Joe Average	Player	Major NPC
Gritty Game	20	30	40
Adventure Game	20	40	60
Cinematic Game	20	60	80

SKILL COSTS

Skill Level	Simple Skill Cost	Complex Skill Cost	Minimum Attribute
1	1	2	-1*
2	4	8	0
3	9	18	+1
4	16	32	+2
5	25	50	+3
6	36	72	+4
7	49	98	+5
Specialization	5	5	n/a

* If Attribute is less than -1, level one can be purchased at double cost.

MUNCHKINISM

Welcome to the art of munchkinism, sometimes called "power-gaming." This venerable gaming art is practiced by Players who are meticulously point conscious and want to get the most out of their characters. Expect them to spend a while trying to figure out how to balance their characters' Attributes and Skills exactly in order to lose no points in the process. This favorite pastime of some Players has been known to annoy both Gamemasters and their fellow gamers, and is often discouraged. We say, let them. If that's what it takes for those players have fun with their character, humor them (within reason).

On the other hand, munchkinism can lead to ridiculous extremes. It is possible to create a character who would start with three Attributes at +3, one at -1, two at -2 and four at -3. Put bluntly, that's ludicrous. We strongly recommend that Gamemasters limit the starting Attributes of a character to one Attribute at +2 and four or five at +1. Attributes to watch for: Agility, Build and Perception. They are prized by the munchkins because they are tied to a variety of combat skills. Roleplaying Attributes to encourage: Creativity, Psyche and Willpower. While not exceedingly powerful in combat, they promote character development and non-combat Skills.

◇ SKILL SPECIALIZATIONS

A character may obtain a Skill Specialization at a cost of 5 SPs, regardless of whether it is a Simple or Complex Skill. A Specialization allows the character to add a +1 modifier to his Skill test totals under certain specific conditions. For example, a soldier could have a Small Arms specialization in rifles and thus add one to every roll made while using such a weapon. A scientist could have a Physical Sciences specialization in nuclear physics, and gain the plus one whenever a relevant roll is called for. The Skills section later in this chapter includes suggested Specializations, but the Gamemaster can add more should he wish. A few Skills require that a specialization be chosen above a certain level — these are clearly identified in their description.

A character may purchase multiple different Specializations in the same Skill, but no more than one Specialization (i.e. +1 bonus, maximum) can be applied on a single die roll. Some Players may be tempted to focus their characters and have them excell in a few Skills, purchasing specializations and high levels in three or four carefully selected Skills. Quite often, the advantages of this are more than offset by the inflexibility of the character, which will surface whenever the GM thrusts him into unfamiliar situations.

The *Master Skill List* below lists the available Skills along with their governing Attribute and complexity, as well as the page on which the Skill is explained. The Skills are listed in alphabetical order for easy reference. Some of the Skills have asterisks beside them; these skills have prerequisites, which means that previous knowledge of a related Skill is required before learning the new one.

◫ MASTER SKILL LIST

Skill	Attribute	Complexity	Page	Skill	Attribute	Complexity	Page
Acrobatics	AGI	Simple	69	Intimidate	BLD	Simple	72
Aircraft Pilot	AGI	Complex	69	Investigation	PER	Complex	81
Animal Handling	CRE	Simple	73	Law	KNO	Complex	79
Archery	AGI	Simple	69	Leadership	INF	Simple	76
Athletics	FIT	Simple	75	Life Sciences	KNO	Complex	79
Bureaucracy	KNO	Complex	77	Literature	CRE	Simple	74
Business	KNO	Complex	77	Mechanical Design*	KNO	Complex	79
Camouflage	CRE	Simple	73	Mechanics	KNO	Simple	79
Combat Sense	PER	Simple	80	Medicine*	KNO	Complex	79
Communications	KNO	Complex	77	Melee	AGI	Simple	71
Computer	KNO	Complex	78	Music	CRE	Simple	74
Cooking	CRE	Simple	73	Naval Pilot	PER	Complex	81
Craft (Specific)	CRE	Simple	73	Navigation (Specific)	KNO	Complex	80
Dance	AGI	Simple	69	Notice	PER	Simple	81
Demolitions	KNO	Complex	78	Parachuting	AGI	Simple	70
Disguise	CRE	Simple	73	Physical Sciences	KNO	Complex	80
Dodge	AGI	Simple	70	Psychology	KNO	Complex	80
Drive	AGI	Simple	70	Riding	AGI	Simple	71
Earth Sciences	KNO	Complex	78	Security	KNO	Complex	80
Electronic Design*	KNO	Complex	78	Seduction	APP	Simple	72
Electronic Warfare	CRE	Complex	74	Sleight-of-Hand	AGI	Simple	71
Electronics	KNO	Complex	78	Small Arms	AGI	Simple	71
Etiquette	INF	Simple	76	Social Sciences	KNO	Complex	80
Exo-Pilot	AGI	Complex	70	Space Pilot	CRE	Complex	74
First Aid	KNO	Simple	78	Stealth	AGI	Complex	71
Foreign Language (Specific)	KNO	Simple	79	Streetwise	INF	Simple	77
Forgery	CRE	Complex	74	Survival	CRE	Simple	75
G-Handling	FIT	Simple	76	Swimming	FIT	Simple	76
Gambling	PER	Simple	81	Tactics	CRE	Simple	75
Grooming	APP	Simple	72	Teaching	CRE	Simple	75
Gunnery (Specific)	PER	Complex	81	Theatrics	INF	Simple	77
Haggling	INF	Simple	76	Throwing	AGI	Simple	71
Hand-to-Hand	AGI	Simple	70	Tinker	CRE	Complex	75
Heavy Weapons	AGI	Simple	70	Visual Art	CRE	Simple	75
Human Perception	PSY	Complex	81	Zero-G Combat*	AGI	Simple	72
Interrogation	CRE	Simple	74	Zero-G Movement	AGI	Simple	72

*These skills have a prerequisite (see *Skill Descriptions*, p.69).

STEP FOUR: CALCULATE SECONDARY TRAITS ▼

5.2.4

The character's Secondary Traits, Wounding Scores, and System Shock are calculated using the following formulas. Although the formulas may appear quite involved, most of them are simply an averaging of two or three Attributes. Some Traits have minimum values, meaning that is the lowest value they can beregardless of Attributes and Skills.

SECONDARY TRAIT FORMULAS ◫

A	Strength = (Build + Fitness) ÷ 2, round towards zero
B	Health = (Fitness + Psyche + Willpower) ÷ 3, round off
C	Stamina = (5 x (Build + Health)) + 25, minimum 10
D	Unarmed Damage = 3+ HtH skill + Strength + Build, minimum 1
E	Armed Damage = 3 + Melee skill + Strength + Build, minimum 1
F	Flesh Wounding Score = Stamina ÷ 2, round up
G	Deep Wounding Score = Stamina
H	Instant Death Score = Stamina x 2
I	System Shock = 5 + Health, minimum 1

STEP FIVE: PURCHASE EQUIPMENT ▼

5.2.5

There are two ways to select equipment. If the character resembles one of the archetypes, he may simply use the archetype's equipment list. Alternately, personal gear may be purchased "à la carte." In that case, the Gamemaster chooses a starting budget according to the campaign style and the character's background. He may also wish to approve all equipment before the game starts.

SPECIAL OPTION: OFF-WORLD CHARACTERS ▼

5.2.6

Off-world characters are human beings that live on other planets or in small space stations (not the large colony cylinders). While the environment can be changed/controlled through terraforming or enclosed living structures, gravity cannot be modified and affects the inhabitants' physiology.

The character generation procedure is unchanged if the character's place of origin has a gravity that falls between 80 and 120 percent of Earth's — the difference is not significant enough to warrant an Attribute change. This includes most of the colony cylinders, whose rotation is calibrated to produce the equivalent of one gee (one Earth gravity). If gravity is much weaker than Earth's (less than 0.8 G), the character is considered to be a *Light Worlder*. Characters from a space station where gravity is less than 0.1 G are called *ZeGees*.

OFF WORLD CHARACTERISTICS ◫

Type	AGI	APP	BLD	CRE	FIT	INF	KNO	PER	PSY	WIL
Light Worlders	-3/+5	-	-5/+3	-	-5/+3	-	-	-	-	-
ZeGees	-3/+5	-	-5/+2	-	-5/+3	-	-	-3/+5	-	-

AGI to **WIL** indicate the minimum and maximum values of the Attribute in question. If no number is indicated, the normal human Attribute range (-4/+4) applies.

LIGHT WORLDERS ◇

Light worlders spend most of their lives in weaker gravity fields, which lessen the stresses put on their physical bodies. As a consequence, they tend to develop a slight atrophy of the muscular and skeletal systems, which can both be controlled by medical technology to prevent physiological problems. Light worlders are usually more agile than humans living in standard gravity and are also taller, with an average height of 1.90 meters for men and 1.80 meters for women. All Light Worlders automatically receive the Survival (Space) Skill at level 1, since they must live in pressurized habitats and thus have some knowledge of space safety procedures.

ZEGEES ◇

Dwellers of zero- or micro-gravity space stations and small asteroids, the ZeGees' physical bodies have been affected from growing up in an environment with very little or no gravity. ZeGees routinely suffer from atrophy of the muscular and circulatory systems, but are renowned for their heightened sense of balance and quicker reflexes, as well as their all-around awareness. Average height is 1.95 meters for men and 1.90 meters for women. For obvious reasons, all ZeGees automatically receive the Zero-G Movement and Survival (Space) Skills, both at level 1.

▶ATTRIBUTE AND TRAIT DESCRIPTIONS

5.3

The basic abilities, knowledge and weaknesses of a **Jovian Chronicles** character are defined by their Attributes and Traits. These largely represent the characteristics a character was born with or acquired in their formative years, and range from physical Attributes such as Agility and Strength to mental proficiencies such as Willpower and Knowledge.

▼ATTRIBUTES

5.3.1

The ten basic Attributes represent a character's natural proficiencies and potential. They are costly to improve, so vary little throughout much of a campaign (see *Character Improvement*, p. 124). Along with each Attribute description is a table giving a real world equivalent for different ratings.

AGILITY (AGI)



AGI rating	Equivalent
+3	Olympic gymnast
+2	Agile
+1	Well-coordinated
0	Average Person
-1	Awkward
-2	Clumsy
-3	Suffers from a crippling disease

Agility is the character's hand-eye coordination, nimbleness, and reflexes. This Attribute is well suited to action-oriented characters such as exo-armor pilots, bodyguards and pickpockets, all of whom are likely to have high Agility ratings. Indeed, most personal combat Skills are linked to Agility because they depend on precise body movements.

APPEARANCE (APP)



APP rating	Equivalent
+3	World-class models
+2	Beautiful
+1	Attractive, Cute
0	Average Person
-1	Plain
-2	Homely
-3	Physically revolting

Appearance rates the physical attractiveness of the character. This can modify how other people react to him or her. Many heroic and cinematic characters have high Appearance scores in order to better impress people they come in contact with. When NPCs are willing to bend the rules or help in other ways based on their first impression, it makes the character's life that much easier.

BUILD (BLD)



BLD rating	Equivalent
+5	180-249.9 kg*
+4	140-179.9 kg
+3	115-139.9 kg
+2	95-114.9 kg
+1	80-94.9 kg
0	70-79.9 kg
-1	60-69.9 kg
-2	50-59.9 kg
-3	40-49.9 kg
-4	25-39.9 kg
-5	10-24.9 kg

*This is a set of suggested weights. Players should feel free to modify this by +/- 20 kg according to their character's planned appearance.

Build is a rating of the character's size and body frame. It does not represent the character's physical strength — that's what's Strength is for, see further — only the actual body size and mass. This is most apparent in the archetypal couch potato who is very large, but can barely lift the remote to change the channel.

CREATIVITY (CRE)



CRE rating	Equivalent
+3	Great artists and tacticians
+2	Bright
+1	Witty
0	Average Person
-1	Slow
-2	Dumb
-3	Mentally retarded or quintessential moron

Creativity is a measure of the character's ability to use his knowledge in innovative ways. It is also a measure of the character's ability to think on his feet. This Attribute is useful for most characters who are likely to be thrust into unfamiliar situations and for leaders who have to make many decisions while on the run.

FITNESS (FIT)



FIT rating	Equivalent
+3	Olympic athlete
+2	Professional athlete
+1	College jock
0	Average Person
-1	Out of shape
-2	Shrimp
-3	Gets winded when taking a few steps

Fitness rates the character's cardiovascular endurance and muscle tone. While Build measures raw size, Fitness measures how well maintained the character's body is. Illness can temporarily reduce this Attribute, as can other hardships such as a substandard air supply and starvation. Characters with a high Fitness need not have a high Build, but do often have above-average Agility.

INFLUENCE (INF)



INF rating	Equivalent
+3	Professional con artists and used car salesmen
+2	Believable
+1	Likable
0	Average Person
-1	Timid
-2	Annoying
-3	No social life; either obnoxious or socially inept

Influence measures the character's charm, wit, and persuasiveness. A high Influence rating is a must for any charismatic leader. It is also useful for those who desire to spend lots of time in corporate or social settings, or characters who need to get past security personnel in more subtle ways than simply bashing them over the heads.

KNOWLEDGE (KNO)



KNO rating	Equivalent
+3	Annoying ability to discuss any topic in an intelligent manner
+2	Well-educated
+1	Knowledgeable
0	Average Person
-1	Doesn't read much
-2	Poor education
-3	Learning disability or just incredibly dense.

Knowledge is the character's ability to learn and recall information, and also takes into account the number of years of education the character has successfully completed. Scientists and "brainiac" characters typically have high Knowledge ratings. While Knowledge is most often tied to formal education, inquisitive and well-read people can have a high Attribute without a degree.

PERCEPTION (PER)



PER rating	Equivalent
+3	Amazingly sharp senses; can read the small print on legal documents
+2	Quick
+1	Fast
0	Average Person
-1	Slow
-2	Absent-minded
-3	Should never be allowed near anything that is even remotely hazardous

Perception is a measure of the character's attentiveness to detail and overall alertness. Like Agility, Perception is crucial for action heroes since the enemy who cannot be seen cannot be dealt with. Perception is especially important for scouts and investigators, who need to pay attention to obscure details and find things hidden from view.

PSYCHE (PSY)



PSY rating	Equivalent
+3	Unusually spry and sane
+2	Very happy
+1	Happy
0	Average Person
-1	Unhappy
-2	Troubled
-3	Existential Angst

Psyche is an abstract measure of the character's karma, happiness, sensitivity and love of life. Psyche also reflects the empathy of the character and how "in tune" he is with his own emotions and those of others, as well as his innate luck. Psyche is a rather abstract concept which is best reflected by its extremes; someone with a low psyche seems to have a black cloud over his head all the time, and people will intuitively avoid him. A person with a high Psyche is empathic towards the feelings of others and tends to be easily trusted.

WILLPOWER (WIL)



WIL rating	Equivalent
+3	Endure weeks of torture without cracking
+2	Strong willed
+1	Willful
0	Average Person
-1	Easily swayed
-2	Weak resolve
-3	Cannot stay on a diet for longer than 5 minutes

Willpower is a rating of the character's self-discipline, determination, and pain threshold. Unlike Psyche, Willpower does not imply a love of life; it does however reflect the character's ability to deny death using sheer strength of will. Headstrong and arrogant characters are good candidates for a high WIL, as are shock troopers who want to be able to take a bullet.

USING PSYCHE

An often misunderstood Attribute, Psyche is a Gamemaster's best friend against die-hard munchkins and "combat monster" Players. This Attribute is often misconstrued as unimportant, if not downright useless. Most Players will prefer to have a negative Psyche in order to boost their other Attributes and Skills. We hope to provide here a few recommendations to GMs who would like to encourage roleplaying among their Players and give an incentive to buy high Psyche.

While Psyche does not replace Influence, it gives it flavor. What kind of charisma does your character have? Is he a sweet-talking, glib-tongued rogue, or a scowling, taciturn leader? While both may have a high Influence, it is the Psyche which determines much about how they will be perceived. The first one may leave a good impression, while the second, most likely, will not. Non-Player Characters are not computers, and they will react positively or negatively based on their first impression of someone. When faced with a situation where they must gather information from various individuals, low-Psyche PCs have to rely on intimidation or violence and they can quickly find themselves shunned from most social circles. Even with a high Intimidate or Streetwise Skill, they may have a hard time gathering information if everyone they want to talk to flees or hides from them. Characters with high Psyche, however, have no such problems. While they may not be quite as successful in the short term, they often establish long-lasting relationships or become very popular with people in general. Rather than having to seek out information, they may receive free tips from people who bear them good will. Playing high Psyche is difficult, however, and Gamemasters should reward Players appropriately.

SECONDARY TRAITS ◀

Secondary Attributes are calculated based upon Attributes and certain skills (see formulas on page 63) and help round out the definition of a character. The Trait descriptions follow the same pattern as Attribute descriptions, including real-word reference tables.

STRENGTH (STR)



STR rating	Equivalent
+3	Olympic weight lifter
+2	Professional wrestler
+1	College jock
0	Average Person
-1	Out of shape
-2	Shrimp
-3	Weakling

Strength is a measure of a character's raw physical power and brute strength. It is a zero-average rating, like Attributes. Strength is the average of Build and Fitness, rounded towards zero. Cross-indexing with the Build weight table (page 64) shows the maximum weight that can be dead-lifted and carried a few paces — the lowest weight value in the range is used. Thus, a character with a +2 strength can heft around 95 kg and stagger for a few steps before running into difficulty.

HEALTH (HEA)



HEA rating	Equivalent
+3	Practically never gets a cold
+2	Great health
+1	Good health
0	Average Person
-1	Weak health
-2	Poor health
-3	Perpetually ill

Health rates a character's resistance to illness, toxins, and physiological shock. It is a zero-average rating, like Attributes and Strength. Health is the average of Fitness, Psyche, and Willpower, rounded to the nearest whole number. People who never seem to get sick and those who can drink large quantities of potables likely have high Health scores.

STAMINA (STA)



STA rating	Equivalent
10	Frail old grandmother, child
15	Young teenager
20	Weak adult
25	Average individual
30	Fitness enthusiast
40	Professional athlete
50	Professional boxer

Stamina is a rating of how much sheer physical punishment a character's body can tolerate. Stamina is *not* a zero-average rating: it is equal to five times the total of Build and Health, plus 25. No character may have a Stamina lower than 10. While a high Stamina will decrease the chances of injury, it is still quite easy for a character to be wounded by gunfire or other deadly weapons.

UNARMED DAMAGE (UD)



UD rating	Equivalent
1	Small Child
3	Average adult
5	Brawler
8	Black belt martial artist

Unarmed damage is the Damage Multiplier of any unarmed (Hand-to-Hand Skill) attacks performed by the character. Unarmed Damage is equal to three plus the total of Hand-to-hand Skill level, Strength, and Build. The minimum Unarmed Damage rating is 1. This damage is on the Personal Scale, not the Vehicle Scale (see pages 126 and 130).

ARMED DAMAGE (AD)



AD rating	Equivalent
1	Small Child
3	Average adult
5	Street Thug
8	Skilled swordsman

Armed Damage is the base Damage Multiplier of any of the character's armed attacks (Melee Skill). Armed Damage is equal to three plus the total of Melee Skill level, Strength, and Build. The minimum Armed Damage rating is 1. The Damage Multiplier of a melee weapon is equal to the character's Armed Damage rating and the weapon's own base DM. This damage is on the Personal Scale, not the Vehicle Scale (see pages 126 and 130).

▼PHYSICAL STATUS

5.4.1

Physical Status represents the level of resistance to physical wounds. There are three types of injuries. Flesh Wounds are nasty but not crippling wounds. Deep Wounds are immediately life-threatening injuries. Instant Death is the third type of "injury" and requires no further explanation.

Each level of injury has a wounding score. Wounding scores are the amount of damage an attack must cause to produce a certain type of wound. An attack produces the type of injury whose wounding score is equal to or under the amount of damage inflicted by the attack. Only the most severe of the possible results is applied. For example, if an attack does 40 points of damage to an average individual (whose wounding scores are Flesh Wound = 13, Deep Wound = 25, Instant Death = 50), the attack victim suffers a Deep Wound (40 is greater than the Deep Wound score "25" but is less than the Instant Death score "50").

The wounding score of Flesh Wounds is equal to half of the character's Stamina (round up). The wounding score of Deep Wounds is equal to the character's Stamina. The wounding score of instant death is twice the character's Stamina. Personal armor adds its armor points to **each** wounding score when the character is under physical attack. The modified wounding score should be noted in parentheses after the original wounding score.

Action penalties are negative modifiers to all actions that reflect the pain and distraction induced by wounds. A character is penalized -1 to **all** actions per Flesh Wound and -2 to **all** actions per Deep Wound.

The final column of the injury list is used to note how many of each type of injury a character has sustained, and possibly what they are.

▼SYSTEM SHOCK RATING

5.4.2

The System Shock rating is a measure of how many injuries a character can take before going into shock and dying. If the total of System Shock and a character's wound-induced action penalties equals zero or less, the character goes into shock (see *Injuries*, page 116). System shock is equal to five plus the character's Health. System Shock cannot be lower than one.

System Shock is shown on the character sheet as a row of boxes — unused boxes are simply filled in. As wounds are taken, boxes can be crossed out according to action penalties, representing the damage.

DESCRIBING WOUNDS

HOOKS AND TIPS

Whenever a character gets wounded, there are consequences. Because the Silhouette system uses thresholds that create very specific and clear-cut game effects, it is often assumed that unless there's a Flesh or Deep Wound result, nothing has happened. Nothing could be further from the truth, because if the attack connects, there is at least a minimal level of pain. Even though the damage may not be enough to cause a penalty, it does not prevent the pain from being at least distracting. When a character suffers a Flesh Wound, it hurts. A lot. Suffering a Deep Wound hurts to tears. The black and white nature of the Silhouette wound system is often misleading. Gamemasters should carefully consider the impact of damage and see how it relates to reality.

Flesh Wounds may seem negligible, but they are not. They represent deep cuts, bleeding bruises, cracked ribs, twisted articulations, etc. They cause a great deal of trouble. Players might work under the assumption that although they have a Flesh Wound, they should not see the -1 penalty apply to anything intellectual they do. This stems from the fact that few Gamemasters take the time to properly describe what the wound looks like. If you tell the Player, "You have a Flesh Wound — you're at -1 on everything you do," he will simply shrug and ignore the effect, then start to argue that the penalty should not apply. If you tell him, "You've fallen face first on the ground — you've broken your nose and your forehead is bleeding enough to partially blind you," they will understand why *all* their Skill checks are tougher. Remember, precise information is just not very easy to recall when dealing with pain.

Deep Wounds are even worse. They represent fractures, internal bleeding, punctured lungs, torn ligaments, cut muscles, etc. They are rapidly incapacitating, enough to cause a -2 penalty on all rolls. The pain is sharp and extremely distracting. As with Flesh Wounds, they should be described with great detail to ensure that PCs realize the extent of the damage they have received. Think of it this way: a bit more damage and it would have been sufficient to kill the character.

SKILL DESCRIPTIONS ◄

5.5

While a character's Attributes define his potential, his Skills define his actual abilities. This section details all the "standard" Skills. Gamemasters should feel free to invent new Skills if they are required in their campaigns. A new Skill should not be too general nor too specific — Shooting is an example of something too general, as it might allow any sort of ranged weapon to be used, while Identification of Martian Flatworm Subspecies is definitely too specific.

Skill descriptions have five entries. The complexity entry defines whether the Skill is Simple or Complex. The Specializations entry lists a few suggestions for Skill Specializations. Some Skills list Prerequisites necessary for learning the Skill. The next entry lists some professions that normally have some training in the Skill. The final entry is a short, plain-English description of the Skill and the abilities it covers.

AGILITY BASED SKILLS ▼

5.5.1

The Skills governed by the Agility Attribute are those which require a high degree of hand-eye coordination and quick reaction time, as well as those which require precisely controlled movements of the body.

ACROBATICS ◫



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Leaps and Jumps, Tumbling, Tightrope, Trapeze, Diving**
Often Possessed By:	**Athletes, Circus Performers, Martial Artists**

The Acrobatics Skill is the ability to perform activities requiring tumbling, balancing, or gymnastics. This Skill it is useful to many types of characters — the ability to vault over a group of guards in an escape or leap between buildings to catch an antagonist are all highly desirable. The intensive training regimen involved keeps this Skill from being too widespread.

AIRCRAFT PILOT ◫



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Jets, VTOL, Hot Air Balloon, Prop, Helicopter**
Often Possessed By:	**Combat Pilots, Commercial Pilots, Hobbyists**

The Aircraft Pilot Skill is required to fly various aircraft, including planes, vectored thrust vehicles, and helicopters. The dream of flying among the clouds has captivated humans for ages, and people continue to soar there. A must for pilot characters, few non-pilots take this Skill to any degree due to the time involved in training.

ARCHERY ◫



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Longbow, Compound Bow, Crossbow, Sling**
Often Possessed By:	**Athletes, Hunters, Primitives**

The Archery Skill allows the character to effectively use such primitive missile weapons as longbows, slings, or crossbows. While still used for sport and historical events, this Skill is seldom used in combat situations due to the limitations of those weapons compared to modern small arms. A number of specialized arrowheads have caused some of these weapons to make a limited comeback in recent years.

DANCE ◫



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Ballroom, Tribal, Modern, Ballet**
Often Possessed By:	**Sophisticates, Professional Dancers, Youth**

The Dance Skill is a measure of how proficient the character is in performing the prescribed steps of a dance, such as the waltz, the flamenco, or the stage-dive. Dance is a useful Skill for many characters: the ability to mix in at various venues is always helpful, and of course a fumbled roll in front of a planetary council can be very embarrassing.

DODGE



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Unarmed Attacks, Melee Attacks, Ranged Attacks**
Often Possessed By:	**Soldiers, Police, Criminals, Convenience Store Clerks**

The Dodge Skill is a measure of how able the character is at avoiding incoming attacks. It is used as a general "defense" Skill. Virtually every Player Character should have this Skill to some degree. This Skill also takes into account the ability to make the best use of available cover.

DRIVE



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Racing, Cargo Trucks, Combat Vehicles, Motorcycles**
Often Possessed By:	**Joe Average, Race Drivers, Tank Drivers**

The Drive Skill is the ability to control the movements of wheeled or tracked vehicles, such as tanks, APCs, or motorcycles. Although most characters are assumed to have their license and drive competently (unless from a small colony background), to take a Skill in this is unusual except for characters who use such vehicles often.

EXO-PILOT



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Specific Model**
Often Possessed By:	**Military Pilots, Techs**

The Exo-Pilot Skill is a measure of how good the character is at maneuvering, dodging and brawling with a vehicle controlled via a linear frame, whether it is an exo-suit or an exo-armor. Used by anyone employing one of these vehicles, Exo-Pilot is similar to Aircraft Pilot in a few ways, one of these being the long time required to learn the Skill involved.

HAND-TO-HAND



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Striking, Grappling, Tripping, Throwing**
Often Possessed By:	**Boxers, Martial Artists, Police, Soldiers**

The Hand-to-Hand Skill measures the proficiency of a character in close-range combat using unarmed fighting techniques. A high level in Hand-to-Hand implies that the character is using some form of martial art, such as karate or boxing. Almost all military personnel receive basic training in this Skill, and many other individuals and professions find it necessary to learn some of the techniques involved.

HEAVY WEAPONS



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Mortars, Grenade Launchers, Missiles**
Often Possessed By:	**Soldiers, Police, Criminals**

The Heavy Weapons Skill is a measure of the character's proficiency with man-portable support weapons such as mortars, grenade launchers and missiles. The Skill includes basic knowledge of maintenance procedures. This Skill is known almost exclusively in military and paramilitary circles and is seldom shown to those not sanctioned to use them by the authorities.

PARACHUTING



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**High-Altitude, High-Wind, Night-Time**
Often Possessed By:	**Skydivers, Paratroopers, Pilots**

The Parachuting Skill allows the character to use and control a parachute or similar device and to correctly absorb the landing impact. It also includes the ability to prepare and pack parachutes, make minor repairs, and estimate wind speed and evaluate weather patterns that might affect the drop. Because of its inherent risk, Parachuting is used mostly by thrill-seekers and military personnel.

MELEE



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Knives, Clubs, Fencing**
Often Possessed By:	**Soldiers, Police, Criminals, Martial Artists**

The Melee Skill reflects how good a character is at attacking and/or defending with close-combat weapons, such as knives, cudgels or swords. This type of combat is probably the most widespread of all since it involves relatively little training and mostly inexpensive weapons, yet increases the amount of damage dramatically compared to unarmed combat.

RIDING



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Specific Animal, Racing, Dressage**
Often Possessed By:	**Equestrian Athletes, Ranchers**

The Riding Skill measures the character's ability to control a riding animal (it is used in lieu of a Piloting or Drive Skills when astride such a creature). It is used if any difficult type of maneuver is wanted from the mount. The Skill also includes a basic ability to care for the animal.

SLEIGHT-OF-HAND



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Pickpocket, "Magic" Tricks, Shoplifting**
Often Possessed By:	**Petty Criminals, Stage Magicians, Spies**

The Sleight-of-Hand Skill is a measure of how good the character is at the subtle hand movements required by activities like picking pockets or stage magic. Abilities such as palming and concealing small objects upon one's person are covered by this Skill. A fair number of Nomads have this Skill, as do some members of the Mercurian Merchant Guild.

SMALL ARMS



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Pistols, Rifles, SMGs**
Often Possessed By:	**Soldiers, Police, Criminals, Hunters**

The Small Arms Skill is a measure of the character's proficiency with man-portable firearms such as pistols, rifles, and submachine guns, and includes basic knowledge of the maintenance procedures. This is another popular weapon-related Skill, and many small arms are available throughout the solar system for relatively low prices (though at various levels of legality).

STEALTH



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Urban, Indoors, Jungle, Woodlands, Nighttime**
Often Possessed By:	**Thieves, Spies, Soldiers, Police**

The Stealth Skill is the character's ability to move about undetected, be it by human observers or by electronic surveillance devices. In the age of remote sensors and detection gadgets of all sorts, the ability to move around undetected is still desirable and possible with the proper training and equipment.

THROWING



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Knives, Javelins, Balls, Grenades, Darts**
Often Possessed By:	**Soldiers, Game Players, Athletes**

The Throwing Skill is the ability to accurately throw an object at a target. It is the Skill used when throwing grenades and other offensive weapons. Although some maintain that this Skill has become antiquated, there are enough people who make use of these weapons for manufacturers to remain viable, and the sports which use this Skill are too numerous and varied to mention.

ZERO-G COMBAT



Complexity:	**Simple**
Pre-Requisites:	**Zero-G Movement 1**
Specializations:	**Specific Martial Art, Hand Weapons**
Often Possessed By:	**Spacecraft Crew, Asteroid Miners, Space Marines**

Zero-G Combat reflects the ability of the character to fight in weightless or micro-gravity (under 0.1 g) environments. The lowest Skill level of either Zero-G Combat or the usual combat Skill is used (Hand-to-Hand, Dodge, Small Arms, etc.). Without proper training, the changes in balance, momentum and a host of other details will turn a deadly warrior into a slowly drifting corpse.

ZERO-G MOVEMENT



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Rapid Movements, Delicate Movements**
Often Possessed By:	**Anyone living in space**

Zero-G Movement reflects the ability of the character to move about and perform non-combat actions in weightless or micro-gravity (under 0.1 g) environments. The Skill includes basic knowledge of vacuum suit procedures. In an emergency, a person with this Skill can instruct another individual in the rudimentary use of the suit.

▼APPEARANCE-BASED SKILLS

5.5.2

People have used their looks to gain advantages since the beginning of recorded history, and these practices will probably continue for a very long time. By accentuating their attractiveness, a person can modify what other people's first impressions will be.

GROOMING



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Clothing, Makeup**
Often Possessed By:	**Con Artists, Entertainers, Fashion Models**

Grooming measures a character's ability to improve the physical appearance of a person through the judicious use of clothing and grooming. Someone who is made to look the part, cannot always successfully act on it, however. The Margin of Success of a Grooming Skill roll vs. (5 + APP) (fumbles are ignored) is added to the character's Appearance Attribute.

SEDUCTION



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Specific Sex, Eye Contact, Specific Seduction Style**
Often Possessed By:	**Con Artists, Fashion Models, Gigolos, Prostitutes**

Seduction measures a character's ability to sway others by the judicious use of looks and sex-appeal. The Skill includes an understanding of what people find attractive and the ability to adapt to different preferences. It is possible to get any desired information from a seduced victim before anything serious occurs, but beware: sometimes, the roles of the people involved reverse, and the seducer may become the victim.

▼BUILD-BASED SKILLS

5.5.3

Most of the tasks which are related to Build are innate, not learned, thus there is only one Skill for this Attribute. As they say, perception is everything.

INTIMIDATE



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Coercion, Terrify, Enforce**
Often Possessed By:	**Bullies, Police, Drill Sergeants, Muggers**

Intimidate is the ability to appear large and menacing in order to scare another person into doing what you desire. More subtle methods of coercion are covered by the Etiquette and Streetwise Skills.

CREATIVITY-BASED SKILLS ▼

This group of Skills is a reflection of an individual's ability to think up new solutions to a problem. An artist tries to find new ways to entertain his audience, a lost person tries to make the best he can with what he has at his immediate disposal, a commander tries to find a new way to achieve his mission objectives. All of these show the ingenuity of an individual under at least somewhat stressful conditions — after all, even the artist has to have a success to put food on his table.

ANIMAL HANDLING ◫



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Specific Animal, Herding, Performing Tricks**
Often Possessed By:	**Farmers, Ranchers, Circus Performers**

The Animal Handling Skill measures the ability of a character to care for and train various animal species. The Skill includes knowledge of the animal's preferred foods and daily habits, reproductive cycle and the basic signs of disease. Life Sciences (Veterinary Medicine) is needed to actually treat diseased animals, however.

CAMOUFLAGE ◫



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Jungle, Urban, Desert, Winter**
Often Possessed By:	**Soldiers, Commandos, Hunters**

Camouflage represents a character's proficiency at using make-up, special clothing, and netting to conceal himself or other objects by matching the texture and color scheme of the thing which is to be hidden to that of the surrounding terrain. With advancements in detection technology, it is necessary to use electronic measures to make anything truly undetectable.

COOKING ◫



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Vegetarian, Country, Meats, Baking**
Often Possessed By:	**Joe Average, Professional Cooks**

Possessing the Cooking Skill allows the character to concoct appetizing dishes. A fine meal that is tailored to the consumer's tastes can impress anyone, from presidents to peasants. People who lacks this Skill can only prepare simple meals with any competence and will tend to mess up the more complex recipes available.

CRAFT (SPECIFIC) ◫



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Commercial, Specific sub-category of the Craft**
Often Possessed By:	**Artisans, Metalsmiths**

The Craft Skill covers the ability to produce useful and artistic creations with one's hands. A specific craft must be chosen: it can include jewelry, metalwork, woodcraft, weaving, etc. The market for fine items makes it lucrative to know one of these crafts (though only at high levels), and the ability to recognize the value of such crafts is in demand from many interested parties.

DISGUISE ◫



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Specific Disguise, Theatrical Special Effects**
Often Possessed By:	**Actors, Undercover Agents, Special Effects Specialists**

The Disguise Skill covers the physical aspects of changing one's physical appearance, including proper use of makeup, masks, and clothing. An old beggar who sits on the corner can hear things that all the surveillance gear in the world could not. Actual impersonation or mimicry of a specific person or type of person also requires the Theatrics Skill, however.

ELECTRONIC WARFARE

Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Sensors, ECM, Underwater Sensors**
Often Possessed By:	**Combat Pilots, Sensor Op Specialists, Explorers**

Electronic Warfare is a catch-all skill that covers the myriad aspects of sensor operations, electronic counter-measures (ECM), and electronic counter-counter-measures (ECCM). Use this skill for detection rolls, jamming, and other similar activities.

FORGERY

Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Electronic, Written, Art, Counterfeiting**
Often Possessed By:	**Criminals, Spies, Police Experts**

The Forgery Skill is the character's ability to accurately duplicate a variety of objects, such as official documents, works of art, money, and handwriting. It also encompasses the ability to recognize a forgery as such, and give an opinion as to the origin of the forgery based on the style and materials used in creating it.

INTERROGATION

Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Casual Questioning, Torture, Specific Type of Informant**
Often Possessed By:	**Police Officers, Intelligence Experts**

Interrogation measures a character's ability to extract information from an unwilling informant. Although such an exchange can be roleplayed, Gamemasters can use an Opposed Action Test with informants rolling either WIL or Interrogation, whichever is higher. A MoS of 4 or more indicates that the informant may not even realize he has revealed something of note.

LITERATURE

Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**French Poetry, Shakespeare, Science Fiction**
Often Possessed By:	**Professors, Students, Authors, Avid Readers**

The Literature Skill grants the character familiarity with existing literary works. This includes the ability to identify, produce or critique text. Although there was a brief decline in the amount and quality of literature produced during the early 21st century, the wide availability of word processors has since returned humanity to this form of communication and entertainment.

MUSIC

Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Classical, Rock, Mixing, Critic, Singing**
Often Possessed By:	**Musicians, Music Engineers, Music Critics**

The Music Skill encompasses the ability to understand musical notation, write a piece or song, perform music and critically evaluate performances. Music has always been a reflection of the age in which it was created, and the 23rd century is no different; there are hundreds of different styles of music in creation and performance which reflect the number of different cultures in the solar system.

SPACE PILOT

Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Specific Type of Vehicle**
Often Possessed By:	**Spacecraft Crew, Aerospace Combat Pilots**

Space Piloting is the ability to figure out new vectors to maneuver spacecraft in combat and other close-range maneuvers such as docking. Exo-vehicles use the Exo-Pilot Skill instead of Space Pilot. This Skill is obviously useful to pilots, but characters who spend a large amount of time in space can pick up this Skill, provided they are willing to put in the long hours of training required.

SURVIVAL



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Jungle, Desert, Winter, Urban, Foraging, Shelter, Space**
Often Possessed By:	**Soldiers, Campers, Survivalists**

The Survival Skill allows the character to survive in hostile environments, such as jungles or deserts. Survival includes hunting, foraging, and obtaining shelter and water. In space, Survival includes how to work an airlock, patch a hole or use an emergency evacuation pod.

TACTICS



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Infantry, Armored, Aerial, Naval, Space**
Often Possessed By:	**Military Officers and NCOs, S.W.A.T. members**

The Tactics Skill represents the character's expertise in small-unit tactics. The Skill is also useful to commanders of units of all sizes, and is one of the most important to soldiers who wish to rise in the ranks.

TEACHING



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Any other skill**
Often Possessed By:	**Professors, Combat Instructors**

Teaching is the Skill of transmitting knowledge and expertise to others in a clear and coherent fashion. It is a Skill which few Player Characters who are not from an instructional background possess, since most PCs spend their lives learning Skills necessary for their chosen profession.

TINKER



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Vehicles, Weapons, Appliances, Computers**
Often Possessed By:	**Inventors, Technicians, Hobbyists**

The Tinker Skill is used in the modification and improvement of equipment and machinery, often without the use of specialized tools. Characters of any technical background, especially Nomads, are prime candidates for this Skill.

VISUAL ARTS



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Painting, Sculpting, Computer Graphics, Layout**
Often Possessed By:	**Artists, Computer Programmers, Editors**

The Visual Arts Skill encompasses expertise in the various graphical forms of expression, such as painting, sketching, sculpting and pottery. This includes the ability to identify, produce and critique such works. Visual arts continue to flourish in the stellar age.

FITNESS-BASED SKILLS ▼

The Skills which are governed by the Fitness Attribute place high physical stresses upon the body. In the environment of space, where low gravity has such debilitating effects upon people's physique, sports of all kinds are commonly played.

ATHLETICS



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Running, Football, Volleyball, Climbing, Break Fall**
Often Possessed By:	**Athletes, Sports Enthusiasts, Soldiers**

The Athletics Skill represents the character's ability to engage in sporting activities of all kinds. It includes the necessary skills and knowledge of the rules and regulations along with the physical training required by athletic activities.

G-HANDLING



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**None**
Often Possessed By:	**Pilots**

G-Handling represents the character's ability to remain conscious under high acceleration. It includes breathing techniques and the knowledge of the physical and medical effects of acceleration, along with the muscular training required. This Skill is rolled in addition to the normal FIT roll which is used in these situations and the character uses the best result.

SWIMMING



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Endurance, Speed, Diving, SCUBA Diving**
Often Possessed By:	**Athletes, Lifeguards, Joe Average**

Swimming is the ability to move effectively and efficiently in an aquatic environment. This Skill further encompasses the ability to perform other aquatic activities, such as diving and SCUBA diving. This Skill is uncommon amongst most people in space, but not altogether unheard of since many installations have a pool as one of their exercise areas.

▼INFLUENCE-BASED SKILLS

The arts of persuasion have always been a strong force in the history of humankind. The natural desires of people to try and get the most in return for their Skills and work have manifested themselves through communications of various types for ages. The ability to convince another person of one's ideals without recourse to the use of force is now far preferred to violence by many cultures.

ETIQUETTE



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Military, Business, Aristocratic**
Often Possessed By:	**Sophisticates, Military Officers, Businessmen**

Etiquette reflects the character's familiarity with proper methods of social interaction within formalized settings, such as military ceremonies, upper class gatherings or business negotiations. Many politically-inclined characters will possess this Skill, regardless of their social standing. It is extremely useful for those who wish to get ahead in a hierarchy of any sort.

HAGGLING



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Specific Commodity, Specific Culture, Barter**
Often Possessed By:	**Traders, Smugglers, Business people**

Haggling measures a character's ability to influence the final price in a transactions (be it for cash, credit or barter). Haggling is an opposed Skill roll, with the MoS x 5% as the maximum discount possible. A Player's roleplaying should always be weighed as powerfully as the die roll, and the specific circumstances of the deal should be kept in mind. There are many situations in which prices are firmly fixed, and cannot be affected by haggling in any way.

LEADERSHIP



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Military, Political, Business, Cult**
Often Possessed By:	**Military Officers and NCOs, Politicians, Businesspeople**

Leadership is the capacity to lead others, either by example or through inspiration. At least one character in any group will probably posses this Skill to some degree or another. Any group which will see combat on a tactical scale will dearly need someone to guide its actions; entering battle without a well-trained leader only increases the chaos the group will experience.

STREETWISE



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Gangs, Organized Crime, Homeless, Prostitutes**
Often Possessed By:	**Urban Residents, Gang Members, Criminals**

Streetwise is a catch-all Skill for interacting with the "shadier" elements of society and includes basic knowledge of the underground of a city the character is familiar with. Obtaining illicit drugs, purchasing illegal firearms or just finding out what is going on through non-standard channels, are all activities which Streetwise encompasses.

THEATRICS



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Drama, Con Artist, Comedy, Directing, Media Editing**
Often Possessed By:	**Actors, Directors, Film Editors, Con Artists, Undercover Agents**

The Theatrics Skill covers all aspects of live or recorded acting as well as guile, confidence games and subterfuge. The Skill also includes the ability to produce, direct, act or otherwise work in theatrical media, and allows an actor to impersonate someone else through the use voice and mannerism mimicry, provided that the impersonator knows enough about the subject to make the act convincing.

KNOWLEDGE-BASED SKILLS ▼

These Skills are similar because they depend as much — or more — on long study and experience as they do on natural aptitude. Many of these Skills are the types taught at institutions of higher learning, although it is possible to obtain proficiency in them through diligent months or years of hands-on education.

BUREAUCRACY



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Government, Military, Customs, Bribery, Corporate**
Often Possessed By:	**Clerks, Administrators, Businessmen**

Bureaucracy involves knowledge of what makes a government or corporate structure function. It also represents the ability to manipulate that structure to achieve desired results or to access resources. These manipulations include knowing who oversees a particular function and what steps are needed to bring about the user's desired result. A fumbled roll might well result in unscrupulous activities being reported to authorities, so roleplaying should often play a large part in the use of this Skill.

BUSINESS



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Finance, Management, Foreign Trade, Accounting, Economics**
Often Possessed By:	**Businesspeople, Bankers, Accountants**

Business is the ability to manage the affairs of a corporation or nation. This could include anything from compiling product feasibility reports to the creation of marketing campaigns to promoting a product, whatever that product may be. A small number of Player Characters are likely to take this Skill based upon their background. They may find it useful in a political campaign, but in a more action-oriented one, its utility may be somewhat more limited.

COMMUNICATIONS



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Coded Messages, Jamming, Listening Devices**
Often Possessed By:	**Combat Pilots, Communications Specialists, Spies**

The Communications Skill is required both to operate and effectively counter communications devices. It is also used in the design and breaking of codes used for communications between two parties. This Skill is invaluable to most groups of characters — knowledge is power, and good communications are required to get to it.

COMPUTER



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Programming, Systems Administration, Neural Nets**
Often Possessed By:	**Programmers, Technicians, Joe Average**

The Computer Skill covers both the use and maintenance of diverse computer systems. It is one of the many technical Skills for mechanic-type characters to choose amongst, since computers are so common. See also the Computer section in the *Mechanical Action* chapter, page 180.

DEMOLITION



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Mining, Military, Construction**
Often Possessed By:	**Military and Industrial Specialists, Terrorists**

Demolition is the Skill concerned with setting and detonating explosive charges in such a way as to maximize damage done to the target, and either maximize or minimize the collateral damage caused by the explosion. The Skill encompasses the ability to deactivate these same charges. It also includes the knowledge required to produce and safely handle various types of explosives from raw materials.

EARTH SCIENCES



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Geology, Geography, Mineral Survey**
Often Possessed By:	**Professors, Mining Specialists, Petroleum Specialists**

Earth Sciences is a catch-all Skill that includes geology, geography, seismology and meteorology. It is used for predicting weather patterns, conducting petroleum surveys and prospecting. A specialization *must* be chosen before a character can attain level 3. This Skill is often taken by Nomads, who likely were brought up in a situation where the family spent a great deal of time searching for mineral wealth in new asteroids.

ELECTRONIC DESIGN



Complexity:	**Complex**
Pre-Requisites:	**KNO 0, Electronics 2, Computers 1**
Specializations:	**Computers, Sensors, Communications**
Often Possessed By:	**Electrical Engineers, Computer Design Specialists**

Electronic Design represents a character's ability to design totally new or highly modified electronic or computerized systems and configurations, including the expertise in testing them. Due to its highly specialized nature, few Player Characters should choose this Skill; those who do should dedicate part of their history to explaining how they acquired it.

ELECTRONICS



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Vehicle, Industrial, Robotics, Military, Security Systems**
Often Possessed By:	**Technicians, Engineers, Hobbyists**

The Electronics Skill covers the use and repair of any electronic equipment not covered elsewhere in the Skill descriptions. This includes devices such as laser weaponry, targeting systems and repairs of sensors (Electronic Warfare Skill covers the use of sensors in the field). This Skill is useful to both political and adventure-based characters, given the high technology environment in which the game takes place.

FIRST AID



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Combat Medic, Aquatic Injuries, Sports Injuries**
Often Possessed By:	**Soldiers, Lifeguards, Sports Trainers, Paramedics**

First Aid is the ability to stabilize wounded peoples' conditions so that they can be transported to more effective medical treatment. It is a widely known Skill which many characters possess. A high proportion of professions require that their members attain at least a minimum level of competency in treating wounded people.

FOREIGN LANGUAGE (SPECIFIC)



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Specific Dialect, Specific Jargon**
Often Possessed By:	**Travelers, Diplomats, Scholars**

This is the ability to communicate and be literate in a language other than the character's native tongue. Each foreign language must be learned as an individual Skill. All characters are assumed to have level two (standard) or three (if they are highly educated) in their native tongue at no cost. Some languages will not be available to all characters; Players should check with their GMs about which ones their character can learn.

LAW



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Corporate, Criminal, International, Civil, Research**
Often Possessed By:	**Lawyers, Legal Aides, Judges, Police, Politicians**

Law is the knowledge of the legal customs of a society, and their application in a courtroom setting. This Skill might be useful to some individual Player Characters in political campaigns, but Law is more likely to be used by NPCs.

LIFE SCIENCES



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Zoology, Botany, Microbiology, Physiology**
Often Possessed By:	**Medics, Professors, Students, Researchers**

Life Sciences is the study of life in its many forms. This includes all biological disciplines, with the exception of applied medicine. A specialization *must* be chosen before a character can acquire level 3. Due to the nature of this Skill, it is rare for Player Characters to have, but it is one which many scientist NPCs will possess.

MECHANICAL DESIGN



Complexity:	**Complex**
Pre-Requisites:	**KNO 0, Mechanics 2, Computers 1**
Specializations:	**Vehicles, Industrial Equipment, Agricultural Equipment**
Often Possessed By:	**Mechanical Engineers, Vehicle Designers**

Mechanical Design represents a character's ability to design totally new or highly modified complex mechanical systems such as vehicles and processing equipment. The Skill includes expertise in testing such systems, but Electronic Design is required to create the computerized operating systems for such devices.

MECHANICS



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Automotive, Industrial, Locks, Military**
Often Possessed By:	**Technicians, Engineers, Hobbyists**

The Mechanics Skill covers all mechanical and structural repair and design. This includes fields as diverse as automotive mechanics, robotics and mechanical locks. A specialization *must* be chosen before a character can acquire level 3. Many people find this Skill useful because of the highly technological nature of the space societies.

MEDICINE



Complexity:	**Complex**
Pre-Requisites:	**First Aid 2, Life Sciences 2**
Specializations:	**Neurology, Forensics, Surgery, Toxicology**
Often Possessed By:	**Physicians, Surgeons, Coroners, Researchers**

Medicine is the ability to diagnose and treat various pathological conditions, such as dangerous traumas, diseases and infections. Medicine Skill is required for any long term medical treatment (although First Aid is used in emergencies) such as aiding in recovery from disease, and for any type of serious internal surgery. A specialization *must* be chosen before a character can acquire level 3.

NAVIGATION (SPECIFIC)



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Night-time, Map and Compass, Star Position, Terrain Type**
Often Possessed By:	**Campers, Explorers, Pilots, Soldiers, Survivalists**

Navigation represents proficiency in tracking one's position and movements. Note that there are four distinct Navigation Skills, each of which is purchased separately. The Skills are: Sea, Land, Air, Space. Skill rolls in an unfamiliar terrain type suffer a -2 penalty.

PHYSICAL SCIENCES



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Nuclear Physics, Organic Chemistry, Astronomy**
Often Possessed By:	**Professors, Researchers, Students**

Physical Sciences includes the "classical" sciences such as physics and chemistry. It is a purely theoretical Skill. A specialization *must* be chosen before a character can acquire level 3. Due to the difficulty of learning this Skill, it is rare for many Player Characters to have it.

PSYCHOLOGY



Complexity:	**Complex**
Pre-Requisites:	**Social Science 1**
Specializations:	**Counseling, Perception, Learning, Psychological Warfare**
Often Possessed By:	**Professors, Researchers, Clinical Psychologists**

Psychology is the study of the various aspects of mental functions, such as perception, cognition, behavior and psychopathology. The Skill further includes the ability to conduct psychological therapy and counseling.

SECURITY



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Specific Type of Device, Banks, Military Bases**
Often Possessed By:	**Thieves, Police Officers, Security Consultants**

The Security Skill measures the character's knowledge of security procedures and devices and includes a knowledge of likely security procedures and their capabilities, but not the ability to dismantle or avoid them. These actions require the Electronics or Stealth Skills, respectively.

SOCIAL SCIENCES



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Sociology, Political Science, Philosophy, Anthropology, History**
Often Possessed By:	**Professors, Students, Researchers**

Social Sciences is a catch-all Skill for any of the humanities, with the exception of psychology and literature. It can be applied to studying ancient cultures as easily as modern societies. A specialization *must* be chosen before a character can acquire level 3.

▼PERCEPTION-BASED SKILLS

Perception Skills are Skills which rely on a character's awareness of his surroundings, including both actions and objects. These take into account sight, sound and possibly other senses such as smell or the "sixth sense."

COMBAT SENSE



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Urban, Jungle, Marsh, Night-time, Ambushes**
Often Possessed By:	**Soldiers, Police, Criminals, Warzone Residents**

A character with Combat Sense is trained to be aware of dangerous situations, such as fire fights. Combat Sense is used primarily to detect ambushes and for initiative purposes.

GAMBLING



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Specific Game, Cheating, Bookkeeping**
Often Possessed By:	**Gamblers, Bookies, Suburban Husbands**

Gambling represents the character's knowledge of the rules of games of chance. It further allows the character to estimate odds, cheat at most games (if required) and place bets on events.

GUNNERY (TYPE)



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Vehicle Model, Projectile Weapons, Missiles, Energy Weapons**
Often Possessed By:	**Combat Pilots, Combat Gunners**

Gunnery Skill is required to fire any non-portable weapons, such as those mounted on vehicles or exos. There are five distinct Gunnery Skills, each of which must be purchased separately: Exo, Ground, Naval, Air and Space. Skill rolls with an unfamiliar weapon type suffer a -2 penalty.

INVESTIGATION



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Searching, Surveillance, Forensics**
Often Possessed By:	**Police, Private Detectives, Spies**

The Investigation Skill allows the character to collect information on people, places and events. This information can be gathered by any means not covered by the Streetwise or Computer Skills.

NAVAL PILOT



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Capital Ships, Submarines, Gunboats, Yachting**
Often Possessed By:	**Sailors, Submarine Crews, Hobbyists**

Naval Pilot allows the character to pilot water-based vessels of all types. This includes submarines, hydrofoils and surface vessels. Of limited use to many characters since large bodies of water only exist on Earth, this Skill is most likely to be known by NPCs.

NOTICE



Complexity:	**Simple**
Pre-Requisites:	**None**
Specializations:	**Specific Sense, Night-time**
Often Possessed By:	**Researchers, Soldiers, Police, Investigators**

Notice is the ability to perceive details that may be otherwise overlooked in haste. This includes finding a clue hidden in a crime scene, spotting a face among the crowd, reading the fine print on a legal document, and many others.

PSYCHE-BASED SKILLS ▼

The rather ethereal quality of the Psyche Attribute is reflected in the Skill which it governs, the ability to read the body language, eye movements, and other subtle signals which people send.

HUMAN PERCEPTION



Complexity:	**Complex**
Pre-Requisites:	**None**
Specializations:	**Body Language, Voice Tone, Eye Contact**
Often Possessed By:	**Barman, Psychologist**

Human Perception allows an observer to analyze another person's reactions and make an empathic guess as to his emotions or intentions. This is very useful in determining whether someone is lying or hiding something.

end of section 5.6 money

▶ MONEY

5.6

The currency of the solar system is the credit, which was originally based on an average of all the old Terran currencies. These were unified despite much protest from various of the less influential nations in the middle of the twenty-first century. The need for Earth's spacefaring nations to facilitate commercial exchanges between themselves and the new colonies helped them to present a unified front with which to bully nearly all of the smaller countries into compliance. Each settlement issues its own script (such as the Orbitals' SHAREs), but the credit is used to compare them.

Credits are generally electronic in nature (i.e. data in banking computers), but cash is still available for casual transactions and transactions in which one or both parties wish to remain anonymous. Credit bills are green, with a tamper-proof, individual holographic code that can be verified when the serial numbers are run through a fractal code. Made from a special polymer fiber, they are near-impossible to damage during regular use, but deliberate attempts and prolonged exposure to flame or other such forces will cause them to melt or tear. Credits are issued by the Unified Monetary Council, under direct supervision of the United Space Nations, and as such are sometimes used as financial levers to try to coerce its members into following system-wide policies. A credit is roughly equivalent to a late twentieth century American dollar in terms of purchasing power. It is subdivided into a hundred centicredits, or simply cents — the usual abbreviations are Cr and ¢, respectively.

Most interplanetary trade is conducted in credits, but it is not unheard of for a trader to deal in the local settlement currency if he is planning to make a purchase of materials there. The only planet which prevents foreign hard currencies from entering its domestic economy is, strangely, Mercury. This policy is tied to a number of factors, such as the desire of the government to prevent all possible influences of Venus, and the fact that the vast majority of vessels which dock at Mercury are locally owned vessels whose crew would prefer to use Mercurian currency anyway.

▶ PERSONAL EQUIPMENT

5.7

This section provides the Players and Gamemaster with a non-exclusive equipment list for use by PCs and NPCs alike. It includes a little of everything, without concentrating too much on any particular area, giving just enough detail for the Gamemaster to fill in the blanks. Gamemasters should feel free to add any equipment they see fit to these lists. Players who wish to acquire something not contained in these lists should ask their Gamemaster if that item is available in the campaign, and if so what the price will be. It is important for Players to be careful what they ask for — anything that their characters have access to will surely be available to a wide range of NPCs as well.

Again, the Players should understand that the Gamemaster has final say on the matter, and may have a really good reason to refuse a specific item for reasons of plot twists, technology level or game balance. It is possible that the Gamemaster will eventually let items into the campaign that were originally disallowed, if the plot allows it or in the event of a technological breakthrough. A scenario might well hinge on just such a breathrough.

Prices and quality are also subject to the whim of the GM. It is entirely possible for the settlement in which the PCs are currently located to experience a shortage of some good or another at the time they are there, and each culture of the solar system includes a healthy dose of capitalism. Players may also want superior quality, or designer items which will cost anywhere from two to ten times more than a regular item. The sample items are more oriented towards an adventure campaign, but if the group is playing an intrigue-based campaign the GM can easily adjudicate what is available based on what he feels is acceptable and the needs of the Players. It is quite likely that such characters will want to buy electronic equipment, such as listening devices and sophisticated computers.

◪ HANDLING MONEY & EQUIPMENT

HOOKS & TIPS

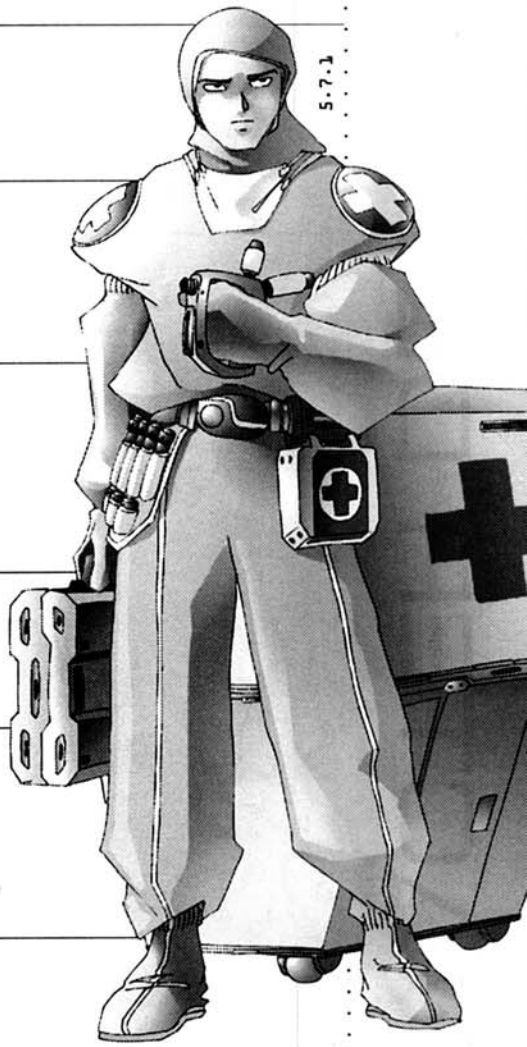
First, a word on Monty Haul campaigns. Back during the days of the *Let's Make a Deal* game show (hosted by Monty Hall), contestants could leave with truckloads of prizes. In gaming, campaigns where Players acquired tremendous wealth and equipment became known as Monty Haul campaigns. The sad fact is, however, that most campaigns, unless managed carefully, can easily fall into that category. Players have a natural tendency to accumulate items and money, and Gamemasters will quickly find it difficult to limit fortunes.

There are two solutions to this problem, depending on the types of Players in the group. One is to carefully monitor the Players' assets and make sure to account for everything they own or benefit from: lodging, transportation, clothes, food, various investments to save on income tax, pension plans, health care, etc. This can rapidly come up to quite a sum. It can also lead to scenarios based around the Players' wealth. For instance, a Player may find that a Venusian banker has diverted his funds for some personal less-than-legal operation and he may wish to investigate the matter. As a whole, Gamemasters should remember that the richer a person is, the more likely he or she will attract unwanted attention. Several people will want to become friends with the PC while many others will try to get them involved in some financial scam that could very well leave them penniless. The road of the rich and wealthy is not for everyone.

The second solution to the problem is to ignore it altogether and shift the focus of the campaign in such a way that that money and tons of equipment can never be part of the solution. In the rocky world of human relationships, money seldom provides long-term answers to a problem, especially if the other party is equally rich. For instance, a rich but depressed media star does not need money to get out of his drinking problem — he needs help, support and understanding. If your Players are getting rich and bored, throw them personal problems and see how they deal with them. If they throw money around, carefully consider the human impact of their actions.

MEDICAL TECHNOLOGY ▼

It is not always possible to prevent illnesses and deterioration of health. Accidents and combat can also severely threaten the well-being of PCs. Often, the quality of medical equipment available can make the difference between life and death.



SYNTHESKIN LTD. FIRST AID KIT ◇

This small, lightweight kit includes everything needed to handle simple emergency situations: syntheskin bandages; antiseptic solution; cleaning sponges; one cutter; one clamp; hypodermic spray; one dose each of Healing, Painkiller and Sleeping drugs. A First Aid skill roll without a kit suffers a -1 penalty. LifeTech Industries of Mars is the top brand, but Syntheskin is making a name for itself.

LIFETECH INDUSTRIES FIELD SURGERY KIT ◇

The Field Surgery Kit is a complete emergency medical treatment package. In addition to the items found in the First Aid Kit, the Field Surgery Kit includes scalpels and surgical tools, a multifunction pumping system, dehydrated blood plasma along with a re-hydrator, and an inflatable sterile tent. Attempting to perform surgery without at least this kit incurs a -2 penalty to the Medicine roll. The premier brand name is also LTI, but the Earth sphere's various manufacturers are also recognized as above-average quality.

CATHIODE ELECTRONICS H31-P HAND MEDISCANNER ◇

This small hand-held device helps diagnose health problems. Within about 24 seconds (4 rounds), it can record vital signs and determine if someone has been infected with a specific disease. It adds +1 to First Aid and Medicine skill tests for diagnosis. Jupiter's Cathiode Electronics produce the reliable H31-P model.

MERCMED PORTABLE HOSPITAL ◇

A Portable Hospital is the ultimate in mobile medical equipment. In addition to a Field Surgery Kit, it features: a Hand Mediscanner; a multipurpose chemical analysis and synthesis laboratory; a computer-assisted VR surgical system; an ultrasound imaging system; artificial-bone modeling tools; and a miniature growth tank for skin and muscle tissue. Medicine skill tests receive a +2 bonus with the portable hospital. It is contained in a 1.5m x 1.5m x 1m box.

EUFORAN EUPHORIC DRUG ◇

This compound is not really a medical drug, though it is sometimes administered to victims of panic and anxiety attacks. It has Potency 12, an Onset Time of 15 minutes and is used as a recreational narcotic. This drug is manufactured by a wide variety of companies such as Herbeal's of Earth, and Jupiter's Lichorp.

RELAXIN PAINKILLER DRUG ◇

This commonly available analgesic helps reduce the pain from wounds, diseases or chronic conditions. It has Potency 8, an Onset Time of 2 minutes and is applied locally by hypodermic spray. A less potent version (Potency 6, Onset 10 minutes) is available in tablets under several trade names.

SED-DAN SLEEPING DRUG ◇

This popular sleeping aid is a safe sedative with euphoric and analgesic side effects. It has Potency 9, an Onset Time of 30 minutes and was carefully designed to make it very difficult to overdose: Fumbles are treated as Margin of Failures of 9, with intense nausea aftereffects.

VACCINES ◇

These vaccines are compounds of specifically engineered viral RNA administered to individuals in order to boost their immune system. Each vaccine usually protects against about a dozen specific diseases, and costs between 5 and 200 credits. Vaccines give a +2 bonus to the appropriate Health roll.

VITAMAX HEALING DRUG ◇

This liquid solution, which must be administered daily, doubles the healing rate of any individual. For each daily dose missed, an additional day will be needed for any wound to heal completely. The Solar Cross receives a huge donation of Vitamax from Greyneer Corp. of Venus every year.

▼COMMUNICATIONS

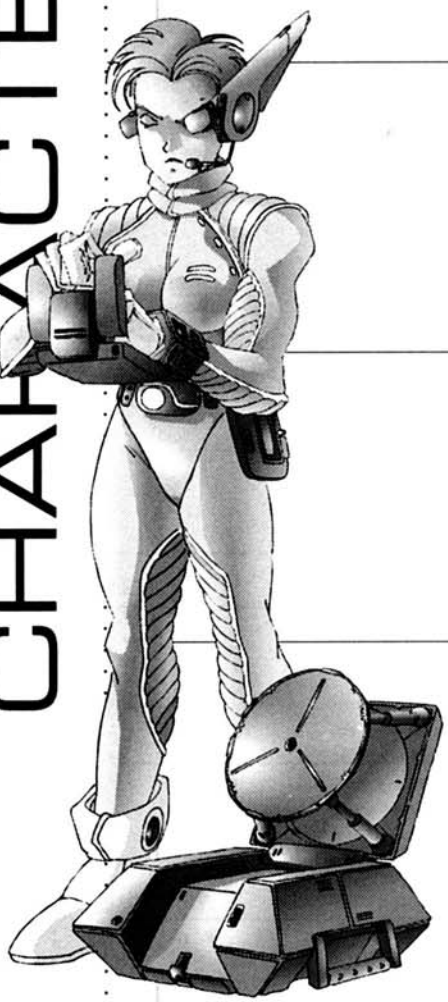
In most places, telephones, video screens and computers are all linked and work together as one unit. Simple voice or video communications are usually cheap; a monthly "phone" bill usually costs about 10 to 50 credits, depending on where you live. Interplanetary rates are much higher however (up to 1 credit/AU/minute), and talking face to face is not possible due to the long lag time involved. This type of communication is more akin to letter writing than actual conversation.

◇COMMUNICATOR

This apparatus is used to transmit and receive data through radio waves, from long waves all the way to ultra high frequencies. There are three basic models, differentiated by range. Cheaper models, such as Nakumacom's hand-held LW Radio have an effective range of 10 km. Mid-range models like Speechtech's Celurite line have a range of 100 km and high-end sets that can broadcast as far as 1,000 kilometers are produced by JVD Electronics. None of these models have built-in encryption capacity and all are very vulnerable to jamming (they are treated as -5 Communications systems in tactical games).

◇HEADSET AND WRISTCOM

Headsets are the communications device of choice to groups that need to stay in contact with each other, have their hands free to perform other tasks and also have no need to conceal their purpose. A variant called the wristcom is worn as a small metal band around the wrist. The standard systems available to the public have a range of 5 km. These devices act as -5 Communications systems in a tactical scenario. They are produced in many locations, such as the Nakumacom plant on Earth which churns out prodigious numbers of these sets.



◇C-CURE LISTENING DEVICE

This simple device is similar in many ways to the first listening devices ever used by humans— a microphone surrounded by a broadcasting or recording device and enclosed in a miniature box. The greatest advances in these technologies have been found in the concealment capabilities of the device, although advances in miniaturization and broadcasting power have occurred as well. There are a myriad of producers of these devices, and a large variety of models from which to choose as well. Many private detective agencies suggest that the best of these — besides military models — are made by C-Cure, and there are stories of investigators who could not find "bugs" which they had planted, despite the fact that they knew the bug was still present and operating as it was supposed to.

◇JVD ELECTRONICS SATELLINK

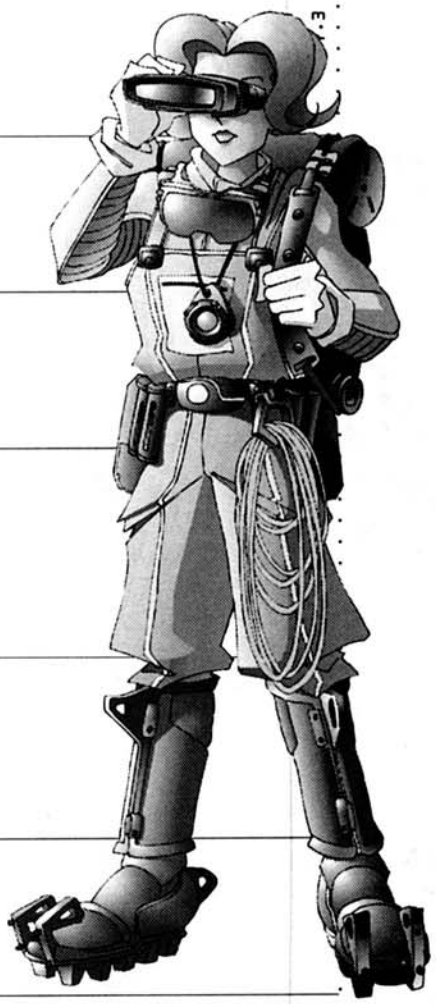
A satellink communication unit is simply a small device that enables a computer, radio or VR terminal to receive direct link data from orbiting satellites. It comes with its own parabolic antenna and both broadcasts and receives on a direct channel. It cannot be used while moving due to the precise antenna alignment which must be maintained during operation, unless the satellite broadcasts in wide bands. JVD Electronics is the primary producer that sells to the solar system at large, but there are other manufacturers who have quality performance in this area as well. Although it is not difficult to acquire one of these devices, the access codes of the satellite which the owner wishes to use the Satellink with must be known before communication can begin.

◇MASUO-PANET VR TERMINALS

The development of high-speed computers and light weight data display devices have enabled the creation of quite convincing virtual realities (VR). A user equipped with VR goggles and body sensors can easily become an actor in a play, take part in a party on a station hundreds of kilometers from his home or learn a new skill. VR technologies have also spawned many very advanced video games. Most Public Access Networks (PAN) have a VR display option in addition to the usual plain text and multimedia displays, but not all of the broadcasts are available since some field reporters wisely refuse to carry around the heavier and more cumbersome 3D camera. Fully interactive VR programs usually cost between 5 and 10 credits per hour, but most worthwhile educational programs, and some high-end entertainment suites can cost upwards of 100 credits per hour. Stacks of datadisks with pre-recorded programs can also be purchased; each disk can hold 2 hours of VR and costs between 1.5 and 5 credits for average material. VR producers include ZONet news agency, ThespaSight Entertainment, Senselogic Educational Data, and Arbrescht Interplanetary, which is a private organization dedicated to recording the history of humankind that sometimes works alongside Interplanetary Geographic.

SURVIVAL GEAR ▼

This section covers equipment and tools helpful for survival in difficult environments. This includes wilderness areas such as outbacks or deserts. While much of this equipment is most useful on Earth, it is also used on Mars and in the "wilderness areas" included in several Orbital and Jovian colonies.



CORADO BACKPACK ◇

A general use backpack, which can hold up to 0.5 cubic meters and 100 kilos of assorted material. It is completely waterproof. Vacuum-proof models are available for twice the cost, though they do not supply proper life support.

FARSIGHT BINOCULARS ◇

These standard binoculars can give up to 200x magnification and have rudimentary electronic motion detectors. Ordinary binoculars without motion detectors are also available at half cost, such as the popular Ryerson Explorers.

OZONETECH CLIMBING GEAR ◇

This pack, which can be used either for mountain climbing or spelunking, includes a 50 m rope, spikes, crabs, cams and other protective devices, various loops and lengths of webbing/sling, an ice ax, spiked climbing boots, an oxygen mask with a two-hour supply, a radio flare, a helmet with HUD altimeter, a powerful headlight (range: 300 m) and a miniature 10 km radio communicator. OzoneTech also sells the elements separately.

MISAWA GAS MASK ◇

A lightweight Earth design that covers the face without impairing the wearer's vision, this mask filters polluted air and will protect against most types of smoke and gas (poison gasses have their Potency reduced by 10). This mask will not protect against toxins absorbed through the skin, nor will it enable one to breathe in a vacuum or underwater.

FORGER LTD. IR GOGGLES ◇

These goggles can be used at night to detect sources of heat, such as animals, humans, vehicles and the like. They do require some practice (at least two or three hours) to use effectively, however and are useless during the day.

ARES META-COMPASS ◇

This multipurpose compass has an internal gyroscope and can point to many useful reference points, such as planetary poles, galactic poles, important stars, etc. When brought to another planet, it must be reset with the time of day, latitude and longitude to be of any use.

STINE OPTICS NIGHT GOGGLES ◇

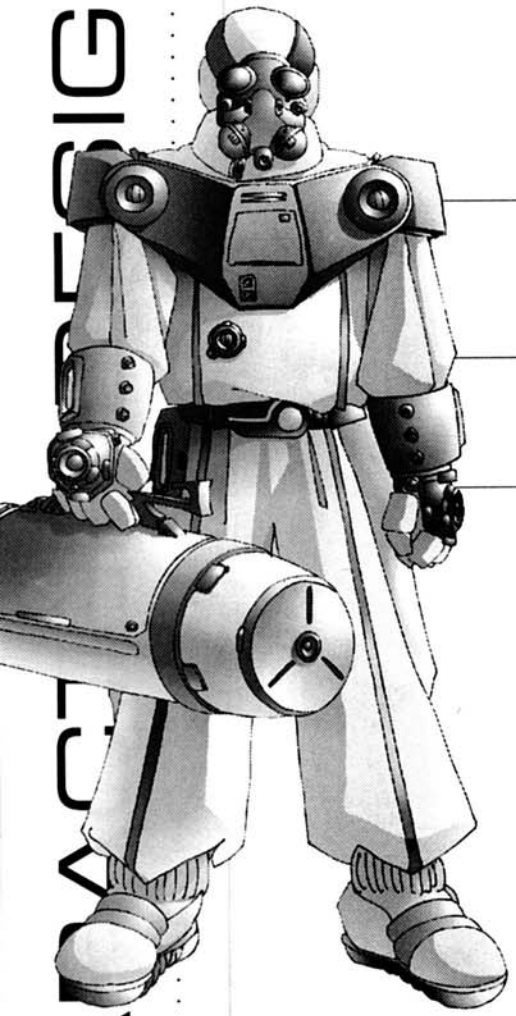
These goggles, equipped with electronic motion detectors and an ultraviolet mini-spotlight, enable the viewer to see even in complete darkness, up to a maximum range of 50 meters. On a perfectly clear starry night, their effective range increases to 500 meters.

STARCOM® RADIO FLARE ◇

This is an emergency magnesium flare which also generates a short but powerful radio signal. Rescue units are attuned to this signal, and will identify it as a call for help.

SINCLAIR ROPE (50M) ◇

A cord made out of super-resilient composite weave, about 0.5 cm thick, able to support a maximum weight of about five tons. Available in greater strength and length, and can be exposed to vacuum and extremes of temperature.



◇ SHUSS ORBITAL SHELTERS & EMERGENCY BUBBLES

Used both as shelters and emergency safety devices, Shuss' products take up remarkably little space when folded (20 x 10 x 5 cm for a one-person model, 50 x 30 x 20 cm for the five-person one). They are made to be pressurized in less than six seconds, but the compressor, air reserve and life support pack must be bought separately — these cost half the price of a vacuum suit. The shelters/bubbles come with a small one-man airlock and are aluminized on the outside. They provide limited thermal insulation (from -100 degrees to 300 degrees Celsius).

◇ OZONETECH SURVIVAL KIT

This survival kit includes a compass, a light yet resilient bedroll, a sheet of high-performance insulation, one week's worth of survival rations, nylon string and hooks, a multipurpose knife, a collapsible canteen, a lighter (three hours fuel), and a radio flare.

◇ QUINN FOODS LTD. SURVIVAL RATIONS

These rations can sustain a person for up to a week, and will stay edible for up to two years. They are water and vacuum-proof until opened, and some can be served hot.

◇ SURVIVAL SUITS

A variety of survival suits are freely available on the market. Each of these suits protects against a specific environment, and suit models are available with more than one protection feature (as well as armor — see page 98) for 1.5 times the total costs of all suits and armors so combined. Weight is equal to 1.5 times the weight of the heaviest suit.

Desert suits protect against dry, high-temperature environment and are specially designed to recuperate and distill lost bodily fluids. With this suit on, a man can comfortably function in up to 50 degrees Celsius, with a daily water ration of 250 ml.

Diving suits offer some thermal insulation, enabling divers to enter water of temperatures as low as -5 degrees Celsius without suffering from hypothermia. A gill-like device extracts oxygen from the water and compresses it into the tank, which can hold up to two hours worth of air. Maximum diving depth is about 200 meters.

Fire suits are designed to protect the wearer against very high temperatures (up to 1000 degrees Celsius), and resist most damage from fire sources; the suit has an Armor rating of 40 against fire attacks only; it includes a gas mask and air cooling unit.

NBC suits protect against Nuclear, Biological and Chemical contamination, have self-contained breathing apparatuses with an autonomy of 2 hours, and offer five rads per hour of radiation protection.

Rad suits protect against hard radiation, either by means of specialized lining or with a small screen generator. They offer protection of up to ten rads per hour.

Vacuum suits, the most complex of survival suits, allow a person to survive in a vacuum. These suits are made of a self-sealing material that will repair a hole of up to 0.5 cm in diameter in one round. The air and power reserve usually contains up to six hours' worth. They offer total insulation against cold, and will enable the wearer to comfortably withstand temperatures of up to 150 degrees Celsius. They also count as sealed against NBC effects.

Winter suits are insulated and internally heated to offer complete thermal protection for a period of up to 12 hours. After this period, it will allow the wearer to comfortably withstand temperatures as low as -100 degrees Celsius.

◇ OZONETECH TENTS

Used by campers, explorers and the military, modern high-performance tents take up remarkably little space when folded (20 x 10 x 5 cm for a two-person tent, 50 x 30 x 20 cm for the 20-person model). They can resist winds of up to 65 kph, and will provide some limited thermal isolation (from -10° to 30° Celsius).

◇ OZONETECH WATER DISTILLER

This lightweight, practical distiller can produce about one liter of water every day on Earth. It can also be used on Venus and Mars, but only produces one quarter liter per day because of the lower moisture content in the atmosphere.

TOOLS ▼

The following tools have been designed for use in gravity environments, such as a planetary surface or the interior of a colony. Space-adapted versions are available for 1.5 times the cost; other statistics remain the same, although their external appearance is drastically different.

5.7.4

LILU MULTIPAZ ELECTRONICS TOOL KIT ◇

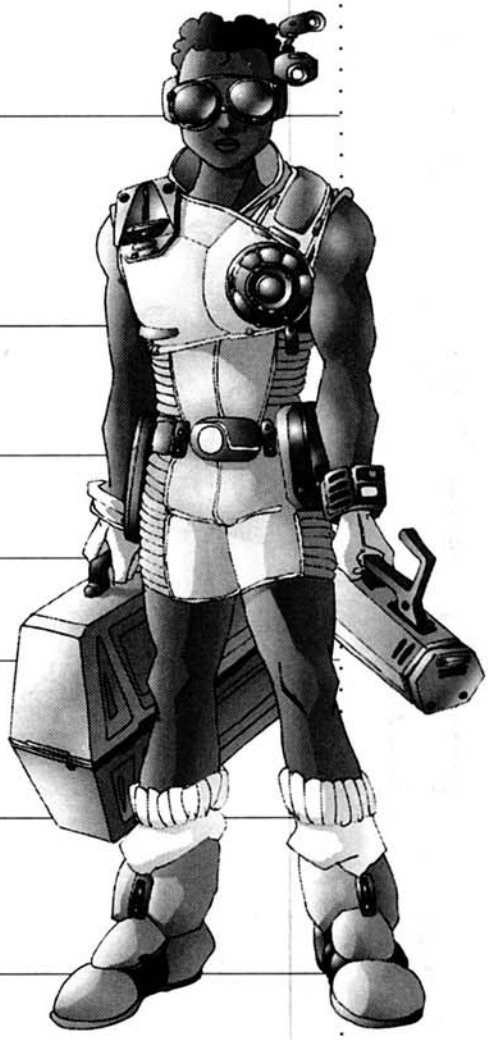
This typical kit includes the basic tools and instruments required for routine maintenance and repair: cutters; pincers; powered adjustable screwdrivers and wrenches; a laser knife; a minidrill; a saw; a multipurpose meter; a halogen minilamp; rechargeable power cells and charger. It fits in a 60 x 25 x 20 cm airtight and insulated toolbox. No electronic repairs other than jury-rigging can be accomplished without an electronic tool kit.

SINCLAIR FLASHLIGHT ◇

This small pen-like flashlight has a range of up to 50 meters in a wide 90 degrees arc, or up to 300 meters in a narrow 3 degree beam.

SINCLAIR GLOW STICKERS ◇

When removed from their pack and stuck to almost any surface, these luminescent stickers will provide enough light to read by for about an hour. Illumination will then quickly decrease, and fade out in about thirty seconds. Each pack holds 20 stickers.



BENFORD MECHANICAL TOOL KIT ◇

This typical kit includes the basic tools required for routine maintenance and repair: two hammers; two metal handsaws; powered adjustable screwdrivers and wrenches; a laser knife; a power drill with bits; a power saw with adjustable blades; a collection of rechargeable power cells and charger. All this fits in a 100 x 30 x 20 cm airtight toolbox. No mechanical repairs other than jury-rigging can be accomplished without a mechanical tool kit.

OZONETECH PICK ◇

A tough metal or duraplast pick, used principally for digging. If used as a weapon, it is treated as a poleax with -1 Accuracy.

SINCLAIR SHOVEL ◇

A tough metal or duraplast shovel. If used as a weapon, it is treated as a metal staff with -1 Accuracy.

PERSONAL EQUIPMENT ▼

The following items are personal pieces of equipment that people will carry with them.

NEWSMAN AUDIO/VIDEO RECORDER ◇

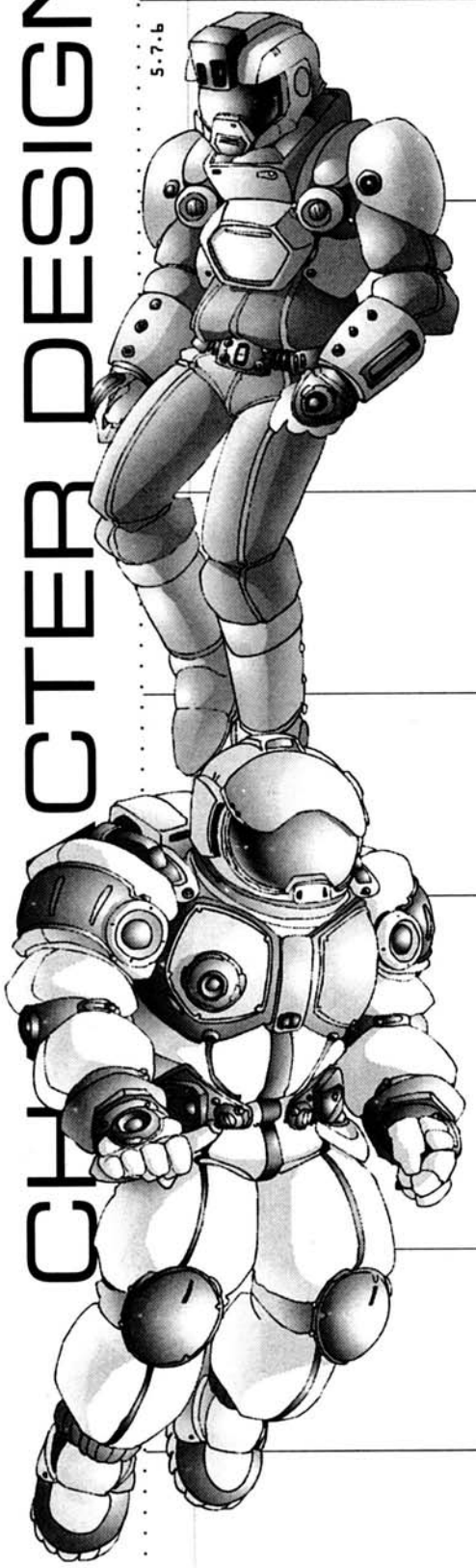
This multipurpose camera-like apparatus can digitally record and playback high-quality sound and video. It uses small memocards to store the recorded data, which come either in single ten-minute cards or stacks of 30, 60, 120 or 240 minutes.

CLOTHES ◇

Clothing comes in a wide variety of styles, purposes and costs; to try to offer a comprehensive list of available clothing would be ridiculous, but the few categories indicated in the table can give an approximation to the Gamemaster who, as always, has the final word.

MASUO DATAPAD ◇

The Masuo is a common small "dumb" computer that serves as a combination of personal agenda, address book, notepad, etc. It can be linked to a computer system to download or upload information, but cannot run programs on its own.



▼SPACE SUITS

The basic function of a space suit is to protect the wearer against the hard vacuum and excesses of temperatures of the space environment. They also provide a convenient mounting frame for tools and survival equipment such as radiation shielding, maneuver units and communication equipment. All suits are modular: each person selects a set of fitting parts rather than have a suit custom designed. Parts normally include: boots, lower body, upper body, gloves and helmet, plus a modular life support pack.

◇JOVIAN A-9 FLIGHT SUIT

The Jovian Armed Forces' A-9, shown at left, is typical of the flight suits currently in service. Flight suits are low-pressure, almost skin-tight body suits worn by pilots in exo-armors and space fighters; their game stats may be found under *Vacuum Suits*, page 86. They offer little protection against radiation, temperature variations or impacts. Flight suits have a layer of myomar fibers that selectively harden and relax to resist the internal air pressure of the suit and allow the wearer to move comfortably.

Spaceship and space station crewmen suits feature additional layers of puncture-resistant material as well as radiation shielding. Many have reinforced pads in heavy duty areas such as the feet and joints. In game terms, they are equivalent to flight suits, with Duraplast mail armor (see page 99) woven into them.

◇HERCULES WORKSUIT

Worksuits are equipped with reinforced parts and components for extended stays in space. These suits are built around the myomar layer of the lighter flight suits, but they also feature reinforced "shell" sections for improved performance and reduced wear and tear. The hardy Hercules worksuit, at left, is equipped with a one-piece hardshell torso, and the limbs are encased in articulated armored sheaths. In game terms, worksuits are equivalent to flight suits with heavy composite or Durashell armor (see page 99).

◇HELMETS

Helmets have an almost endless variety of design, but they all share some common features. All house a short range radio apparatus (-5 Comm, 1000 km) and a polarized anti-glare visor that can be adapted to the faceplate. Flight suit helmets have additional electronic modules (and plugs, of course) to project the VR-like HUD needed for piloting. The heavier helmet models manufactured for worksuits feature water tanks, emergency oxygen microtanks, food tablets, compass and headlights.

◇BACKPACKS

Transfer packs are little more than a small oxygen reserve (20 minutes) to maintain the suit's functions when moving between pressurized environments or switching from one life support pack to the other. Transfer packs are usually quite small and worn on the belt or on the chest plate for easy access.

Short-term packs contain the main radio equipment, oxygen tanks (six hours), recycling units and cooling equipment. Some feature an emergency jet option, where the heat of the cooling unit is used to heat up gases for propulsion (2 MP, 2 BP).

Long-term packs are used by space construction workers, who must often spend several hours in space. They feature all the functions of a short-term life support backpack, plus another ten hours of air, an integrated maneuver unit (see below), lights and modular tool hardpoints. They also feature a built-in miniature screen generator, such as the common Protector 9000® made by Maelstrom Electronics.

◇STEELE GRAPPLE GUN

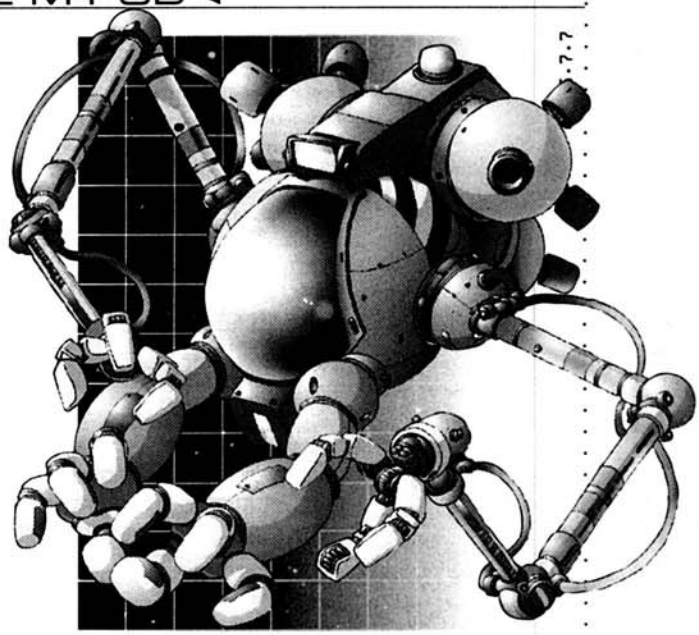
Grapple and lines are simple tools used to tether oneself to a spaceship or rock while working, so that a false move won't send the person tumbling into space. The Steele is a compressed gas gun that allows the grapple and line to be fired at a distant surface. The gun has the following stats: Acc 0, Base Range 10 m, x2 DM, costs 20 credits and weighs 0.5 kg. The gas canister is good for ten shots, and reloads are available for 2 credits (though the canister can be recharged by any standard pressure line).

◇MAN MANEUVER UNITS (MMU)

In space, there is nothing to push on — any motion is based on jettisoning reaction mass in the opposite direction to the one you want to go in. The MMU is a small hand-held or backpack-mounted unit that provides thrust, allowing the user to move about. The small MMU provides 0.2 g (2 MP) of thrust and has four BPs. The backpack model is more massive and can provide up to 0.6 g (6 MP) of thrust with 60 BPs.

FFWS-56 WORKBEE M-POD ◄

M-Pod, short for maintenance pod, is the general nickname for any kind of free flying, short range utility vehicle designed for maintenance and cargo handling. The Boeringer-Orbital Ltd. FFWS-56, pictured at right, is fairly typical of the small units used around the stations and space docks of the twenty-third century. The vehicle's appearance is somewhat insectoid, with the large viewports looking somewhat like a bug's faceted eyes. Many M-Pod designs sport short deployable solar panels for electrical power, which look very much like wings. Completing the image are two pairs of manipulator units, two of which are equipped with graspers to stabilize the machine or carry items around.



M-Pods typically have limited fuel reserve, as they are not expected to stray far from a refueling station. They are equipped with numerous maneuvering thrusters that give them a wide range of possible movements and a fast reaction time, though it takes some practice to be able to use them effectively. Their thrusters are powerful (a requirement for moving around large pieces of construction material), but they are rarely used at full power to economize fuel.

Though sturdy and useful, M-Pods are not combat vehicles by any means. They are generally built with advanced composite material that, while light and tough, does not fare well against high energy weaponry. Their sensor and communication array, more than sufficient for the vehicle's purposes, is also not up to military standards.

VEHICLE DATA

Threat Value:			460 (590,000 credits)
Crew:			1 (2 actions)
Size:			3
Armor:			4/8/12
▶ MOVEMENT DATA			
Movement Mode	**Combat Speed**	**Top Speed**	**Maneuver**
Space	9 (0.9 g)	18 (1.8 g)	+1
Deployment Range:			10 hrs
Reaction Mass:			200 BP
▶ ELECTRONICS DATA			
Sensors:			-2/2 km
Communications:			-2/10 km
Fire Control:			-2
▶ PERKS & FLAWS			
Name	**Rating**		**Game Effect**
Autopilot	-		Act as level 1 pilot
Backup Life Support	1		Maintains basic Life Support
Computer	2		CRE -3, KNO -3, PP2
HEP: Radiation	6		Rad protection
HEP: Vacuum	-		Space protection
Life Support	-		Limited
2 x Manipulator Arm	3		Can punch
2 x Tool Arm	3		Graspers, cannot punch
Reinforced Crew Compartment	-		Absorbs first "Crew" hit
Searchlight	-		Front, 50 meters
Vulnerable to HEAT	2		Subtract from Armor vs. HEAT weapons

EQUIPMENT

ITEM	MASS (KG)	COST (CREDITS)
▶ MEDICAL EQUIPMENT		
Syntheskin Ltd. First Aid Kit	2	50
LifeTech Ltd. Field Surgery Kit	10	650
Cathiode H31-P Hand Mediscanner	1	500
MercMed Portable Hospital	25	4,500
▶ DRUGS		
Euforan, 1 dose	0.01	20
Relaxin, 1 dose	0.01	8
Sedan, 1 dose	0.01	5
Vaccine, 1 dose	0.01	5-200
Vitamax, 1 dose	0.01	10
▶ COMMUNICATION TECHNOLOGY		
All-Purpose Communicators		
Nakumacom	0.25	20
Celurite	1	500
JVD Electronics	10	10000
Nakumacom Headset/Wristcom	0.5	25
C-Cure Listening Device	0.01	50-1000
JVD Electronics Satellink	2.5	200
Masuo-PANet VR Terminal	5	250
▶ OUTDOOR AND SURVIVAL GEAR		
Corado Backpack	4	75
FarSight Binoculars	0.5	50
OzoneTech Climbing Gear	7.5	1,000
Misawa Gas Mask	0.5	40
Forger Ltd. IR Goggles	1	200
Ares Meta-Compass	0.2	100
Stine Night Goggles	1	350
StarCom© Radio Flare	0.5	15
Sinclair Rope, 50m	1.5	10
Sleeping Bag	1	40
Survival Kit	5	200
Quinn Foods Ltd. Survival Rations	1.5	30
▶ SURVIVAL SUITS		
Desert	3	750
Diving	10	500
Fire	6	800
NBC	12	1,200
Rad	8	1000
Vacc	6	5000
Winter	4	450
OzoneTech Tent		
2-person	1	50
20-person	6	250
OzoneTech Water Distiller	1	175
▶ TOOLS		
LILU MultiPaz Electronics Tool Kit	2	500
Sinclair Flashlight	0.5	10
Sinclair Glow Stickers, pack of 20	0.5	15
Benford Mechanical Tool Kit	5	300
OzoneTech Pick	4	15
Sinclair Shovel	3	10
▶ Personal Equipment		
Newsman Audio/Video Recorder	1	200
Cap	0.1	10
Clothes, Summer		
Lower-class	1	10
Medium-class	1	50
Upper-class	0.5	250
Top-of-the-line	0.5	1,000+
Shoes, normal	1	35
Shoes, designer	1	400+
Clothes, Winter		
Lower-class	1.5	25
Medium-class	1.5	90
Upper-class	1	475
Top-of-the-line	0.5	1,750+
Boots, winter	1.5	75
Boots, designer	1	800+
Masuo Datapad	0.1	200
Hat	0.2	75
▶ Memocards		
10 minutes	0.05	1
30 minutes	0.05	2.5
30 minutes	0.05	2.5
60 minutes	0.05	4
120 minutes	0.05	7.5
240 minutes	0.05	14
Watch, cheap	0.05	15
Watch, designer	0.1	250

BRANDS, QUALITY AND AVAILABILITY

There are thousands of manufacturing companies throughout the solar system, some well known, others not. The table above presents a sample of the tools, personal gear and equipment that is available to the players, but is by no means complete or all inclusive. It would be impossible to list all existing variations and models that are currently available on the market. The Gamemaster may derive many of them from the statistics given above, however, by changing one or two numbers in the statistics, or adding or removing a few secondary features to the item.

All of the brands named in this chapter are recognized as reliable and sturdy, but others might not be so. If the characters decide to buy surplus material from the Asian Trading Sphere army, they shouldn't expect the same quality as items manufactured in a high technology Orbital factory. If needed, the Gamemaster can assign an "Unreliability rating" to any given object — a number between 2 and 6 — and roll two dice against it when the object is submitted to any kind of duress: if unsuccessful, the object ceases to function, with potentially deadly consequences.

Most of the items listed in the table are easy to locate and purchase. Some, such as the medical equipment, is obviously restricted to certain professions, but the rest can be readily obtained. Weapons and armors can also be found on the free market, but they have their own set of rules — see next page for a discussion on the availability of weaponry in a space-borne civilization.

WEAPONS AND ARMOR

This section describes the various weapons and armors available to Players and Non-Player Characters, from typical melee or missile weapons, low tech or high tech, lethal or purely defensive. As with equipment, the Gamemaster should feel free to introduce new weapons. Proper care should be taken, however, not to introduce quasi-magical weapons and equipment that is closer to science-fantasy than actual *science* fiction. Personal force fields and hand-held proton emitter cannons are completely out of the question. On the other hand, a laser sight adding +1 to the Accuracy at Long and Extreme range is totally valid.

The weapons and armors provided in this section represent "typical," vanilla-flavored weapons of a given type. There are several dozens of variants made by more or less reputable manufacturers, and Gamemasters are encouraged to come up with their own versions, preferably within close parameters of the originals. For example, adding or subtracting a point from the Accuracy or the Damage Multiplier is often enough to distinguish an Orbital-made weapon from its sibling manufactured on Mars (see the sidebar on the previous page for a discussion on brand names).

CARRYING WEAPONS

Medina thought the black satin evening gown she had selected looked good on her. The number of heads which had turned in her direction since she had arrived at the restaurant confirmed her opinion. She looked at the half-consumed candles on the table, then glanced at her watch. Still no sign of Carl. She considered calling him on her wristcom, but that would be losing face — there must have been several people around her table who wondered about whether she was early or if her date was late. She decided to wait another five minutes. The maitre d' brought her a complimentary appetizer, smiling obsequiously. Fortunately, Carl appeared in the doorway of the hall and she sighed with relief, smiling at him. She then realized with horror that he was in full combat gear: weathered composite armor, nightstick at the thigh, .45 pistol holstered at his belt and extra ammo clips strapped to his chest. She glanced around — everyone was looking away, smiling to themselves or to each other. Medina's heart sank. He saved her life, and that was fine. She just didn't know he was dressed like this all *the time...*

Several Players — especially our friendly neighborhood munchkins, which were discussed at length in the previous sidebars — believe that having weapons at all times is the safest way to go. They like to parade around like walking arsenals and be ready for everything for anything. While this is certainly a typically prudent (sometimes even paranoid) Player attitude, there are certain drawbacks to this which Gamemasters should not ignore.

Among other things, weapons and armor mean trouble. Most people prefer to lead peaceful lives and will do their best to avoid unpleasant situations. Individuals who are armed to the teeth appear as scary and dangerous. John and Jane Doe from the street — who are not known for their bravery (average Willpower or lower) — tend to steer clear of those people. If engaged in conversation, they will answer briefly and will take the earliest opportunity to leave the area. At best, they will remain polite and courteous, and only provide the Players with specific answers to their questions, unless the Players happen to have enough Influence and Psyche to counteract the very negative effects of the gear they carry around.

Some other people tend to be very antagonistic when faced with armed individuals. Young punks or other anti-social persons may react with aggressiveness and try to antagonize the Players, taunting them and daring them to show they "have the guts" it takes to use their weapons against someone their own size. It is often considered a rite of passage among small gang members to show off how tough they are by harassing someone bearing weapons.

Police and security officials are also *very* distrustfu lof heavily armed individuals. From their perspective, a stranger armed to the teeth can only mean trouble. Indeed, people who aren't expecting combat don't walk around with assault rifles and hand grenades. The Player Characters are bound to be identified either as stone-cold killers, homicidal maniacs or fools who don't know what they are doing and are likely to kill innocents accidentally. In any of these cases, local police are probably going to try and deal with the PCs before anything goes wrong. In heavily populated colonies or settlements, Player Characters who wear weapons like they would a new suit can expect to have a SWAT team break into their living quarters in the middle of the night.

Most establishments forbid (or at least severely frown upon) openly displayed weapons. Again, this comes back to trouble. They will ask the individual to leave his weapons with the doorman for safekeeping. On that particular topic, several Gamemasters take advantage of the Players' collaboration by having the weapons permanently disappear. This is a grave mistake. Players whose weapons were stolen this way once will never again part with their armament. Gamemasters should do this sparingly, and not the first few times around. PCs who cause trouble in the establishment will be thrown out and their weapons will be returned to them through the police (who will no doubt ask questions about the origins and the legality of the weapons, and why there was a disturbance at the establishment).

Aboard stations and spacecraft, any weapon capable of damaging the installation is illegal. The only weapons which are tolerated (providing the bearer has the appropriate permit, which generally cost around 50 credits) are old-fashioned melee or projectile weapons — daggers, crossbows, etc. Everyone is thoroughly checked before entering, and it takes a great deal of creativity and inventiveness to hide illegal weapons from the security personnel and their sensors. Players should be made aware that being caught can have severe consequences for their characters.

Lastly, people who are obviously geared up for combat are the first ones marked for death in a dangerous situation. From a troublemaker's perspective, you start by killing anyone who is strong enough to oppose you, then you deal with the small fry. Plainly-put, Players who walk around with visible combat equipment are just asking for it.

▼MELEE WEAPONS, LOW TECH

5.8.1

This category includes traditional hand-to-hand weapons, which have evolved little since the antiquity of humanity. These are mostly used inside ships and stations to reduce the chance of damaging vital components such as air filters. They also lack the power required to breach most ship or station hulls. These weapons are used with the Melee Skill; each category of Melee weapons can use a corresponding Melee Skill specialization.

◇STICKS AND CLUBS



The Club is a catch-all category for any kind of short-to-medium length crushing weapon, whether it is a tree branch, a baseball bat or a metal pipe. A Nightstick is a specially hardened, balanced club used by police forces. The Quarterstaff is another catch-all term for any kind of long wooden or metallic pole, usually used with both hands. A Tonfa is a defensive martial arts weapon: it is a club with a perpendicular handle at one end. It is very efficient in blocking melee attacks (+1 to parry).

◇KNIVES



As much tools as they are weapons, Small Knives include all small, cutting bladed weapons whose blade is shorter than 20 centimeters. Large Knives are heavier and have longer blades (between 15 and 30 centimeters); the category includes bowie knives and daggers. Machetes are knives with blades that are between 20 and 70 cm, used primarily for chopping. Some machetes also have thrusting points.

◇SWORDS



The Long Sword is the basic, straight sword popularized by heroic fantasy. It is rarely used these days, except for ceremonial purposes. The name Cutlass (or saber) is used to describe single-edged, curved, basket-hilted swords, which still exist as a part of some military uniforms. The Katana is a slightly curved, single-edged sword. The weapon is often associated with elaborate fencing styles and martial arts.

◇AXES



Hatchets are small axes, used primarily as tools but quite dangerous in capable hands. Large Axes include battle axes, made especially as weapons, but also fireman's and woodcutter's axes. These axes must generally be used with both hands (-2 if they are not). Polaxes have a shaft longer than 2 meters.

◇SPEARS

Short Spears are pointed shafts whose length does not exceed two meters. Their tips can be made of wood, stone or metal. Long Spears are pointed shafts whose length exceeds two meters. In all other aspects they are similar to short spears.

▼MELEE WEAPONS, HI-TECH

5.8.2

Hi-tech melee weapons are traditional melee weapons made deadlier by technological additions or modifications. They require an extension cord or a power pack of some sort in order to function.

◇HUMMERS



Hummers are melee weapons whose blade vibrates at very high frequencies, producing a distinctive humming sound. The vibration enhances their lethality as well as giving them better penetration against protective armor. Hummers use standard electrical and beam weapon power packs, draining one unit per full minute of combat. Using them requires the Melee Skill.

◇ELECTRIC MELEE WEAPONS



These weapons are similar to their low-tech counterparts, save for the fact that they also deliver an electrical shock whenever they hit. If the electrical weapon attack succeeds, or if the defender use a non-grounded weapon to parry, the victim is subjected to additional electrical damage, applied separately; the Intensity of the shock can be set from one to ten, draining a corresponding number of charges from the power pack. The setting must be determined before combat; further adjustments cost one action.

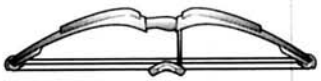
Common electrical versions of archaic weapons include metal club, staff and tonfa. Electrified weapons use the same skill as their non-electric counterparts.

RANGED WEAPONS ▼

Ranged weapons include all beam, projectile and thrown weapons. Ranged weapons usually need some sort of ammunition and/or power source,which may or may not be compatible from one weapon to another (weapons using the same caliber ammunition should be considered compatible for simplicity).

5.8.3

BOWS ◇



The Light Bow is a sturdy 40-pound bow. It is a relatively lightweight weapon, about one meter high. The Medium Bow is a strong 80-pound bow. It is a cumbersome weapon, almost two meters high. The Heavy Bow is a stiff 180-pound bow. This bow, extremely strong (minimum Strength to use: +2), is about 2 meters in length, and fires 1-meter long arrows. Bows are used with the Archery Skill.

CHEMICAL SLUGTHROWERS ◇

These weapons deliver damage through chemically propelled physical bullets. While chemical slugthrowers use primitive technology, they are cheap to manufacture and remain very efficient. Drawbacks are an obvious signature (chemical slugthrowers are loud and produce a distinctive "flame" in the dark) and a moderate recoil, which can make aiming a series of shots difficult, especially with an automatic weapon. All of these weapons are used with the Small Arms Skill.

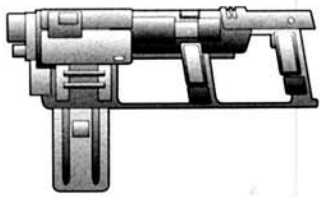


Handguns include revolvers, pistols and automatic pistols. Ammo types are usually compatible, though pistols and automatic pistols use clips (containing 7 to 10 bullets), while revolvers use individual bullets or a "fastloader" six-bullet tray. Smaller handguns, especially when made out of ceramic and using caseless ammunition, are easy to conceal.



Rifles are used by hunters and the military; they have longer ranges than handguns, are more precise and often more powerful. Most use clips, but a few models still need reloading after each shot. Assault rifles are automatic rifles, often used by the military. Submachine Guns are light, automatic slugthrowers which can fire multiple rounds per second.

Shotguns are powerful guns that fire loads of shot or pellet contained in plastic shells. Their accuracy decreases more rapidly than rifles over long ranges, but their stopping power is more than a match. Shotgun pellets are not particularly effective against body armor; double the protective value of Armor when defending against shotgun attacks. If using slug (solid) ammunition, apply a -1 to Accuracy but do not double the Armor of the target.



Grenade Launchers are used to shoot grenades at a specific target; their accuracy is considerably less than other weapons, but serves their purpose well. Some models of grenade launchers can be slung under the barrel of any type of rifle weapon.

Gyrockets are handguns and rifles that fire small rocket-propelled bullets. These weapons are actually more efficient at medium and long range than from up close, as the bullet is still accelerating at short range. The first (lower) Damage Multiplier should be used if the target is at Short range; otherwise, the second one is used. Gyrockets have little or no recoil.

GAUSSIAN WEAPONS ◇

Gaussian weapons use a magnetic effect to propel bullets or flechettes at very high speeds. Gaussian weapons have an unmistakable "thunderclap" auditory signature as the projectile breaks the sound barrier. Gaussian weapons need both power packs and ammo, which are usually combined in one easy-to-load clip (incompatible with other weapon's power packs and ammo clips). All these weapons are used with the Small Arms skill.



The Needler is the smallest of all gaussian weapons. Easily concealable, it fires a volley of small nylon-tipped metal flechettes which mushroom and burst upon contact, penetrating and lacerating body tissues. Flechettes can be made to contain a weak nerve poison that acts as a fast-effect sedative (Potency 10, Onset time: 4 combat rounds). It is certainly possible to make flechettes containing other toxins. Needlers are innefective against any form of armor; double the rating of any Armor present.



Gauss rifles are the magnetic equivalent to gunpowder rifles, using their long barrel to accelerate bullets to very high speeds. A gauss shotgun bears little resemblance to its gunpowder equivalent; it is much longer, and the barrel is narrower. Instead of propelling a somewhat scattered volley of pellets, the gauss shotgun fires them in a rapid, precise stream, the pellets following almost exactly the same path through space. Penetrative power is enhanced at the expense of some tissue damage. A gauss shotgun reduces the effectiveness of Armor by 10.

◇ BEAM WEAPONS

This category covers weapons that fire beams of energy, as opposed to physical missiles. These weapons use power packs in lieu of ammo clips; these packs are usually interchangeable (with other beam weapons as well as electrical melee weapons) and come in a variety of sizes. Beam weapons come equipped with laser-targeting devices; in the case of laser weapons it is simply a low-power version of the main beam, activated by resting the finger on the trigger.

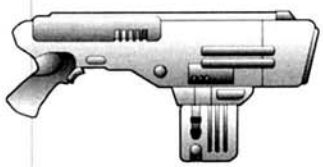


The Laser pistol is the quintessential personal beam weapon. It fires a thin, invisible beam of coherent light which will quickly burn through most materials; non-reflective armor effectively protects with only half of its normal value. The weapon has three different settings, which drain 1, 4 and 9 energy units, respectively; the weapon's three Damage Multipliers correspond to these settings.



The Laser rifle is simply a more powerful and accurate version of the laser pistol. It has five settings (which drain 1, 4, 9, 16 and 25 energy units); the five Damage Multipliers given in the weapon's stats correspond to these settings.

A bulky item, the Sniper Laser is a high precision weapon designed for long range performances. It has only two settings: targetting (which causes no damage) and 40. The system is composed of the gun proper and a backpack-mounted capacitor.



Maser pistols fire a short, intense beam of microwaves which fry their target. Their main advantage is that they bypass most types of armor; polymer or ceramic-based armor protect with only half of their value. Against metallic armors, the damage from a maser is transformed into an electrical attack whose Intensity is equal to half the weapon's Damage Multiplier plus the attacker's Margin of Success. Masers have fixed energy settings, which drain 2 energy units.

Maser rifles are more accurate than maser pistols, but not really any more powerful. Like maser pistols, maser rifles have fixed energy settings of 2 units per shot.

◇ NON-LETHAL RANGED WEAPONS

These weapons cause little actual damage to their target, but incapacitate them for short periods of time. The least restricted of all weapons, they are quite popular among ordinary civilians for self-protection.



Tasers fire a small electrically charged dart at their target. If the opponent is not wearing armor, he receives electrical damage equivalent to an Intensity 5 shock. No matter what the result, however, the victim will not suffer anything more than a Light Wound. When rolling for side effects, fatal results are ignored but the Margin of Success of the attack is added to the Intensity. Tasers use standard power packs.



A Sonic stunner uses powerful focused subsonic waves to induce shock in its target. The victim of a sonic stunner must succeed in a BLD roll against the weapon's power setting plus the attacker's Margin of Success. A failed roll means the victim is stunned for a number of rounds equal to the Margin of Failure. On a fumble, the victim is knocked uncounscious for a number of minutes equal to the MoF; roll a Health test against the Margin of Failure to avoid a permanent -1 to PER. Sonic stunners have power settings of 1 to 10, each draining the corresponding amount of energy units; they use standard power packs.

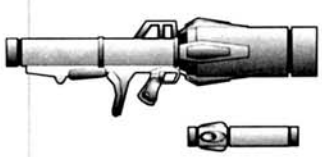
◇ HEAVY WEAPONS

Heavy weapons are designed to provide an infantry platoon's "punch." They are generally heavier, more cumbersome and a lot more expensive than standard weapons, and are thus assigned only in limited numbers. These bulky weapons must be braced and cannot effectively be used hand-held, except by very strong characters (minimum Strength +2, character suffers a -1 Accuracy for each point of Strength under +4). These weapons use the Heavy Weapon Skill.



Machineguns are heavy automatic weapons which can fire up to thirty rounds of ammunition per second. The Chaingun is a large, electrically driven multi-barrel cannon. It uses the same ammunition as a Machinegun but has a much higher rate of fire. However, it has a lower effective range because its barrels are shorter.

The Anti-Armor Gun is a rocket-boosted cannon that is light enough to be carried by a strong infantryman. It has a fairly long range, but is best used in close quarters where it can punch through the skin of most lightly armored vehicles.



The Light Mortar fires shells in an arcing, overhead trajectory. Unlike the mortars of old which required teams of highly trained crewmen, this light and portable weapon can be carried by a single trooper and deployed in mere seconds.

The Rocket Launcher is a light recoiless cannon, providing a heavy punch even against vehicles and fortifications. It is usually fired from the shoulder, but is also available as a tripod-mounted model.

GRENADES ◇

Grenades are small, explosive weapons which are either thrown or shot at their target. Although a lot of variations exist as far as the type and power of particular grenades are concerned, most of them fall in a few definite categories as detailed below.

Most grenades do more than simple concussion damage (fragmentation, incendiary, gas); the Secondary Damage Multiplier indicates the intensity of this second attack, while the weapon's description explains the nature and game mechanics related to this additional damage. Anyone in the primary radius will suffer both the effects of the concussion and any secondary effects which might be inflicted by the grenade.

Grenades which have multiple types of secondary damage are possible, but very expensive and usually redundant; a grenade with both fragmentation and nerve gas is likely to achieve the same final result (i.e. dead people) as a grenade with either charge. The use of a large radius of one effect combined with a small radius of another, however, can be useful in some situations.



Concussion Grenades are simply explosive charges encased in a plastic casing, which is vaporized by the explosion. They are considered "offensive" grenades, because they can be thrown further than the explosion radius. Normal concussion grenades are often used in urban combat situations because they can quickly neutralize enemy infantry and also cause damage to vehicles and installations; the effects of a grenade detonating in an enclosed space are both devastating and gruesome. Concussion grenades with a very high Damage Multiplier can be used effectively against vehicles, and are called Anti-tank or Anti-armor grenades.

Fragmentation Grenades do additional damage by scattering small shards of metal or ceramic over a wide area. Anyone caught in the secondary area of effect takes the result of one die multiplied by the secondary Damage Multiplier. The secondary Damage Multiplier is applied at full strength against humans, but only at half strength versus vehicles.

Incendiary Grenades carry an additional charge of fast-burning chemicals. Fire damage is applied to anyone within the secondary area of effect, with an Intensity equal to the secondary Damage Multiplier. Some incendiary grenades may have a Burn Duration and will continue to do damage for the number of rounds stated unless the burning substance is somehow neutralized.



Flash Grenades do little actual damage, but disable targets with a very bright magnesium flash and loud bang. Anyone inside the secondary area of effect must make a Health roll against a Threshold equal to half the maximum secondary area of effect, minus the distance to the grenade's point of impact. For example, a character 12 meters away from a grenade with a secondary area of effect of 30 would have to roll against a Threshold of ([30-12]/2), or 9. A failed roll incapacitates (-4 to all rolls) for a number of combat rounds equal to the Margin of Failure.



Gas Grenades subject everyone within the secondary radius to the effects of a particular gas, which is treated like a drug or toxin. They come in many different varieties, the most common being Tear Gas and Nerve Gas, but smoke is a non-lethal alternative sometimes used for defensive actions. If there is a strong wind, it is possible that the secondary radius may be somewhat elliptical, and Gamemasters can rule how this works according to the situation. Similarly, in an extremely strong wind, it is possible that the secondary radius will be effectively neutralized due to the near-instantaneous dispersal of the gas.

Tear gas incapacitates by attacking the victim's respiratory system and mucous membranes (eyes, nose and mouth). A Health test is made against the gas' Potency (usually between 6 and 10); a Margin of Failure between 1 and 4 means an equivalent negative action modifier due to pain and blurred vision; this penalty will lessen by 1 for every minute spent outside of the gas. A MoF between 5 and 9 will incur a -4 action penalty, which will lessen by 1 every *hour* removed from the gas. A MoF of 10 or more will, in addition to the other effects, cause damage to the character as a fatal toxin of a Potency seven points lower than the Potency of the tear gas; a fumble is equal to a Margin of Failure of 9.

Nerve gas grenades disperse a fatal toxin gas in its secondary area of effect, and usually have a Potency situated between 7 and 15. All targets in the secondary area of effect are subjected to the toxin's effect.

Smoke gas grenades usually have a very small primary radius which inflicts little damage, and a large secondary radius. The volume covered by the secondary radius is considered to be very poorly lit and imposes a -2 penalty to any ranged skill use. These are excellent devices for use in both attack or retreat actions since they are extremely effective at hiding the locations of people in the smoke. Unfortunately, when improperly used, they serve only to confuse matters for both sides. It is also possible to manufacture grenades that use "hot smoke"— a type of smoke-producing chemicals that burn at higher temperatures — for double the cost of regular smoke grenades. These block not only the visual line of sight, but also impair the functioning of infrared sensors.

WEAPON STATISTICS

▶ STICKS & CLUBS	ACC	DM	RANGE	ROF	AMMO	COST	WT.
Club, short	0	AD+5	close combat	n/a	n/a	5	1
Club, medium	0	AD+9	close combat	n/a	n/a	10	2
Nightstick	0	AD+6	close combat	n/a	n/a	20	1
Quarterstaff, wood	0	AD+7	close combat	n/a	n/a	7	2.5
Quarterstaff, metal	0	AD+11	close combat	n/a	n/a	25	4
Tonfa	0	AD+6	close combat	n/a	n/a	20	1
▶ KNIVES	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Small Knife	0	AD+3	Throw	0/2	n/a	10	0.25
Large Knife	0	AD+5	Throw	0/2	n/a	15	0.5
Machete	0	AD+8	close combat	n/a	n/a	20	1
▶ SWORDS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Long Sword	0	AD+11	close combat	n/a	n/a	100	1
Cutlass	0	AD+10	close combat	n/a	n/a	75	1.5
Katana	0	AD+13	close combat	n/a	n/a	300	1.5
▶ AXES & POLEARMS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Hatchet	0	AD+7	Throw	n/a	n/a	15	1.5
Ax, Large	0	AD+11	close combat	n/a	n/a	50	2
Ax, Pole	-1	AD+12	close combat	n/a	n/a	100	2.5
▶ SPEARS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Spear, short	0	AD+8	Throw	n/a	n/a	20	1.5
Spear, long	-1	AD+12	Throw	n/a	n/a	35	3
▶ HUMMERS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
HummerKnife	0	AD+9	close combat	n/a	30	150/10	0.5
HummerMachete	0	AD+15	close combat	n/a	30	325/10	1.5
HummerKatana	0	AD+20	close combat	n/a	30	1,000/10	2
▶ ELECTRIC MELEE WEAPONS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Any melee weapon	same	same/elec.	same	n/a	30	+75/10	same
▶ BOWS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Light Bow	0	7	5/10/20/40	0/1	1	150/1	0.5
Medium Bow	0	10	6/12/24/48	0/2	1	200/1	1
Heavy bow	0	15	7/14/28/56	0/2	1	450/2	3
▶ HANDGUNS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
6mm Revolver	0	7	5/10/20/40	0	6	120/2	0.5
9mm Revolver	0	14	6/12/24/48	0	6	200/4	1
9mm Heavy Revolver	0	23	7/14/28/56	0	5	350/5	1
11mm Revolver	0	25	7/14/28/56	0	6	400/5	1.5
7.5mm Pistol	0	10	6/12/24/48	0	10	150/4	0.5
9mm Pistol	0	15	6/12/24/48	0	9	225/6	1
11mm Pistol	0	24	7/14/28/56	0	8	425/8	1
9mm Autopistol	0	15	8/16/32/64	1	40	475/25	2
▶ RIFLES	ACC	DM	Range	ROF	Ammo	Cost	Wt.
6mm Carbine	0	18	45/90/180/360	0	1	175/0.5	2
7mm	0	24	50/100/200/400	0	20	280/10	4
7.5mm	0	28	60/120/240/480	0	10	375/5	4
7.5mm Assault Rifle	0	28	65/130/260/520	1	40	750/25	4.5
8mm	0	32	75/150/300/600	0	10	500/6	4.5
15mm Sniper Rifle	+1	40	100/200/400/800	0	4	900/5	6
▶ SHOTGUNS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
.410	0	22	6/12/24/48	0	10	120/5	2
12-gauge	0	28	7/14/28/56	0	8	200/5	3
Autoshotgun (12G)	0	28	6/12/24/48	1	50	1,200/30	6
▶ SUBMACHINE GUNS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
7.5mm	0	12	22/44/88/176	2	40	450/15	3
9mm	0	18	25/50/100/200	2	30	575/20	3.5
11mm	0	24	30/60/120/240	2	30	750/30	3.5

▷WEAPON STATISTICS CONTINUED

▶ GRENADE LAUNCHERS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
40mm Underbarrel Launcher	-1	grenade	40/80/160/320	0	1	250	1.5
40mm Grenade Rifle	0	grenade	50/100/200/400	0	5	700	4
▶ GYROCS	ACC	DM	RANGE	ROF	AMMO	COST	WT.
Gyroc Pistol	+1	15/25	10/20/40/80	0	15	675/15	1
Gyroc Rifle	+1	22/32	80/160/320/640	0	15	950/15	3.5
▶ GAUSS WEAPONS	ACC	DM	RANGE	ROF	AMMO	COST	WT.
Needler	0	7	5/10/20/40	1	15	100/5	0.5
Gauss Rifle (8mm)	0	35	85/170/340/680	1	30	800/30	4
Gauss Shotgun	0	20	40/80/160/320	2	40	1,050/40	4.5
▶ BEAM WEAPONS	ACC	DM	RANGE	ROF	AMMO	COST	WT.
Laser Pistol	+1	8/17/26	9/18/36/72	0	30	750/10	1
Laser Rifle	+1	8/17/26/35/44	120/240/480/960	0	30	1,250/10	3.5
Sniper Laser	+1	40	200/400/800/1600	0	10	8,000/100	8
Maser Pistol	+1	20	8/16/32/64	0	30	825/10	1
Maser Rifle	+1	22	110/220/440/880	0	30	1,300/10	4
▶ NON-LETHAL GUNS	ACC	DM	RANGE	ROF	AMMO	COST	WT.
Taser	0	3	4/8/16/32	0	30	60/10	0.5
Sonic Stunner	+1	special	4/8/16/32	0	30	115/10	0.5
▶ HEAVY WEAPONS	ACC	DM	RANGE	ROF	AMMO	COST	WT.
6mm Machinegun	0	30	100/200/400/800	2	belt	1,800	7
7.5mm Machinegun	0	32	125/250/50//1000	3	belt	2,150	10
11mm Machinegun	0	42	130/260/520/1040	3	belt	3,600	15
9mm Chaingun	0	30	50/100/200/400	4	belt	4,000	10
24mm Anti-Armor Gun	+1	70	150/300/600/1200	0	5	10,000	15
60mm Light Mortar	-1	120	150*/300/600/1200	0	5	5,000	12
50mm Rocket Launcher	0	140	50/100/200/400	0	1	8,000	6
▶ GRENADES	ACC	DM	RANGE	ROF	AREA	COST	WT.
Concussion	0	30	Throw	0	9	12	0.5
Fragmentation	0	26/14	Throw	0	8/30	10	0.5
Incendiary	0	24/8	Throw	0	8/12	12	1
Flash	0	8/flash	Throw	0	3/30	8	0.5
Tear Gas	0	5/gas	Throw	0	2/15	8	1
Nerve Gas	0	5/gas	Throw	0	2/15	15	1
Smoke Gas	0	2/smoke	Throw	0	1/30	4	0.5

ACC is the weapon's accuracy;

DM is the weapon's Damage Multiplier, which is multiplied by the attacker's Margin of Success. AD and UD are the character's Armed and Unarmed Damage ratings;

Range indicates the Short/Medium/Long/Extreme ranges of a weapon, in meters. "Close Combat" means the weapon can only be used in melee; "Throw" means the melee weapon can be thrown using the Throw skill;

ROF shows the weapon's burst fire bonus. Single shot weapons have a ROF of 0; a ROF of 0/X means the weapon can only be fired once every X turns;

Ammo is the number of bullets and/or charges found in the weapon's magazine. These normally come in clips or power packs;

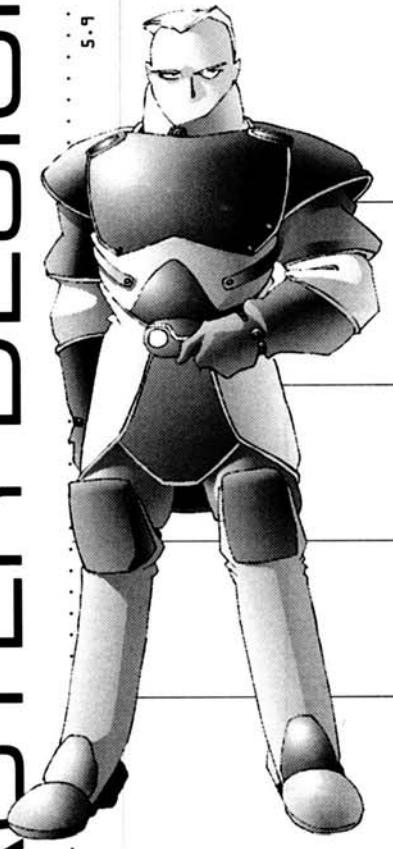
Cost is the manufacturer's suggested retail cost of the weapon, in credits. The number after the slash is the cost for a full reload;

Wt. is the weapon's loaded weight, in kilograms;

Area (for grenades only) indicates the radius in meters of the particular grenade's area of effect. The first number is the primary area of effect, used for concussion damage; the second number, if any, determines the secondary area of effect.

*: cannot fire at a range of less than 100m.

Note: When calculating the cost of a grenade with more than one secondary effect, multiply the cost of the most expensive secondary effect with three quarters of the price of the second most expensive effect, plus half the price of each (if any) successive effect.



▶ PERSONAL ARMOR

For almost as long as there have been weapons, people have worn armor to protect themselves. Although technological changes have revolutionized the world of weapons, armor designs have always followed the same basic patterns, with improvement being mainly in the resilience and lower weight of the materials used. Some scientists have hypothesized that energy shields may be possible at some point in the next few hundred years, but they remain out of reach to date.

▼ LOW TECH ARMORS

Low tech armors are simply protective suits, without any computerized gadgets. The weights and costs given are for full body suits; for armors that protect the torso only, divide both the cost and the weight by half. Except for composite armor, these are normally used when people do not have access to more advanced forms of protection. Nomads and pirates often wear these items.

◇ LEATHER ARMOR

Leather armor normally appears in its most common form — leather jackets. A favorite among street gangs, the basic leather armor can be slightly enhanced by adding small metal studs; many owners will stud their armor just for the "mean" look it gives them.

◇ PLATED ARMOR

Plated armor is rarely seen, primarily because it is heavy and cumbersome. Plates of metal or other strong material are joined together to create an armored shell. Medieval armor is a classic example of plated armor.

◇ COMPOSITE

Composite armor comes in two varieties, light and heavy. Light composite is a fine mesh of synthetic fibers and other non-metallic composites. Normally highly flexible, it hardens when subjected to blows, evenly distributing the kinetic energy throughout its fabric. It can discreetely be worn under loose-fitting clothes, and will not hamper its wearer's movement.

Heavy composite is both heavier and bulkier, consisting of multiple, precisely fitted layers of polymer and metallic fibers. While it offers more protection against physical attacks, it cannot normally be worn under one's clothes, exceptions being made of robes, overcoats and cloaks.

◪ LAYERS AND SCRATCHBUILT ARMOR

Sooner or later, Players are going to want (or need) to layer their character's armors. Going into personal combat in a vacuum requires use of a vacuum suit, and the Players will want extra layers between them and their opponent's weapons. The Armor rating of all layers is added together. The trade-off for this is an escalation in mass and encumbrance: for both statistics, take the worst value from the list of armors being layered and multiply by (1.1 x number of layers), rounding up to the nearest tenth of a kilogram. This applies only for armors worn on top one another; suits with built-in protection, such as space suits, use the rules on p. 86

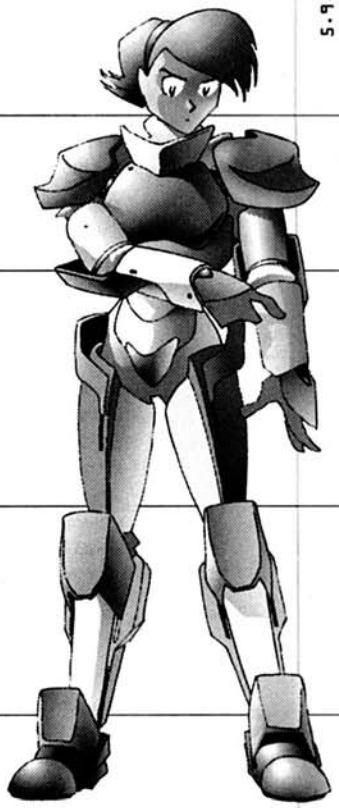
When desperate characters build armor from scratch, a number of factors come into play: the Tinker skill of the character, the materials on hand, and the time the character is willing (or able) to spend making the armor. To begin with, the GM must ascertain how much material is actually useable as armor; a damaged suit of armor will provide an amount of base armor equal to the proportion of the armor that is salvageable. If working with a bunch of raw metal, composite, etc., the GM must make a judgment call based on the tools available and the condition of the scrap parts. The Player must state before beginning work on the armor how long he intends to spend building the armor. If the character is interrupted beforehand, the amount of armor actually available is directly proportionate to the amount of time actually spent. Upon completion (or interruption) the Player makes a Tinker skill roll against a threshold of 3 (5 if trying to incorporate a Reflec layer or Interference Screen). If the roll is equal to or less than the Threshold, the scratchbuild will slow the character down more than protect him. The formula below is applied with a maximum final armor value equal to the sum of base armor points available.

Example: a Player working on leather hides and a badly damaged Duraplast Mail suit with rudimentary mechanical tools states that he plans to spend 4 hours making a new suit of armor. The GM decides that the leather is worth three points, and that the Duraplast only has five points left (judging that only about 20% of it is salvageable with the tools on hand). He finishes uninterrupted and rolls a 5 giving a MoS of 2; thus the new suit has (2 x 2 x 2 =) 8 points of armor, the maximum he could have gotten. If he had been interrupted near the third hour of work, the suit would only have had six points of armor (3/4 of the intended time multiplied by the result achieved).

Final Armor Value = Tinker MoS x (square root of time in hours expected) x 1/4 base Armor available x time available (proportion of time expected)

HIGH TECH ARMORS ▼

This category includes all kinds of sophisticated armors. Usually very expensive and/or illegal, these suits of armor are rather hard to find. The military and police forces have some access to this kind of technology, but the prohibitive cost of high tech armor always makes them scarce.



5.9.2

DURAPLAST MAIL ◇

Duraplast is the generic name for a synthetic compound whose hardness and flexibility surpasses those of cold steel, at a fraction of the weight. It is often made into a modern version of chain mail, in which little rings of duraplast are interwoven to make a resilient yet flexible shirt.

DURASHELL ARMOR ◇

Durashell is the name given to full suits of molded composite antiballistic plates. A durashell armor suit is bulky and must be worn on top of one's clothes (usually a light body suit), but provides the best all-around protection short of an exo-suit. They are usually custom-tailored for their wearer; characters wearing a durashell armor made for someone else receive an additional -1 penalty to "physical" Skills. This applies for full body suits only — wearing someone else's durashell torso armor does not incur any penalty. The cost given for a full durashell body suit does not include the tailoring, which costs an additional 10%.

REFLEC ARMOR ◇

Reflec armor is a light, reflective suit that protects against lasers; its surface diffracts and disperses some of the energy carried by laser beams, but also makes the wearer easier to spot (-2 to Stealth Skill rolls). Reflective armor is practically useless against physical attacks, but does stop some of the damage from maser beams (use half the listed value). Any other kind of armor can be made into relective armor as well; add 20% to the armor's cost and use the listed value for normal reflective armor against laser attacks.

INTERFERENCE SCREEN ◇

This light suit protects against maser attacks by dephasing and diffusing the strong microwaves emitted by the weapons. It is useless against any other kind of physical or energy attacks. An interference screen can be added to any type of armor for an additional 25% of that armor's cost.

PERSONAL ARMOR ◫

ARMOR	ARMOR RATING	ENCUMBRANCE	CONCEALABLE	MASS	COST
▶ LOW TECH					
Leather armor	5	0	somewhat	4	180
Studded Leather	8	0	somewhat	6	200
Light Plated armor	10	-1	somewhat	7	200
Heavy Plated Armor	14	-2	no	10	250
Light Composite	16	0	yes	2.5	250
Heavy Composite	32	-1	somewhat	6	400
▶ HIGH TECH					
Duraplast mail	24	0	yes	2	750
Durashell armor	50	-1/-2	no	10	2,000
Reflec armor	30*	0	yes	0.5	250
Interference Screen	28**	0	yes	1	575

*Against Lasers only; divide by two against Masers.

**Against Masers only.

Armor Rating is the protective value of the armor, to be added to the character's wound tresholds when resisting an attack;

Encumbrance indicates if wearing a particular armor incurs a penalty to "physical" skills, i.e. skills that involve the AGI or FIT stats (but not BUI). A second number, separated by a slash, gives the penalty for someone other than the owner (for tailor-made suits);

Concealable gives an arbitrary measure of how discreet a particular suit of armor is. The GM should decide, depending on circumstances and the Player's dress, if the armor is visible or not;

Mass is the mass of a full suit of armor in kilograms. For torso armor divide by two;

Cost is the cost of a full suit of armor in credits; for torso armor, divide by two.

▶ ARCHETYPES

5.10

Archetypes are the "stock characters" of the **Jovian Chronicles** universe. They are the simplest type of character to roleplay because they are the icons of the game. Archetypes can be used to populate a scenario, interact with the Player Characters or even serve as one in a pinch.

Most of the time, though, the archetypes will serve as stock Non-Player Characters for the Gamemaster. Other characters can be developed from these by modifying one or two stats and changing the NPC's name. Each archetype features a "Similar Archetypes" section. These are related archetypes that can be represented by the existing ones, either as is, or with few modifications.

The key to successfully roleplaying an archetype is to develop the little details of a character (e.g. favorite drink, style of dress, personality quirks) enough to make the character unique. To that effect, each archetype can receive up to 10 additional points, either Character or Skill Points (or any combination thereof). The Gamemaster or the Player can then use them to improve the Attributes or skills of their choice.

▼ CAST RATING SYSTEM

5.10.1

Jovian Chronicles campaigns works very much along the same principles as movies and television series. The characters that appear throughout the campaign have very similar functions as the various members of a movie cast. We provide here a rating system which will help Gamemasters categorize their Non-Player Characters. This system ranks characters according to their importance in the game. GMs should make use of it both as a design tool when creating their own campaign or as a quick reference indicator when using pre-generated campaigns. Please note that Player Characters fit nowhere in this system. The basic assumption is that PCs are a class all their own, and to include them in pre-generated form in any book would be more restrictive than anything else. It is much preferable to leave them out entirely, with the understanding that their importance is far greater than even that of the Lead Characters. The Player Characters are the stars and heroes of the show. They (hopefully) clean up the mess created by the Lead Characters and their followers.

◇ LEAD CHARACTER



A Lead Character is vital to the campaign. He represents the movers and shakers of the world, and is one of those who weave the background story in which the Player Characters take part. On the side of the allies, the more typical Lead Characters are the fatherly ship captain (who tells the hero that he's "counting on you to save the day"), the strong and reliable wing commander (who gets to dramatically die later in mid-campaign) or the soft-spoken, lovable artist (who is at the center of some love triangle). Allied Lead Characters are stable and often predictable, and should have a fairly detailed background. Their personalities should present a few recognizable quirks that will make them endearing and more human. On the side of the enemies, the typical Lead Character can be some scheming politician or power broker with a hidden agenda (who will want to use the PCs, then kill them), a ruthless and lethal rebel leader (who will eliminate anyone standing in his way, including the Player Characters), or the fierce and patriotic elite enemy pilot (whose goal is to establish his superiority over any contender). As with allied Lead Characters, enemies in that category should be very well detailed. Their reactions should be clear in the Gamemaster's head and they should be consistent, although preferably not perfect.

Overall, Lead Characters do not get overly important until later in the campaign. While their importance is felt in the story from the beginning, they should not overshadow the heroes, nor should they take part in any action which can get them killed right away.

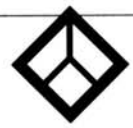
◇ SUPPORTING CAST



On the side of the allies, the Supporting Cast represents the various coworkers, wingmates and contacts who have enough importance in the story to warrant being named. Their background may not be as detailed as the Lead Characters, but some of their quirks and personalities should be established prior to the campaign. They are the characters which interact the most with the Player Characters, and as such they should be vivid and interesting. Enemy Supporting Cast members are few but memorable as well. Until fairly late into the story, they are the ones who provide most of the opposition to the Player Characters. They serve as a transition between the Extras which the Players have fought from the beginning and the Leading Cast mastermind. They also hint to the Players that someone even more powerful stands behind them.

Supporting Cast help Gamemasters carry the storyline roughly until its midpoint. Past that, their importance diminishes and that of the Lead Characters increases.

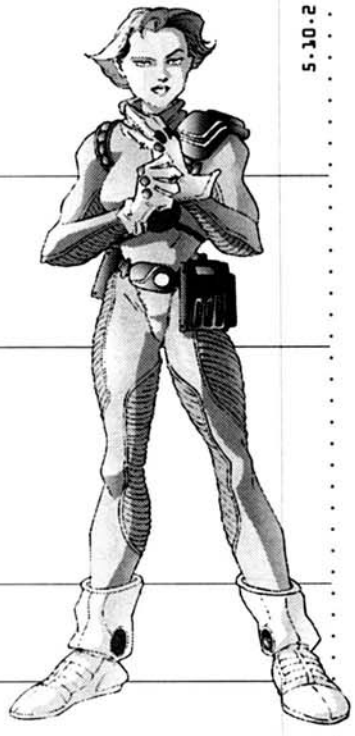
◇ EXTRA



Extras represent "average" characters in **Jovian Chronicles**. They usually have no personal impact on a storyline and are included primarily to be used by Gamemasters as faceless minions or typical citizens. While most of them may be ordinary, Extras can still be injected with character quirks and GMs should pay attention to Extras who the Players learn to like; they may be worth promoting to Supporting Cast.

ADVENTURER ◀

The solar system of the twenty-third century is rich in possibilities and offers numerous adventures to the daring. Adventurers hop from ship to ship, selling their services or knowledge in return for transport. They are wanderers, always looking for excitement. With their ability to get themselves into unusual predicaments of all varieties, Adventurers often rely on talking their way out of trouble rather than blasting their way out; but when the chips are down, their creative and often unorthodox approaches can be dangerous for their opponents.



5.10.2

ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	1	FIT	0
INF	1	KNO	1	PER	0	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	4	AD	3

SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Athletics	1	0	Dodge	1	0	Human Perception	1	0	Theatrics	1	1
Business	2	1	Etiquette	1	1	Seduction	1	0	Throwing	1	0
Computer	1	1	Hand-to-Hand	1	0	Streetwise	2	1			

Other possible skills: Zero-G Movement, Survival, Pilot (Space), Pilot (Exo), Notice, Gambling, Dodge.

EQUIPMENT ◇

Bag of clothes, personal computer, 1d6 x 100 credits.

SIMILAR ARCHETYPES ◇

Rogue, Gambler

BOUNTY HUNTER ◀

The sheer physical size of the solar system makes it easy for criminals to "skip town" and move beyond the reach of authorities. Bounty hunters make their living tracking down such fugitives. They own a small ship and may spend weeks in travel between planets, using their extensive network of personal contacts and their own computer hacking capabilities to track down their target. Once located, they will attempt to subdue the fugitive as fast as possible.



ATTRIBUTES

AGI	1	APP	-1	BUI	0	CRE	2	FIT	0
INF	0	KNO	0	PER	0	PSY	-1	WIL	0
STR	0	HEA	0	STA	25	UD	5	AD	4

SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Acrobatics	1	1	Dodge	1	1	Human Perception	2	-1	Small Arms	1	1
Business	1	0	Etiquette	1	0	Melee	1	1	Streetwise	2	0
Combat Sense	1	0	Hand-to-Hand	2	1	Seduction	1	0	Theatrics	1	0
Computer	2	0									

Other possible skills include: Zero-G Movement, Tinker, Throwing, Survival, Stealth, Psychology, Law, Investigation, Intimidate, Foreign Language, Drive, Camouflage, Ambush.

EQUIPMENT ◇

Small spaceship, assorted weaponry (both lethal and non-lethal), 1d6 x 10,000 credits.

SIMILAR ARCHETYPES ◇

Private Investigator, Special Agent

▶ ENTERTAINER



5.10.4

The widespread availability of high-fidelity multimedia broadcast and reception equipment means that entertainment stars proliferate in the 23rd century. Most media darlings begin small, working local nightclub circuits or producing their own multimedia show for independent release and broadcast. Those with business savvy can walk away extremely rich, while others become underpaid bread-winners for media conglomerates. Multimedia entertainment usually involves a substantial amount of computerized manipulation of sight and sound, making the top entertainers more than just singers or dancers, but skilled computer artists as well.

◫ ATTRIBUTES

AGI	0	APP	1	BUI	0	CRE	1	FIT	0
INF	1	KNO	0	PER	0	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◫ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Acrobatics	1	0	Etiquette	1	1	Music	2	1	Streetwise	1	1
Computer	2	0	Human Perception	2	0	Seduction	2	1	Theatrics	2	1

Other possible skills include: Visual Art, Business, Dance, Sleight of Hand.

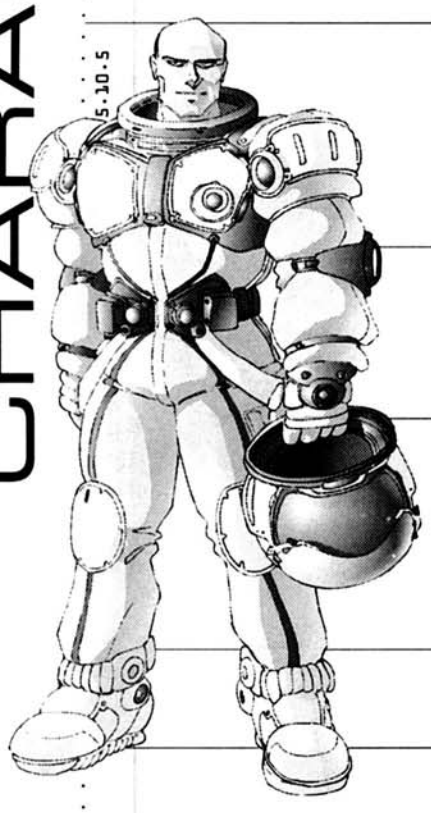
◇ EQUIPMENT

Expensive and cutting edge clothing, jewelry, sunglasses, a copie of the latest *Entertainment Report* magazine, luxury apartment, 1d6 x 100,000 credits.

◇ SIMILAR ARCHETYPES

Washed-up Artist, Talented Unknown, Singer, Dancer, Painter

▶ EXPLORER



5.10.5

Despite extensive colonization and resettlement, much of the solar system remains uncharted territory in 2210. Those engaging in the dangerous and lonely exploration missions are part scientist, part pioneer, and part prospector. The search for new information is often driven by commercial interests, but some continue to simply search for new frontiers to discover. Explorers are a hardy and independent lot. To them, settlers are sedentary and even cowardly. Some explorers speak of establishing colonies around even the most remote of the Sun's satellites. They are treated with respect since they follow in the steps of the folk-heroes of solar system colonization.

◫ ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	1	FIT	0
INF	0	KNO	1	PER	0	PSY	0	WIL	1
STR	0	HEA	0	STA	25	UD	3	AD	3

◫ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Combat Sense	1	0	Earth Sciences	2	1	Navigation (Space)	2	1	Survival	2	1
Communications	1	1	Exo-Pilot	1	0	Space Pilot	2	1	Zero-G Movement	2	0

Other possible skills include Computer, Demolitions, First Aid, Life Sciences, Gunnery: Exo, Gunnery: Space, Hand-to-Hand, Small Arms.

◇ EQUIPMENT

Exo-suit, rugged clothing, tools, astronomical navigation computer, survival gear, 1d6 x 100 credits.

◇ SIMILAR ARCHETYPES

Military Scout, Prospector, Planetary Researcher

FREELANCE REPORTER

The people's right to know and the networks' right to profits regularly send legions of reporters across the solar system in search of the next big story. The major news services maintain offices in most planetary systems, employing staffs that range from a few independent freelancers on half-time contracts to full professional teams of reporters, video technicians and editing specialists. Some reporters are still hired only for their looks, and they usually end up working only at the broadcast centers. Field correspondents are typically much more resourceful and independent, capable researchers, investigators, video technicians and authors as well as presenters. The long term offworld assignments common to interplanetary reporting entail that few correspondents can afford to establish lasting personal relationships.

5.10.6



ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	1	FIT	0
INF	1	KNO	0	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Bureaucracy	1	0	Etiquette	1	1	Interrogation	2	1	Notice	1	1
Combat Sense	1	1	Human Perception	1	0	Investigation	2	1	Streetwise	2	1
Communications	1	0									

Other possible skills include Computer, Electronics, Foreign Language, History, Dodge, Visual Arts (Photography).

EQUIPMENT

Rugged all purpose clothing, portable audio/video equipment, personal computer, 1d6 x 100 credits.

SIMILAR ARCHETYPES

Scandal sheet Reporter, Camera Technician

MEDIC

Accidents happen all the time, and the distances involved in interplanetary travel ensure that a medical hospital is almost certainly very far away. As such, most vessels have at least one person with medical training aboard. Most commonly, a trained medic will accompany a vessel, able to treat all but the most serious injuries. Larger vessels will have a surgeon with support staff aboard. All space-faring medics are able to think on their feet. To be a certified ship's medic, the Solar Cross insists on rigorous training in first aid and requires an ability to follow instructions and guidelines for critical cases. Medics travel with an extensive database of emergency procedures, enabling them to get detailed instructions even if they are unable to consult with real physicians.

5.10.7



ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	1	FIT	0
INF	0	KNO	1	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Combat Sense	1	1	Dodge	1	0	Life Sciences	2	1	Notice	1	1
Computer	1	1	First Aid	2	1	Medicine	1	1	Survival	2	1
Communications	1	1	Human Perception	1	0						

Other possible skills include Drive, Space Pilot, Tinker, Zero-G Movement.

EQUIPMENT

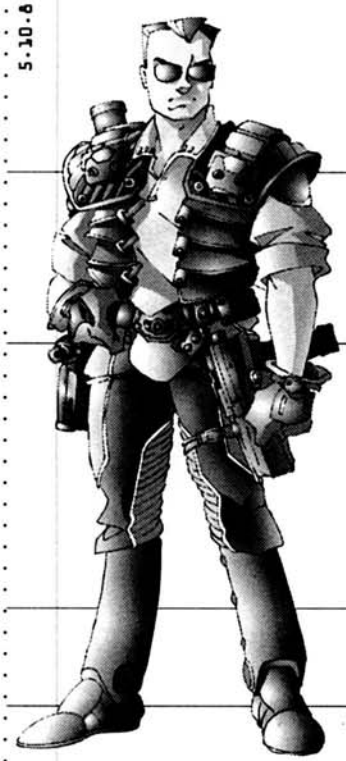
Pressure suit, medical kit, medical scanner, emergency surgery kit, medical database, 1d6 x 500 credits.

SIMILAR ARCHETYPES

Solar Cross Medic, First-Aid Technician

▶ MERCENARY

5.10.8



As a soldier-of-fortune, the Mercenary makes his living doing the dirty jobs of other people. They are most common on Earth, where the endless brushfire conflicts between CEGA and the unaligned countries supply them with ample employment opportunities. Rarely welcome in human space society, the space-based mercenaries tend to gather at the dirtiest, most remote spots of the system, where they await their next assignment. Some, not content to wait idly, turn to piracy and attack defenseless merchant ships, living a ramshackle outcast existence on some forlorn asteroid base or ship.

◫ ATTRIBUTES

AGI	1	APP	0	BUI	1	CRE	0	FIT	0
INF	0	KNO	0	PER	1	PSY	-1	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◫ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Acrobatics	1	1	Dodge	2	1	Pilot (Exo)	1	1	Streetwise	1	0
Athletics	1	0	Gunnery (Exo)	1	1	Small Arms	2	1	Tactics	1	0
Camouflage	1	0	Mechanics	1	0	Stealth	1	1	Throwing	1	1
Combat Sense	2	1	Notice	1	1						

Other possible skills include Business, Computer Electronics, Demolitions, Leadership.

◇ EQUIPMENT

Personal weapon and armor, 1d6 x 100 credits.

◇ SIMILAR ARCHETYPES

Bully, Mugger, Pirate

▶ MERCHANT

5.10.9



There are few , if any, settlements in the solar system that can claim to be completely self-reliant. The supply lines of the settlements are navigated by fleets of merchant vessels which ferry people and supplies anywhere between Jupiter and Mercury. The merchant captain's creed requires independence and resourcefulness to seek out the best routes and markets for their supplies. Merchants usually begin their careers deep in debt, borrowing huge sums to acquire a used cargo vessel. Those who fail to repay their debts will usually have their Merchant Guild membership revoked and their vessels confiscated. Once a debt is cleared, merchants can become free traders.

◫ ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	1	FIT	0
INF	1	KNO	1	PER	0	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◫ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Bureaucracy	2	1	Etiquette	1	1	Haggling	2	1	Security	1	1
Business	2	1	Foreign Language	1	1	Human Perception	1	0	Streetwise	2	1
Camouflage	1	1	Forgery	1	1						

Other possible skills include Electronic Warfare, Law, Mechanics, Navigation (Space), Space Pilot, Zero-G Movement.

◇ EQUIPMENT

Guild membership, sidearm, makeshift uniform, manifest datapad, cargo vessel (full or part-ownership), 1d6x50 credits.

◇ SIMILAR ARCHETYPES

Stoic Second in Command, Smuggler

NOMAD ◀

5.10.10

Perhaps the most rugged people in the solar system, Nomads live in converted asteroids that course around the sun. They are notoriously hardworking, intolerant of laziness and effete behavior, and play as hard as they toil. Many Nomads serve tours as workers in other parts of the solar system, bringing their technical skills to the service of large corporations and sending their wages (or purchased supplies) to their clan back home. Citizens of more sophisticated locales are impatient with Nomad informality and raucous behavior; nomads repay these attitudes by making a game of insulting and making fools of their "sophisticated" employers. Only those who show an ability to do their own work — rather then simply manage others — earn Nomad respect.



ATTRIBUTES

AGI	0	APP	0	BUI	1	CRE	1	FIT	1
INF	0	KNO	0	PER	0	PSY	0	WIL	0
STR	1	HEA	0	STA	30	UD	7	AD	5

SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Combat Sense	1	0	Electronics	2	0	Mechanics	2	0	Survival	1	1
Dodge	1	0	Hand-to-Hand	2	0	Notice	1	0	Zero-G Combat	1	0
Earth Sciences	1	0	Intimidate	1	1	Small Arms	1	0	Zero-G Movement	2	0

Other possible skills include Business, Haggling, Space Navigation, Space Pilot, Streetwise.

EQUIPMENT ◇

Repair tools, vacuum suit, primitive firearm.

SIMILAR ARCHETYPES ◇

Clan Chief, Advisor, Miner

OFFICIAL ◀

5.10.11

As the age of isolationism comes to an end, governmental officials and corporate executives have discovered the shuttle lifestyle. Operating from modified diplomatic liners, they move from planet to planet to arrange business deals or sign treaties. In this time of dynamic change and increasing tension, diplomats and business representatives are on the cutting edge of reorganizing the power structure of the solar system. Although business executives and political officials often find themselves at odds with each other, most people see them as almost interchangeable. They dress for success and speak in clean and crisp sentences (often changing smoothly from one language to another). These elite power-brokers often look down on settlers and Nomads as barbarians and ne'er-do-wells.



ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	0	FIT	0
INF	1	KNO	1	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Bureaucracy	2	1	Etiquette	1	1	Law	1	1	Notice	1	1
Business	2	1	Human Perception	2	0	Leadership	1	1			

Other possible skills include Foreign Language, Haggling, History, Intimidation, Investigation, Law.

EQUIPMENT ◇

Expensive clothes, personal computer, anti-espionage devices, 1d6 x 1000 credits.

SIMILAR ARCHETYPES ◇

Politician, Exiled Official, Mole/Spy, Custom Officer, Executive

5.10.12

▶ SCIENTIST



In the stations which house much of humanity, reliance on science and technology is absolute. Few scientists have the liberty to work on pure science, however. Even those working in academic institutions are under heavy pressure to work on projects with immediate technological applications. In the private and government sectors, the pressures to produce are even stronger. A few mild beacons of theoretical work do exist and most scientific institutions support some pure theory work, but these programs are sidelines at best. The militarization of science is a major preoccupation for most of the scientific community. A growing number of scientists feel disgruntled by this appropriation of their work and talk of a peace movement is growing.

◫ ATTRIBUTES

AGI	-1	APP	0	BUI	-1	CRE	1	FIT	0
INF	0	KNO	2	PER	0	PSY	0	WIL	0
STR	0	HEA	0	STA	20	UD	2	AD	2

◫ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Bureaucracy	1	2	Etiquette	1	0	Notice	1	0	Teaching	1	1
Computer	2	2	Foreign Language	2	2	Primary Field*	2	2	*Choose Any Science Skill		
Electronics	1	2	History	1	2	Secondary Field*	1	2			

Other possible skills include Electronic Design, Foreign Language (Latin), Mechanics, Medicine, Tinker.

◇ EQUIPMENT

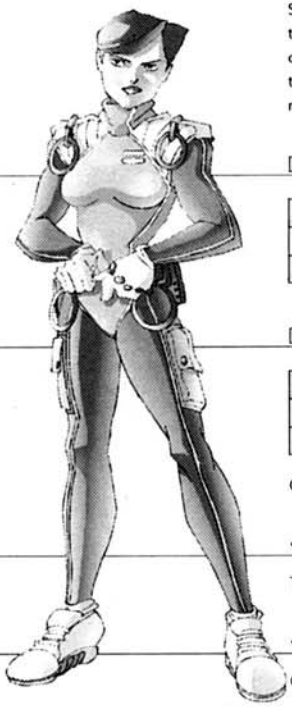
Laboratory, high-powered personal workstation, 1d6 x 1000 credits.

◇ SIMILAR ARCHETYPES

Terraforming Engineer, Astrophysicist, Robotic Specialist

5.10.13

▶ SHIPMATE



Shipmates are the people responsible for the well-being and daily operations of the spaceships that bind the solar system together. They can be rowdy on their spare time, but they are usually cool and professional when on the job. The prospect of being stuck with someone in cramped quarters for an extended period of time also tends to breed an air of tolerance towards others in these spacers. Ship crew tend to be intelligent and quick thinking, since space is an unforgiving environment where your first mistake might very well be your last.

◫ ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	1	FIT	0
INF	0	KNO	2	PER	0	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◫ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Acrobatics	1	0	First Aid	1	2	Navigation (Space)	1	2	Tinker	2	1
Communications	1	2	Mechanics	2	2	Physical Sciences	1	2	Zero-G Movement	2	0

Other possible skills include Business, Computer, Electronics and Gunnery: Space.

◇ EQUIPMENT

Tool kit, coverall or uniform, personal datapad, 1d6 x 100 credits

◇ SIMILAR ARCHETYPES

Gunnery Crew, Engineer

SOLAPOL AGENT

There are two broad categories of Solar Police agent. The first specializes in covert operations. The USN uses them most often to discover the truth behind secret military operations, or to dig up the guilty parties in cases of illegal (and dangerous) scientific research. These agents are comfortable in any setting. The rest of the SolaPol is composed of analysts. There are few minds in the solar system that are sharper than an analyst's when it comes to making sense of jumbled reconnaissance data. In conflict situations, however, the analysts are next to useless. Their training is focused on mental abilities.

5.10.14



ATTRIBUTES

AGI	-1	APP	0	BUI	-1	CRE	1	FIT	-1
INF	0	KNO	1	PER	1	PSY	1	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Acrobatics	1	-1	Computer	2	1	Human Perception	2	1	Psychology	1	1
Bureaucracy	2	1	Etiquette	1	0	Investigation	2	1	Tactics	1	1
Communications	1	1	History	1	1	Notice	1	1			

Other possible skills include Business, Electronics, Hand-to-Hand, Intimidate, Small Arms.

EQUIPMENT

Datapad, SolaPol credit account.

SIMILAR ARCHETYPES

Intelligence Agent

SOLDIER/SECURITY OFFICER

Despite doe-eyed predictions of a utopian life among the planets of the solar system, the twenty-third century is not a time of universal peace and justice. In a world such as this, soldiers, police officers and private security guards are an all-too-common sight. Soldier are now trained to be self-reliant because of the massive distances involved in interplanetary (or even planet-wide) operations. In most armies the distinction between NCO and officer is often blurred once in the field, and command decisions often leave much room for soldiers' own initiative. Civilian security officers operate much as they have for hundreds of years, often based in precincts and squads assigned to specific regions or crimes.

5.10.15



ATTRIBUTES

AGI	0	APP	0	BUI	1	CRE	0	FIT	1
INF	0	KNO	0	PER	1	PSY	0	WIL	0
STR	1	HEA	0	STA	30	UD	7	AD	6

SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Athletics	1	1	Hand-to-Hand	2	0	Investigation	1	1	Security	2	0
Combat Sense	1	1	Interrogation	1	0	Melee	1	0	Small Arms	2	0
Dodge	1	0	Intimidate	1	1	Notice	2	1	Streetwise	1	0

Other possible skills include Camouflage, Exo-Pilot, First Aid, Law, Navigation, Survival, Zero-G Combat and Movement.

EQUIPMENT

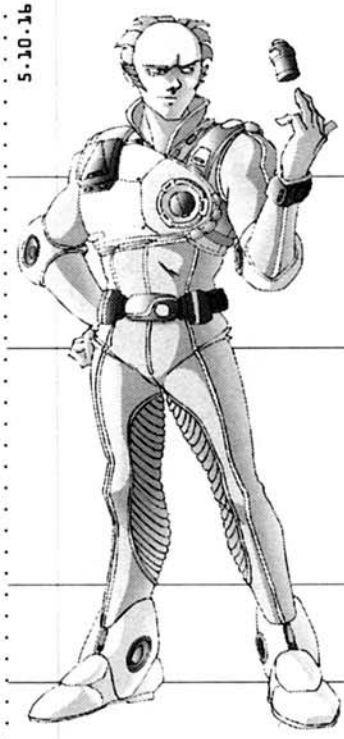
Sidearm, uniform, patrol vehicle, comm gear, flashlight, restraints; Fatigues, rifle, grenades, medical kit.; 1d6x100 credits.

SIMILAR ARCHETYPES

Policeman, Bodyguard, Nomad Sheriff

▶ SPACER

5.10.16



The spacers are the people who live in orbit around of the major planets of the solar system. They are used to living within the confines of a colony cylinder and think nothing of spending a few hours in zero or microgravity environments — they have been doing it ever since they were infants. Spacers can travel comfortably to any planet in the solar system, since they are used to multi-gravity living environment. They are often fascinated by planet-side geological features such as oceans and large mountain ranges.

◫ ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	0	FIT	0
INF	0	KNO	0	PER	0	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◫ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Acrobatics	1	0	Computer	2	0	Human Perception	1	0	Tinker	1	0
Athletics	1	0	Electronics	1	0	Survival (Space)	1	0	Zero-G Movement	1	0
Communications	1	0									

Other possible skills include Business, Bureaucracy, any Science

◇ EQUIPMENT

Clothes, datapad or collection of mechanical (or other) tools, 1d6 x 1000 credits.

◇ SIMILAR ARCHETYPES

Jovian, Orbital, ZeGee (+1 AGI, -2 BLD, +1 PER)

▶ TECHNICIAN

5.10.17



Technical and engineering careers are among the most popular in the orbital stations, the nomad asteroids and the Jovian Confederation. On these various space stations and micro-worlds, there is an acute appreciation of skilled technical knowledge and a desire to help the community by contributing to the field. As such, most technicians tend to be dynamic and friendly, always ready to try something new or lend a helping hand. Only those who disparage the accomplishment of planetary settlements can expect poor treatment from the average technician. The combination of social prestige and friendly reputation makes the stereotypical technician into a fatherly (or motherly) figure. Military disciplinarians have long been frustrated by the tendency for this stereotype to carry over to military techs.

◫ ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	2	FIT	0
INF	0	KNO	1	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◫ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Communications	1	1	Electronic Design	1	1	Mechanics	2	1	Tinker	1	2
Computer	2	1	Electronics	2	1	Physical Sciences	1	1			

Other possible skills include Business, Electronic Warfare, Haggling, Mechanical Design.

◇ EQUIPMENT

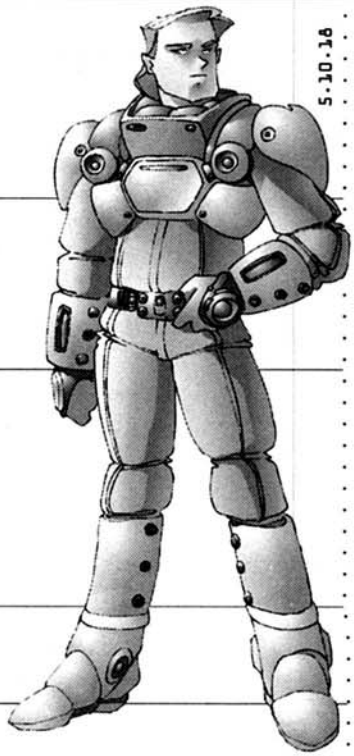
Extensive tool kit, portable computer with design specs, work suit, pressure suit, 1d6 x 100 credits.

◇ SIMILAR ARCHETYPES

Computer Tech, Weapon Tech, Engineer, Miracle Worker

VETERAN PILOT ◀

Grizzled veterans form the backbone of each army. While not as glamorous as the elite pilots, the jocks who have been sitting behind the controls longer than most of their teammates have lived are a well-respected lot. The older ones fought in many conflicts of the late twenty-second century. Haunted by ghosts and bearing the stains of their past, these old-timers bring an air of somber experience to a combat group. Most armed forces have few exo-armors and hand them to skilled veteran pilots, who display a reserve learned from years of space time.



5.10.18

ATTRIBUTES

AGI	1	APP	0	BUI	0	CRE	0	FIT	1
INF	0	KNO	0	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Aircraft Pilot	1	1	Electronic Warfare	1	0	Navigation (Space)	1	0	Space Pilot	2	0
Combat Sense	2	1	Gunnery (Space)	2	1	Small Arms	1	1	Zero-G Movement	2	1
Communications	1	0									

Other possible skills include Gunnery (Aircraft), Hand-to-Hand, Leadership, Navigation (Air), Survival, Zero-G Combat.

EQUIPMENT ◇

Flight suit, sidearm, survival gear, access to military vehicles, 1d6 x 500 credits.

SIMILAR ARCHETYPES ◇

Flight Instructor, Squadron Commander

YOUNG ACE ◀

Exo-pilots are renowned as hotshots and glory hounds, and military trainers often struggle to reign in their enthusiasm. The Jovian Armed Forces are infamous in military circles for the lack of discipline of their pilots. These inveterate hotshots break into daring maneuvers with very little provocation. A rookie pilot, fresh from training, is a common (if less skilled) variation on the young ace character. These "greenies" are wide eyed and seek out dangerous missions for the thrill of it, or to prove themselves to their older and more experienced companions.



5.10.19

ATTRIBUTES

AGI	1	APP	0	BUI	0	CRE	0	FIT	1
INF	0	KNO	0	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	4	AD	3

SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Combat Sense	1	1	Exo-Pilot	2	1	Navigation (Space)	1	0	Zero-G Combat	1	1
Communications	1	0	Hand-to-Hand	1	1	Small Arms	2	1	Zero-G Movement	1	1
Electronic Warfare	1	0	Gunnery (Exo)	2	1						

Other possible skills include Computer, Electronics, Gunnery (Space), Leadership, Melee, Space Pilot, Tactics.

EQUIPMENT ◇

Flight uniform, sidearm, dress uniform, survival gear, access to military exo-armor, 1d6 x 500 credits.

SIMILAR ARCHETYPES ◇

Test Pilot, Rookie

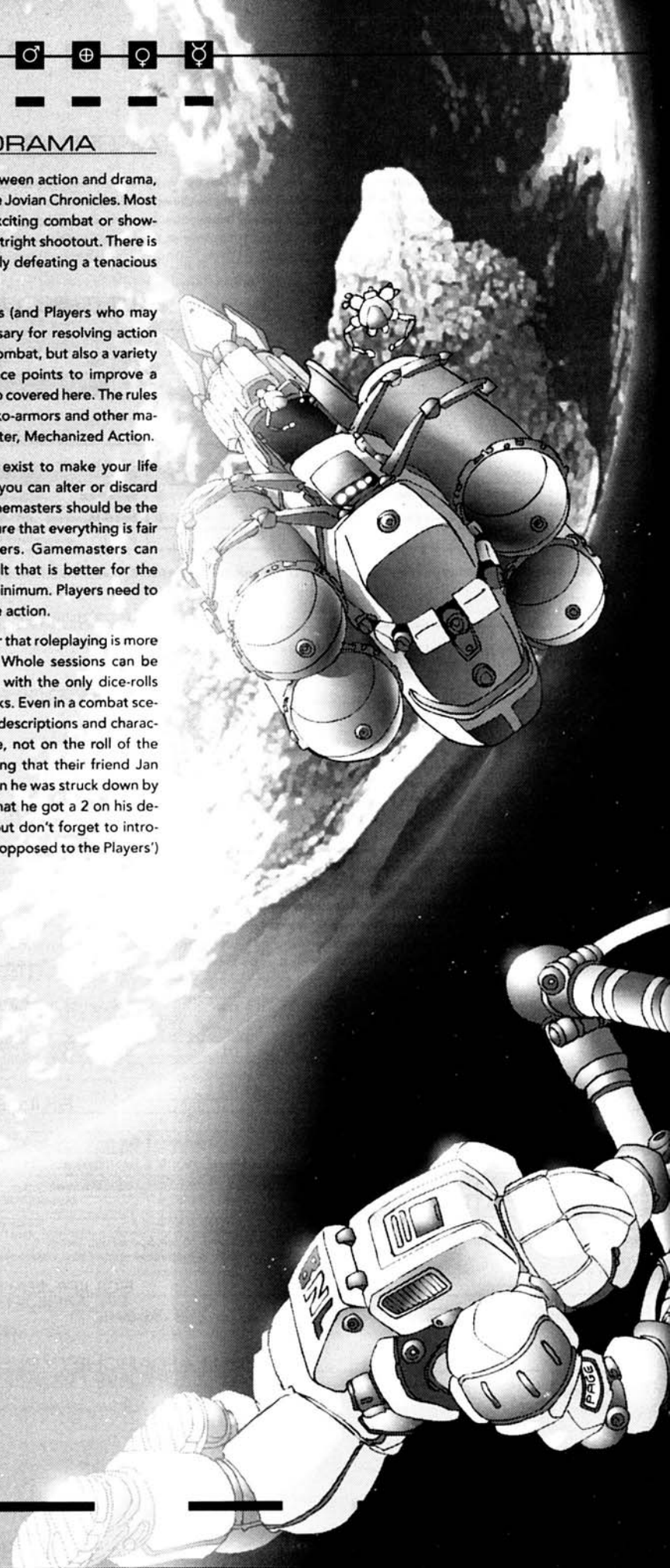
▶ ACTION AND DRAMA

There exists a close relationship between action and drama, especially in a high-octane setting like Jovian Chronicles. Most stories will involve some form of exciting combat or showdown, whether it be a chase or an outright shootout. There is nothing quite as a satisfying as finally defeating a tenacious villain in a climactic battle.

This chapter provides Gamemasters (and Players who may wish to read on) all the rules necessary for resolving action involving characters. This includes combat, but also a variety of other hazards. Earning experience points to improve a character' Skills and Attributes is also covered here. The rules for dealing with combat between exo-armors and other machines is dealt with in the next chapter, Mechanized Action.

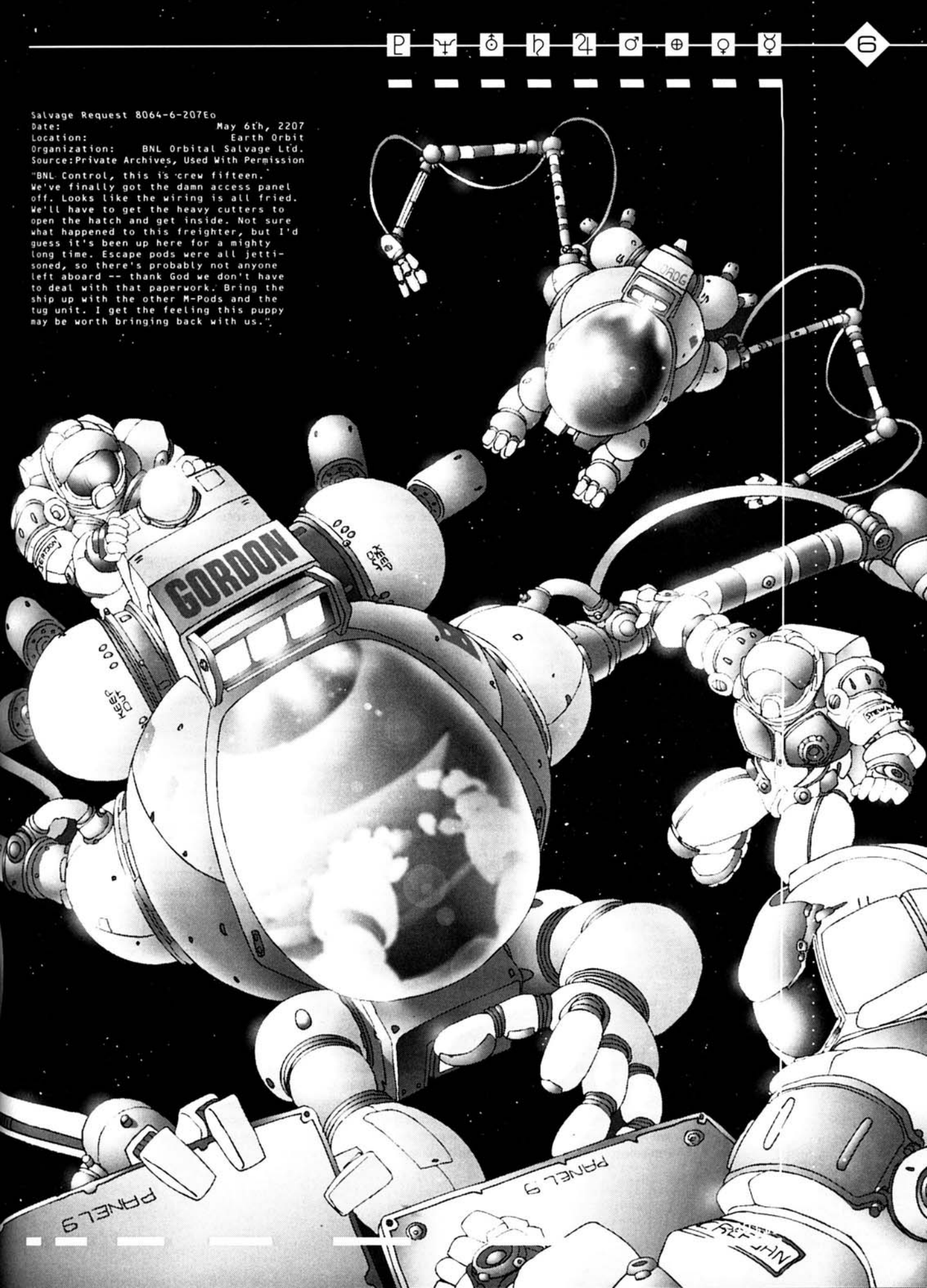
Always remember that these rules exist to make your life easier. If they truly get in the way, you can alter or discard them as you see fit. Of course, Gamemasters should be the final arbiter of the rules and make sure that everything is fair for the Players and their characters. Gamemasters can "fudge" dice rolls to obtain a result that is better for the story, but they should keep it to a minimum. Players need to feel that they have an impact on the action.

Gamemasters should also remember that roleplaying is more than just combat and dice-rolling. Whole sessions can be dedicated to character interaction, with the only dice-rolls being a few Human Perception checks. Even in a combat scenario, Gamemasters should rely on descriptions and characters to make the battle memorable, not on the roll of the dice. Players will be happier knowing that their friend Jan was thinking of his fiancée Lena when he was struck down by an assassin's bullet, than knowing that he got a 2 on his defense roll. Dice rolling can be fun, but don't forget to introduce views from the Characters' (as opposed to the Players') points of view.



Salvage Request 8064-6-207Eo
Date: May 6th, 2207
Location: Earth Orbit
Organization: BNL Orbital Salvage Ltd.
Source:Private Archives, Used With Permission

"BNL Control, this is crew fifteen. We've finally got the damn access panel off. Looks like the wiring is all fried. We'll have to get the heavy cutters to open the hatch and get inside. Not sure what happened to this freighter, but I'd guess it's been up here for a mighty long time. Escape pods were all jettisoned, so there's probably not anyone left aboard -- thank God we don't have to deal with that paperwork. Bring the ship up with the other M-Pods and the tug unit. I get the feeling this puppy may be worth bringing back with us."



▶ ACTIONS

6.1

There are three standard types of actions a character can attempt in a roleplaying game: automatic actions, possible actions, and impossible actions. Automatic actions (e.g. opening a door, walking on a sidewalk) will automatically succeed unless something complicates them, in which case they become possible actions. Possible actions are actions that could either fail or succeed (e.g. forcing open a locked door, walking on a tightrope). Impossible actions are those acts that are doomed to fail, often because they are logically impossible or just incredibly challenging (e.g. flying by flapping one's arms, breathing in a vacuum, finding a needle in a large haystack in one minute). It is the Gamemaster who must decide whether an action is automatic, possible, or impossible.

Automatic actions do not require Skill rolls. Possible actions require an action test: action tests consist of a modified die roll which is compared to either a Threshold value or an opponent's die roll. See *Silhouette Basics* (p. 54) for a detailed description of action tests. Impossible actions fail automatically.

▼ RUNNING ACTION TESTS

6.1.1

There are four different ways to run action tests in a campaign. The first way is to tell the Players what the action's Threshold is, have them make their own dice rolls and then report their Margins of Success or Failure. This method is the easiest but it lends itself to "roll"-playing instead of roleplaying, since it focuses much of the Players attention on dice and bookkeeping tasks. It also takes control away from the Gamemaster since the Players will expect him to abide by the dice results, even if it would mess up the story.

The second way to run action tests is to announce what Skill, Attribute, or Secondary Trait is being tested and then have the Players report their die totals. It is then up to the Gamemaster to compare the numbers reported to his chosen Threshold and describe the results to the Players. This method is a good compromise and allows the Gamemaster to have control over the game while giving Players the satisfaction of having been the ones who controlled (i.e. rolled the results of) their character's actions.

The third alternative is to tell the Players nothing in terms of game mechanics and have the Gamemaster perform the roll behind a screen. This method is generally inconvenient for most Gamemasters but it is very useful for performing perception tests, such as Notice, Combat Sense or Human Perception tests. Besides that, rolling dice every now and then while wearing a fiendish grin keeps Players on their toes.

The fourth alternative is for Players who prefer to dispense with dice altogether in favor of drama and plot development. The Gamemaster must simply make a judgment call, based upon the task complexity and the character's competence. No dice are ever rolled. This method is excellent for very simple and incredibly difficult situations. Advanced roleplayers, especially those who enjoy live action, are encouraged to use this method.

▼ SKILL TESTS

6.1.2

The roleplaying game, like the tactical game, relies on Skill tests to determine the outcome of most character actions. Unlike the tactical game, however, the number of possible actions and Skills required to perform them is virtually unlimited.

The *Skills* section of the *Character Design* chapter lists the official Skills. These are by no means the only possible ones, they are just a list of suggested Skills. If a Player comes up with a reasonable new Skill, and the Gamemaster agrees, it can be used in the game without any problem.

◇ WHAT IF I DON'T HAVE THAT SKILL?

Often, characters will need to accomplish a task in which they have no Skill. In these cases, two dice are rolled. The result is equal to the *lowest* of the two individual die rolls. If *either* of the two dice rolled a "1," a fumble occurs. If no fumble occurred, add the appropriate modifiers to obtain the final total roll.

If Emergency Dice are purchased using Experience Points (see *Character Improvement*, page 124), spending one XP will reduce the number of dice rolled to one. Spending two XPs will keep the number of dice rolled at two, but the roll is normal (i.e. the highest die result counts, two 6's = 7, both dice must roll "1" to fumble). Spending additional XPs will have no further effect.

▼ ATTRIBUTE, STRENGTH AND HEALTH TESTS

6.1.3

Some situations require innate, rather than learned abilities. In such cases, a Gamemaster should request that a player roll an Attribute, Strength or Health test. Attribute tests are fairly rare since many actions that involve an Attribute are really learned abilities. Attribute tests are used when a truly broad reflection of a character's abilities is required. For example, a Knowledge Attribute test is appropriate for recalling an obscure bit of trivia. An Appearance Attribute test could determine just how stunning a character looks on a particular day. Resisting torture might require a Willpower test. To perform an Attribute test, roll two dice and add the Attribute in question to the total.

▷ATTRIBUTE, STRENGTH AND HEALTH TESTS CONTINUED

Strength and Health tests are rolled in exactly the same manner as Attribute tests (roll two dice and add the Secondary Trait). These two types of action tests are much more common than Attribute tests. Strength tests are required for acts requiring sheer brute strength, such as lifting heavy objects, breaking through a closed door or bending metal bars; Thresholds can often be derived from the suggested weights listed on the Build table on page 64. Health tests, on the other hand, are required to resist drugs, illness, and shock, such as surviving a drug overdose or venomous snake bite, or staying conscious while in agony.

CHANCE TESTS ▼

6.1.4

Chance Tests are required when the result of an action is completely random. Simply roll two dice and add the character's Psyche Attribute. High results are favorable, low results are unfavorable — the Gamemaster decides upon the exact effect based on the situation. If appropriate, a "1" is a fumble. As with all dice rolls, Emergency Dice can be added to improve a character's odds.

end of section 6.1 actions

COMBAT ◀

6.2

Drama centers around conflict. In adventure stories, this conflict often manifests itself as open combat. Deplorable as it may be in real life, combat is one of the key elements of adventure. This is not to say that combat equals adventure: a game session that consists of little else but combat is simply an exercise in mindless slaughter. A well-placed fight, however, can spice up an adventurer's life by adding the element of risk.

In the roleplaying game, time is divided into 6-second combat rounds during combat. This can be slightly altered by the Gamemaster for dramatic purposes.

INITIATIVE ▼

6.2.1

Initiative determines who acts first in a combat round. To determine who gains initiative, all combatants roll a Combat Sense opposed Skill test. The Margin of Success is irrelevant in this case. The combatant with the highest result will act first. The next highest is second and so on. Those with tied results act simultaneously.

Any character who fumbles the test is confused for a moment by the panic and chaos of combat, and cannot begin to perform any action except duck — but he may continue any action that began in a previous round and requires more than a round (e.g. treating a wounded buddy). People without any kind of combat training or awareness, such as most civilians, tend not to have the Combat Sense Skill and will thus often "freeze" in dangerous situations.

The roll for initiative is repeated at the beginning of every combat round.

ACTIONS ▼

6.2.2

During a round, a character may perform two actions (for example, shoot a weapon twice) at no penalty. If the character chooses to perform yet more actions during the combat round (for example, drive a car and simultaneously shoot a gun twice at pursuers), *all* of his actions are penalized by -1 per extra action.

An action is defined as anything initiated by the Player which requires a Skill or Attribute roll. In short, anything that normally requires the character's full attention. The Gamemaster has final say as to what counts as an action — reloading a weapon might not require a Skill Test, but it is definitely an action.

MOVEMENT ▼

6.2.3

Many Gamemasters prefer to abstract movement for dramatic purposes, but some GMs and Players like to have precise numbers on hand. These individuals should assume that under normal circumstances, a character can sprint up to 25 meters per combat round plus 5 meters times the total of the character's Fitness Attribute and Athletics Skill level. A character's running, jogging, and walking speeds are equal to 2/3, 1/2, and 1/3 of his sprinting speed, respectively. No other actions may be taken while sprinting.

AVERAGE MOVEMENT RATES ◫

• Sprinting Move (m/round) = 25 + 5 x (Fitness + Athletics Skill)
• Running Speed = 2/3 Sprinting Speed
• Jogging Speed = 1/2 Sprinting Speed
• Walking Speed = 1/3 Sprinting Speed

▶ RANGED COMBAT

b.2.4

To attack a wary target, the attacker must defeat the defender in an opposed Skill test. The attacker rolls his Skill in the attack form being used (Small Arms, Heavy Weapons, Archery or Throwing). The defender rolls his Dodge Skill. If the attacker succeeds, the attack hits. If the defender wins or the result is a tie, the attack misses. If the attacker fumbles, the attack fails. If the defender fumbles, the attack succeeds unless the attacker also fumbled.

Attackers should add the appropriate modifier from the following list to their roll depending upon what range they are attacking from.

◫ ATTACKER RANGE MODIFIERS

Point blank range (≤3m)	+1
Short range	+0
Medium range	-1
Long range	-2
Extreme range	-3

▶ CLOSE COMBAT

b.2.5

To attack a wary opponent in close combat, the attacker must defeat the defender in an opposed Skill test. The attacker rolls his Skill in the attack form being used (Melee or Hand-to-Hand). The defender either rolls his Dodge Skill (to avoid being hit), Melee Skill (to parry with a weapon) or Hand-to-Hand Skill (for unarmed blocks). If the attacker wins, the attack hits the defender. If the defender wins or the result is a tie, the defender avoids the blow. If the attacker fumbles, the attack fails. If the defender fumbles, the attack succeeds unless the attacker also fumbled. If an unarmed defender blocks an armed melee attack, he suffers a -2 to his defense roll.

▶ SURPRISE ATTACKS

b.2.6

Attacking unwary targets requires the attacker to pass a standard (not opposed) Skill test with a Threshold number of 1 + defender's modifiers (like movement and cover). Unlike a normal attack, however, the attacker must roll the lower of two Skills: either his chosen attack Skill or his Stealth Skill. Untrained individuals tend to be noisy or otherwise mess up surprise attacks by alerting the victim at the last moment.

▶ ATTACKER'S ROLL

b.2.7

A character uses his relevant Skill — Hand-to-Hand or Melee for close combat, Archery, Small Arms or Throwing for ranged combat — and adds modifiers. The following modifiers apply to an attacker's roll to hit for both ranged and close combat.

◫ OFFENSIVE MODIFIERS

Attacker Movement	
Stationary	+0
Walking	-1
Jogging	-2
Running	-3
Intoxication*	
Mildly intoxicated	-1
Moderately intoxicated	-2
Heavily intoxicated	-3
Lighting	
Area is poorly lit (e.g. dim lighting, moonlight)	-1
Area is very poorly lit (e.g. candlelight, starlight, fog)	-2
Area is barely light (e.g. light of a single candle, dim indirect light, heavy fog)	-3
Area is completely dark	-4
Aiming	
Per round of aiming (max. bonus is equal to attacker's Skill level)	+1
Aiming at specific location, except head	-2
Aiming at head	-3
Weapon Accuracy Modifier	Varies according to weapon used. Refer to *Weapon Statistics* (page 96).

*Alternately, the Gamemaster may wish to apply the full rules for drug effects (see *Hazards*, page 119).

AIMING MODIFIERS ◇

A character can spend a few combat rounds aiming at a target to improve his odds to hit. Add one to the attacker's roll per combat round spent aiming, up to a maximum equal to the shooter's Skill level. The character may not move while aiming.

A character can aim at a specific body part (e.g. chest, leg, abdomen) of a target. A minus two (-2) modifier applies to all such attacks except head shots, which are penalized by minus three (-3). The victim's normal injury Thresholds are halved (but armor protecting that location is at full value) for all shots aimed at vital locations, such as the chest and head. Shots aimed at specific limbs are useful as non-fatal attacks. Burst fire attacks (see below) cannot be aimed at specific locations.

DEFENDER'S ROLL ▼

b.2.8

When defending, a character uses his relevant Skill — Dodge, Hand-to-Hand, or Melee — and adds modifiers. The following modifiers apply to the defender's roll to avoid being hit.

DEFENSIVE MODIFIERS ◫

Defender Movement	
Stationary	-1
Walking	+0
Jogging	+1
Running or sprinting	+2
Dodging (cumulative with movement)	+2
Cover	
Under light cover (shrubs, garbage cans, tall grass, thin walls)	+1
Completely hidden by light cover	+2
Under heavy cover (strong walls, rocks, large vehicles)	+3
Completely hidden by heavy cover	Automatic Success
Intoxication*	
Mildly intoxicated	-1
Moderately intoxicated	-2
Heavily intoxicated	-3

*Alternately, the Gamemaster may wish to apply the full rules for drug effects (see *Hazards*, page 119).

DODGING ▼

b.2.9

Characters always attempt to avoid injuries in combat. Sometimes, however, an all-out attempt to dodge is required. To dodge, a character must declare it at the beginning of the round (before the first character acts, even if this is out of his initiative sequence). The character cannot perform any actions other than move (up to his Running speed) and dodge.

A dodging character adds two to his defense rolls against all attacks that round, plus his movement modifiers. In addition, a dodging character gets a full defense against *all* attacks, including surprise attacks (it is effectively impossible to snipe at or properly ambush a person who is dodging). Surprise attacks against a dodging individual are rolled like normal attacks.

BURST FIRE ▼

b.2.10

Many weapons have a Rate of Fire bonus of +1 or greater. These weapons are called burst fire (or fully automatic) weapons because they can fire a hail of projectiles in short order. Burst fire weapons are assumed to be able to fire at any ROF bonus equal to or lower than their listed rating. Thus, a +3 ROF weapon could fire as a +3, +2, +1, or 0 ROF weapon. This is done to conserve ammunition since a weapon expends five shots per +1 of ROF in each attack — slightly unrealistic, but this is meant to simplify the bookkeeping. ROF 0 weapons expend one shot per attack.

Burst attacks usually consist of firing a tight burst towards a single opponent. If the attack succeeds, the ROF bonus of the weapon is added to the attack's Margin of Success.

WALKING FIRE ◇

Weapons capable of burst fire can be used to attack multiple targets in a single action by walking the burst across the targets. A player must declare that he is walking fire before any attacks are made. The player then chooses the targets of his attack. A number of targets equal to the weapon's ROF plus one may be attacked. For each extra target, the weapon's ROF is reduced by one for damage purposes (but not for ammo expenditure). All targets must be within the weapon's firing arc. Each separate attack is rolled separately. Each individual target may not be attacked more than once per round by the same weapon (no extra attacks against one target).

▼ THROWING

b.2.11

Throwing is the attack used to hurl items such as rocks or grenades. At least one free arm is required for throwing. If the object being thrown is larger than a quarter of the weight of the thrower, the other arm must be added to the effort. The base throwing range (in meters) is equal to the character's Strength +5 for objects weighting 1 kilogram or less. Each additional range band is double the previous one, as for a weapon. The maximum throwing distance for heavier objects is determined by dividing 40 meters (the standard maximum distance) by the weight in kg (rounded up). Recalculate the range bands accordingly, as long as the Short Range equals at least 1 (if not, the normal range modifiers are disregarded — count all throws as Short range). If the object is balancedfor throwing, double the range.

When an object is thrown, a Throwing Skill roll, modified as normal for range and movement, is made. If the modified die roll is equal to or higher than the defense roll, the object thrown lands right on target. If the dice roll fails, the shot will deviate from its intended destination by a number of meters equal to the Margin of Failure. For the direction of the deviation, roll a single die. A thrown item will have a personal Damage Multiplier equal to its weight in kilograms, plus the thrower's AD.

If the attack roll was fumbled, the shot deviates as normal, but towards the throwing unit. Sometimes, a fumble will land a projectile right on top of a target anyway. The attack is resolved as normal if the defense roll of the new target fails.

◇ GRENADE ATTACKS

Attacking with a grenade differs slightly than with other weapons; the grenade is thrown or shot near its target, and it detonates either on impact, after a short delay, or in the air (in the case of gas grenades). The Margin of Success of the original attack determines how much time there is between landing and detonation for the target to take cover or flee the grenade. Hand grenades are used with the Throwing Skill.

When attacking, a large Margin of Success signifies that the throw was dead on, and that detonation quickly followed impact; inversely, a low Margin of Success (or a failure) will mean that the throw was off mark, or that the grenade was thrown too soon after arming it, leaving enough time for the target to get out of harm's way. A Dodge roll is allowed to defend against grenades if the defender is aware of the attack.

Grenades usually have wide areas of effect; anyone deemed by the GM to be in this area must also defend against this attack or take damage from the grenade. Targets in the grenade's Secondary area of effect get a +1 to their defense roll because they have a little more time to react.

▼ INJURIES

b.2.12

If an attacker hits an opponent in combat, he does an amount of damage equal to his weapon's Damage Multiplier times his Margin of Success.

• Damage = Weapon Damage Multiplier x Margin of Success

This damage total is compared with the wounding scores of the victim. If the damage equals or surpasses any of the three scores, the effect of the highest score passed affects the victim. If an injury does damage less than the target's Flesh Wound Threshold, the target suffers a minor injury that is somewhat painful but has no game effects.

◇ ARMOR

Many people in high risk occupations, such as police and military personnel, wear body armor. Personal body armor is rated by its Armor Rating. That rating is added to all three of the character's wounding scores.

Shots aimed at locations that are not covered by a character's body armor are not affected by the Armor Rating. If a specific location is not declared, the Armor Rating of the victim's torso is used.

◇ ACTION PENALTIES

Severe injuries are very painful and crippling. These effects are simulated by the action penalty associated with injuries. Each injury applies a penalty to *all* Attribute, Secondary Trait, and Skill tests due to pain and trauma. This includes tests to resist degeneration of wounds and avoid unconsciousness. These action penalties also affect the First Aid/Medicine rolls of any medic who attempts to treat the character.

◇ FLESH WOUNDS

Flesh Wound is a catch-all term for painful but generally non-life- threatening injuries such as minor gunshot wounds, deep cuts, minor concussions, and other severe flesh wounds. Multiple Flesh Wounds can induce shock and are thus potentially life-threatening. Each Flesh Wound applies a -1 action penalty. Characters with Flesh Wounds cannot sprint but they can maintain a steady, if painful, jogging pace.

DEEP WOUNDS ◇

Deep Wounds are more severe injuries than Flesh Wounds. Compound fractures of major bones, punctured or crushed organs, damage to major blood vessels, and severe concussions are all classified as Deep Wounds. Deep Wounds can be immediately life-threatening (see below) and apply a -2 action penalty. Characters with a single Deep Wound can go no faster than a slow walk. Characters with more than one Deep Wounds are reduced to crawling and cannot stand unassisted.

KNOCKOUTS ▼

6.2.13

Anytime a character suffers a Wound (Flesh or Deep), he may be knocked unconscious from pain or cranial trauma. The character must pass a Health test versus a Threshold of 1 (remember those action penalties) to avoid unconsciousness. If the character fails the test, he will remain unconscious for 1d6 minutes per Flesh Wound plus 1d6 hours per Deep Wound. If the character fumbles the unconsciousness test, he slips into a coma. The GM should decide how long the coma will be based upon the character's injuries. Most comas are unpredictable in duration and severity and make excellent plot devices.

UNTREATED INJURIES ▼

6.2.14

Any major wound that is left untreated will, after a while, begin to fester and become infected. Untreated wounds (not stabilized by a medic) also cause additional blood loss and trauma. Degeneration is tested daily for Flesh Wounds and hourly for Deep Wounds, independently of each other. Multiple injuries of one type cause the time between the degeneration tests to be divided by the number of injuries of the appropriate type. For example, three untreated Flesh Wounds will cause a test once every (1 day = 24 hours; 24÷3) = 8 hours.

Degeneration tests are Health tests with a Threshold of 1. If the test is passed, the character's wounds do not worsen. If the test if failed, the character adds a new Flesh Wound to his injury list. If the test is fumbled, the character adds a new Deep Wound to his injury list (nasty bleeding or infection). These additional injuries can lead to the character's death (see below).

STABILIZING INJURIES ▼

6.2.15

To stabilize an injury, a medic must pass a First Aid Skill test with a Threshold of one. This test is modified by the victim's Health trait and the victim's action penalty due to injuries. Therefore, any medic attempting to stabilize his own injuries is penalized by his action penalty twice (once as a person in pain and once as the medic dealing with messy injuries). A successful roll stabilizes one injury (Deep Wounds usually are stabilized before Flesh Wounds). A failed roll accomplishes little and wastes five minutes. A fumbled roll wastes five minutes and aggravates the victims injuries, creating an additional Flesh Wound. One attempt to stabilize a single injury (one Flesh Wound or Deep Wound) may be made per 5 minutes.

Stabilized injuries do not degenerate, but they can be destabilized. Flesh Wounds are destabilized by any heavy activity (including combat). Deep Wounds become destabilized by anything greater than minimal activity (bedrest, feeding, bathroom, and little else). Destabilized wounds once again begin degenerating until they are stabilized again.

DEATH ▼

6.2.16

There are two ways a character can die in combat: instant kill or because of trauma. If a character receives damage that surpasses his Instant Death score, he is instantly dead. These injuries are those that are beyond the help of medical science (e.g. decapitation, skull utterly crushed, cut in half). The character cannot be resuscitated.

TRAUMA AND RESUSCITATION ◇

A character begins to die of trauma as soon as his injury action penalty is greater than or equal to his System Shock rating (Health +5, minimum of 1). The character can be resuscitated by modern medical techniques if he is reached soon after "death." The time between apparent death and irrevocable (non-resuscitable) death is equal to twice the character's System Shock rating plus the character's action penalty (a negative value) in minutes. If a character's action penalty plus twice his System Shock rating is less than or equal to zero, the trauma is too severe to save the character and he dies.

A resuscitation roll is conducted in the same manner as a stabilizing roll for injuries. Due to the large action penalty, it is very difficult to resuscitate a dying person unless one's character is a well-trained medic. If the roll succeeds, the victim is resuscitated and the medic gets one chance to stabilize one of the victim's injuries (most often a Deep Wound). If the roll is failed, the victim will die after the time limit is expired. If the roll is fumbled, the victim dies immediately.

If, after resuscitation and injury stabilization, the action penalty from the victim's non-stabilized wounds is below the victim's System Shock rating, the victim will live so long as he receives constant medical attention and his wound has not reopened (destabilized). If the action penalty from the victim's non-stabilized wounds is still greater than the victim's System Shock rating, the victim once again begins to go into shock and "die." The time until death is reset and the medic must once again resuscitate the victim and attempt to stabilize an injury. This process continues until the victim dies of his injuries or enough of his injuries are stabilized to allow him to live.

▼RECOVERY FROM INJURIES

With time, almost any individual injuries can be healed. Even missing limbs can be regrown, though the process is extremely painful and takes many weeks. Only one wound heals at a time; Flesh Wounds heal before Deep Wounds do. The resuscitation resting period (see *Constant Medical Aid* below) occurs before Flesh Wounds begin to heal. Comatose individuals heal normally, regardless of when they actually emerge from the coma. The rate of healing depends upon the availability of modern medical facilities: wounds heal faster with proper care.

◇WITH CONSTANT MEDICAL AID

To count as under constant medical aid, the healing process requires a properly staffed medical facility such as a hospital. The following healing rates assume that healing drugs such as Vitamax (page 83) are used. Flesh Wounds take three days to heal. Deep Wounds take two weeks to heal. Resuscitated individuals must spend one week recovering from the shock and trauma of resuscitation before their injuries begin to heal. Comatose individuals can survive on life support until they die of old age.

◇WITHOUT CONSTANT MEDICAL AID

If only minimal care is applied to the wound, such as a splint or bandage, the body is basically left to heal by itself. Flesh Wounds take one week to heal. Deep Wounds take one month to heal and inflict a penalty of -1 to physical actions until the wounded person can get proper rehabilitation treatments. Both types of Wounds will cause pain for several weeks after healing. Resuscitated individuals and those in long comas (over a week) will die without medical aid.

▶HAZARDS

Combat is far from the only threat characters face. This section examines some of the more common hazards of life, both planet-side and in space. The rules introduced here are intended to spice up the game. Gamemasters should feel free, however, to disregard them if they feel their use would slow down play too much, or if detailed effects are simply not needed. This is especially true of Cinematic games (see *Campaign Style*, page 223).

▼ATMOSPHERE

The contents and pressure of the artificial atmosphere present in all habitable areas are crucial in space — if either is improperly monitored and controlled, severe wounds or even death will result. Even if there is breathable atmosphere present, waste gases may take the place of oxygen in the bloodstream and damage sensitive organs.

Obviously, lack of oxygen is detrimental to human life. There can be several causes of oxygen deficiency: an excess of carbon dioxide in the atmoshpere, defective air reserve or decompression. If the air supply is compromized, characters suffer as their bodies try to make do with insuficient resources.

◇OXYGEN

If the atmosphere degrades due to lack of clean air, characters will suffer from physical and mental penalties. Penalties start ten minutes after fresh oxygen is last supplied. Characters have a -1 to all mental Attributes (CRE, INF, KNO, PER, PSY, WIL) as their concentration decreases due to lack of oxygen. All mental Attributes drop at a rate of -1 per two minutes. All characters in the location must make a Fitness roll against a Threshold of four to avoid unconsciousness, with a penalty equal to the mental Attribute penalty. Twenty minutes after fresh oxygen is last introduced, the character loses consciousness and a random mental Attribute then drops by one every minute. If any Attribute reaches -5, the character dies.

This rule assumes a normal oxygen content of 20%. If the oxygen content of the air is higher or lower, the durations are multiplied accordingly (e.g. twice as much oxygen means Attributes drop every four minutes instead of every two).

◇PRESSURE

A loss of pressure means that although the atmosphere has the proper oxygen content, there is not enough of it or at least not enough ambient pressure to force the oxygen into the bloodstream. Loss of pressure can come from several sources; a faulty regulator or a leak or hole in the hull of the spacecraft.

The Atmosphere Loss table shows the average amount of time it takes for the pressure to completely degrade in a given location. At each stage of decompression (three-quarter pressure, half, quarter) all characters in the location must make a Fitness roll to avoid unconsciousness, with a penalty of -1 to the roll for each level of degradation. They also suffer from the effect, of lack of oxygen (-1 to all Mental Attributes per stage).

If the pressure drops to a quarter normal or less, the character suffers the same effects as if there were no oxygen, according to the *Oxygen* section.

ATMOSPHERE LOSS ◫

Hole/Location	Airlock	Room	Hangar	Colony
Leak-Sized	1 day	4 days	12 days	300 years
Fist-Sized	2 turns	8 turns	24 turns	100 years
Man-Sized	1 turn	4 turns	12 turns	20 years
Vehicle-Sized	Instant	2 turns	8 turns	1 day
Ship-Sized	Instant	Instant	1 turn	1 hour

Hole is the approximate size of the air evacuation duct or hole;

Location is the approximate comparative volume of the pressurized area.

DRUGS AND TOXINS ▼

Drugs and toxins are rated with three Attributes: Potency, Effect and Onset Time. The Potency is the Threshold for the victim's Health test to resist the drug's effects entirely. The Effect represents the symptoms that a character who fails to resist the toxin will exhibit. The Onset Time is the longest period the toxin will require to take effect. The actual time until the effect occurs is equal to the Onset Time divided by the Margin of Failure of the Health test. Fumbled Health tests produce an onset time equal to one-tenth the normal value.

FATAL TOXINS ◇

Fatal toxins induce damage and often death if their Potency is high enough. A fatal toxin does a number of damage points equal to its Potency times the Margin of Failure of the victim's Health test. Fatal toxins usually range between Potency 7 and 20 and often have Onset Times that are under one minute. Injuries induced by fatal toxins represent diffuse tissue damage caused by these chemicals. Fumbled Health tests are automatically fatal.

SEDATIVES ◇

Sedatives normally induce drowsiness and unconsciousness. Anyone whose Margin of Failure is between 1 and 4 will suffer a negative action modifier similar to the action penalty induced by injuries. The modifier will decrease by one per hour until it is gone. This modifier does not count in determining death by trauma, wound degeneration or stabilizing injuries, but it does affect Health rolls for knock-outs.

A character whose Margin of Failure is between 5 and 9 will be knocked unconscious for a number of minutes equal to the potency of the tranquilizer times the amount the roll was failed by. Once he awakens, he then suffers the same effects as a victim who failed the roll by 4 points (i.e. the action penalty of -4).

A character who fails his Health test by 10 points or more will overdose and take damage as if he had been affected by a fatal toxin of a Potency five points below the actual Potency of the tranquilizer. A character who fumbles his Health test will overdose and die within seconds of onset.

HALLUCINOGENS ◇

Hallucinogenic toxins cause a victim to suffer altered perceptions which are often accompanied by strange emotional states. In terms of game mechanics, their effects are similar to sedatives except that the action penalties incurred are due to distorted perceptions and beliefs. Hallucinogens tend to be harder to overdose on. A Health test failed by 5 to 14 points will cause the victim to be incapacitated by massive hallucinogenic experiences (trips) for a duration similar to the unconsciousness induced by tranquilizers.

A Health test failed by 15 of more points will induce a fatal effect like a tranquilizer. The damage inflicted is equal to the hallucinogen's Potency minus ten, multiplied by the amount the Health test is failed by. A fumbled Health roll has the same effect as a Health test failed by 14 points.

EUPHORICS ◇

Euphorics induce a feeling of well-being and contentment. Euphorics produce identical game effects to hallucinogens, but they are vastly different in roleplaying terms. A hallucinating character perceives non-existing experiences while a euphoric character is simply very, very happy. Too happy, in fact, to concentrate on anything very well, hence the action penalty or incapacitation.

◇ STIMULANTS

Stimulants cause a feeling of excitation and anxiety. Anyone whose Margin of Failure is between 1 and 4 will gain a bonus to initiative equal to the Margin of Failure. The modifier will decrease by one per hour until it is gone. The character will have difficulty falling asleep.

A character whose Margin of Failure is between 5 and 9 will gain a bonus to initiative equal to ten, minus the Margin of Failure. The modifier will increase by one per hour until it reaches 5, after which it will decrease at a rate of one per hour until it is gone. Falling asleep is nearly impossible until the drug's effects have worn off.

A character failing his Health test by 10 points or more will overdose and take damage as if affected by a fatal toxin of a Potency five points below the actual Potency of the stimulant.

◇ ANALGESICS

Analgesic drugs numb pain. For every point of the Margin of Failure of the victim's Health test to resist the effects of the drug, one point of action penalty can be ignored. This effect decreases by one per hour until it is gone. A fumbled Health test indicates that the analgesic failed to help reduce the pain.

If the Margin of Failure is greater than twice the character's System Shock trait, the character goes into a coma for a number of weeks equal to the roll of one die.

◇ MULTIPLE EFFECTS

Many drugs have multiple effects. Such drugs have a single Potency rating and Onset Time and only one Health test is made when they are used on an individual. The effects of each drug type are applied to the user according to the Margin of Failure of the Health test.

◇ MULTIPLE DOSES

The rules above assume that the victim was given a single dose of toxin. For each extra dose, add 10% to the Potency of the toxin (round off). Divide the Onset Time by the number of doses administered.

▼ ELECTRICITY

Electricity is perhaps the most fickle, deadly force harnessed by mankind. Its effects on the human body are partially unpredictable. People can die from 110 volt household current, but one man in Virginia was struck by lightning seven times and lived to tell the tale.

Like fires (see next page), electrical sources are rated by Intensities. The following is a table of sample Intensities.

◫ ELECTRICAL INTENSITIES

Intensity	Electrical Source
1	licking a 9 volt battery
3	car battery
5	110 volt domestic current (North America)
7	220 volt domestic current (Europe)
10	local power lines, industrial lines
20	power mains
25	minor lightning strike
50	large lightning discharges
100	hydroelectric dam generator

◇ WOUND EFFECTS

If a character is exposed to electricity for a full combat round, he will receive damage equal to the Intensity rating multiplied by the result of a die (two dice if the reality level of the campaign is Gritty — see page 223). If the time of exposure is less than one combat round, the Intensity is halved (round down) unless the shock is from an electricity-based weapon (e.g. a taser or particle beam). A fumbled roll does no electrical damage.

Electricity not only does raw physical damage, but also messes up a victim's nerves and muscles. Any character who receives a Flesh Wound will suffer from neuromuscular paralysis: the character's muscles clench up and he twitches oddly, preventing him from letting go. The paralysis will continue until the source of the electrical shock is removed. Any character who receives a Deep Wound also suffers from neuromuscular paralysis and has a chance of suffering a heart attack.

▷ WOUND EFFECTS CONTINUED

The character must pass a Health test where the Threshold is the electrical source's Intensity. A successful or tied test indicates no additional effects beyond damage and neuromuscular paralysis. A test failed by 1 to 4 points indicates that the character is automatically knocked unconscious from the shock (in addition to the normal knock-out roll). A test failed by 5 or more points will cause the character to slip into a coma. Both knock-outs and comas are described in the *Combat* section, page 117. A fumbled roll results in an instant and grotesque death as the character's neurons fry and he enters cardiac arrest. No resuscitation attempts will revive the character.

Electricity can also ignite objects. To see if an electrical discharge ignites an object, roll for ignition as if a fire of one-fifth (round down) the discharge's Intensity was being used to ignite it (see *Fire*, page 122).

FALLS ▼

6.3.4

Whenever a character falls from a great height, it is likely that he will suffer severe wounds or die. A number of dice equal to the number of meters fallen (maximum of 10 dice) are rolled and the result multiplied by the number of meters fallen (up to a maximum of x30). The damage is multiplied by the local gravity (in g). This is the damage taken by the individual. If the falling person was purposefully dropped in a manner that would cause him to impact head first, ten is added to the die roll.

SOFTENING IMPACT ◇

A conscious person who is falling may attempt to soften the impact of landing. To do so, the character must roll an Athletics Skill roll. The number rolled is subtracted from the number of meters fallen for the purpose of damage calculations. If the number rolled is equal to or greater than the actual number of meters fallen, the person lands unharmed. If the roll fumbles, the person falls head first and takes the associated extra damage (+10 to the die roll).

IMPACT SURFACES ◇

Base falling damage assumes that a moderately solid surface such as grassy soil will be the surface fallen onto. Unusually hard surfaces such as concrete and asphalt can double the effective number of meters fallen for damage purposes. Soft surfaces such as sand and water halve the effective number of meters fallen for damage purposes. Special crash pads and nets used by firemen for evacuating buildings can divide the number of meters fallen for damage purposes by up to ten to twenty times (Gamemaster's decision).

FIRE ▼

6.3.5

Fire is one of the most powerful and destructive tools of humanity. A fire is rated by an Intensity rating which combines both its size and temperature. The following is a list of sample Intensities for fires.

FIRE INTENSITY ◫

Intensity	Source of Flame
1	candle, lighter, or match
2	gas light, oil lamp, kindling
3	torch, gas range
5	campfire, bunsen burner, flare, acetylene torch
7	bonfire, napalm, incendiary grenade
10	inferno, chemical fire
20	periphery of nuclear strike*, fuel-air grenade
100	near a nuclear strike*, reactor meltdown*
1000	ground zero of a nuclear strike*

* These are only ratings of heat intensity from nuclear attacks and do not include concussive and radiation effects.

WOUND EFFECTS ◇

If a character is exposed to a fire for a full combat round, he will receive damage equal to the Intensity rating multiplied by the highest of two dice. If the time of exposure is less than one combat round, the Intensity rating is halved unless the fire is from a flame-based weapon. A fumbled roll does damage equal to half the Intensity rating.

If a character receives a Deep Wound from a flame-based attack, the character is incapacitated due to searing pain for a number of rounds equal to the throw of one die. During this time, he can do little more than run about randomly or thrash in agony.

◇ ADHESIVE INCENDIARIES

Some flammable agents like napalm or petroleum fuels tend to coat whatever they strike and burn for extended periods. These agents should be rated with a Burn Duration value. This value is the number of combat rounds they will continue to burn unless doused prematurely.

◇ IGNITING FIRES

Fire tends to ignite things it touches, including the nearby scenery and characters' clothes and hair. Every item can be assigned a Flammability rating if needed. To see if a flame ignites an object, two dice are rolled and the fire's Intensity rating is added (the Intensity is halved if exposure is less than one round). If this value equals or surpasses the object's Flammability rating, it will ignite. Fumbled rolls never result in ignition. Check for ignition for every round of exposure, unless it is obvious the item will burn. Lighting a match in a propane-filled atmosphere will ignite it — there is no need to waste time by rolling dice. This rule should be used only for moments where precision is required. Most of the time, common sense will be more than enough (and much faster, too).

The Gamemaster should assign Intensities to the newly created fires, based on the type(s) of material burning. Light clothes burn at Intensity 4, medium clothes at Intensity 5, heavy clothes at Intensity 6, human hair at Intensity 5, and animal fur at Intensity 6. These items have Burn Durations equal to their Intensity times the roll of one die if no attempts are made to extinguish the flames.

If attempts are made to extinguish the flames (e.g. rolling on the ground), they will be extinguished in a number of rounds equal to the roll of one die. Certain strong attempts to extinguish the flames (e.g. jumping in water, dousing with fire-retarding foam, exposition to vacuum) will immediately extinguish the flames.

◫ FLAMMABILITY RATINGS

Flammability	Object Type
1	propane, natural gas, hydrogen gas, methane gas
3	liquid gasoline
4	paper, pitch, crude oil
6	normal clothing, rugs, upholstered furniture
7	dry firewood
8	hair, fur
9	fresh cut or treated wood, most plastics, leather
12	magnesium flares
15	fire retarding clothing
50-200	most "non-flammable" objects like steel and concrete

◇ VEHICLES AND FIRE

Vehicles crossing burning terrain must pass a Piloting Skill Test versus a Threshold equal to one-half of the fire's Intensity to pass safely. If the vehicle's pilot fails the roll, the result is treated as a successful incendiary attack versus the vehicle, with the Margin of Failure of the Skill Test being used to calculate the damage.

▼ RADIATION

In space, radiation is always a concern — vehicles are equipped with screen generators and space stations and colonies incorporate heavy shielding within their hull. Many phenomenons, natural or made-made, produce radiation, but only in certain situations is the amount large enough to cause damage (screen failure, etc.). Radiation poisoning is usually severe, though it may take a few days for the full effects to be felt.

The unit used to measure radiation is the rad. Absorbed rads remain in living tissues and material and are cumulative: if the radiation rules are used, a tally should be kept of the character's current rad level. Every full week, a character can purge a number of rads equal to a standard Health roll, provided he was not further exposed to radiation. Rads can never be purged quite entirely: a character will always retain a number of rads equal to one-tenth the largest number of rads ever accumulated (obviously, this can only increase with time).

Radiation suits and shielded vehicles (those with the Hostile Environment Protection: Radiation Perk) are given a protection factor in rads per hour. This value is divided by 60 to get the protection value in rads per minute. This amount is subtracted from individual radiation bursts or rad rates as appropriate (see table next page). Non-shielded vehicles also provide a minimum amount of protection, equal to their Armor squared in millirads per minutes (0.001 rad per minute). Buildings and natural formations such as rock follow the same formula but double their Structure points before squaring them.

RAD CONTAMINATION VALUES

Source	Intensity
Background cosmic rays (including occasional heavy primaries)	0.005 rads/hour
Fallout at ground zero, 1-megaton ground burst	
after 1 hour	5 rads/minute
after 2 hours	2 rads/minute
after 6 hours	30 rads/hour
after 1 day	7 rads/hour
Nuclear reactor meltdown	1d6 x 10 rads/minute
Solar flare	1d6 x 5 rads/minute

RADIATION EFFECTS ◇

When a character's accumulated rads exceeds 50, or at any time the character receives at least 1 rad thereafter, the GM secretly rolls the character's Health against a Threshold from the Irradiation Table. The GM should only roll once per day or outburst at the highest level, and describe symptoms as they manifest themselves.

If the roll succeeds, the character is unaffected by the radiation, though the accumulated rads remain. On a fumbled roll, apply the effect indicated by the table, then normal failure effects (see below). Make a second Health roll in the case of a fumble to show the number of minutes before the effect takes place.

IRRADIATION TABLE

Rads	Threshold	Fumble Effect
50-99	4	None
100-199	5	Flesh Wound
200-299	6	Flesh Wound
300-399	7	Flesh Wound
400-499	8	Flesh Wound
500-599	9	Deep Wound
600-699	10	Deep Wound
700-799	11	Deep Wound
800-899	12	Deep + Flesh Wounds
900-999	13	Deep + Flesh Wounds
1000-1099	14	Death
1100+	15	Death

SHORT-TERM EFFECTS ◇

A roll failed by 1 to 4 produces mild radiation sickness. Symptoms appear in a number of hours equal to the result of a second Health roll. The character will feel fatigued and nauseous and suffer an action penalty equal to the MoF. This penalty decreases at the rate of one every 12 hours.

A Margin of Failure between 5 and 7 causes effects as a MoF 4. Secondary symptoms appear after a number of days equal to a second Health roll. These include lingering fatigue, muscle pain and loss of hair. The character suffers -1 to all rolls, except Health rolls which are at -2. A daily Health roll against a Threshold of 4 is needed to recover. Success means the character recovers in a number of days equal to 10 minus his System Shock, while a fumble inflicts a Flesh Wound.

A Margin of Failure of 8 or 9 suffers a general action penalty of -2, -3 for Health rolls. A failure on the recovery roll will inflict a Flesh Wound (Deep Wound in the case of a fumble).

A roll failed by 10 to 14 incurs an action penalty of -3, -4 for Health rolls. A failed recovery roll delivers a Deep Wound, and a fumble means the character dies. On a successful result, roll again, but without penalties: a second success allows the character miraculous recovery.

A roll failed by 15 or more kills the character in a number of hours equal to a Health roll.

TREATING RADIATION SICKNESS ◇

If the character can get to a radiation treatment center, he or she receives a +2 bonus on the recovery roll (plus any medical equipment bonus). The accumulated rads are purged four times faster than normal.

▶ CHARACTER IMPROVEMENT

6.4

One of the first rewards of roleplaying is character improvement. As they learn new Skills and abilities, and grow through the trials they face in their lives, the characters' Attributes and other characteristics will rise accordingly. They will also learn new tricks and become more cunning, thus improving their chances of getting out of trouble. Simply put, experienced adventurers are better than greenhorns. In the Silhouette game system, the characters' life experience is recorded in the form of abstract Experience Points (XPs).

▼ EARNING XPS

6.4.1

Experience Points are awarded by the Gamemaster at the end of each playing session. His decision is final. Some players also like to judge each other's performances and give additional "audience merit points," but this requires fair and honest players to avoid self-congratulatory excesses. In general, no more than 5 XPs should be awarded for each session per character (10 for Cinematic Campaigns). Some Gamemasters use the distribution of Experience Points as the stick and carrot to control their players, but this is generally a bad idea. It is likely to cause dissent among the group.

If a player showed little interest in the game or did not participate in the action, the Gamemaster should award no XPs. A player who gave a good effort, but did nothing more exceptional than show up for the game is awarded 1 XP; if the character got really involved, the player should be awarded 2 XPs. A player who always stayed in character and showed genuine enthusiasm is awarded 3 XPs. Particularly dramatic or daring acts of self-sacrifice (where there is a REAL risk that the character could die) should also be rewarded with additional XPs, as do deep sub-plot involvement.

A typical roleplaying session lasts approximately three or four hours. A Gamemaster may wish to reduce or increase the amount of XPs if the session is significantly shorter or longer, respectively.

▼ SPENDING XPS

6.4.2

A character can stockpile XPs if he wishes, but most players will wish to spend theirs, either to improve their characters or to press their luck. There are two ways to spend XPs: buying the life-saving Emergency Dice or improving either the characters' Attributes or Skills.

Experienced roleplayers will notice that character abilities progress rather slowly. The reason for this is simple: Skills levels of 3 or more are very powerful. Most of a character's core occupational Skills should be level 2. Secondary occupational Skills and hobby Skills should be level 1. If a character has level 3 in a "hobby" Skill, it is more than a hobby: it is a way of life!

◇ EMERGENCY DICE

Everyone gets a certain number of lucky breaks in life. To represent these lucky breaks, any or all XPs can be converted to Emergency Dice, which are then spent to boost crucial die rolls. Each XP spent buys one Emergency Die. When spent, these are added to the dice already available for the roll. Unless the Gamemaster disagrees, up to five Emergency Dice may be spent on any single roll.

Emergency Dice can also be spent to save a character's life when his vehicle is Overkilled. Rather than use the normal ejection procedure outlined on page 159, the player can opt to spend 5 Emergency Dice and escape automatically with no damage. No roll is involved — just erase the Emergency Dice from the character's total.

Emergency Dice are most often used in Cinematic Games. For this reason, Gamemasters of Cinematic Campaigns usually will give more XPs than usual (see above). They can also directly give Emergency Dice to the players, in addition to the Experience Points.

◇ ATTRIBUTE IMPROVEMENT

Improving the character's Attributes is possible but very costly in Experience Points to reflect the time and deep commitment required. Raising one Attribute by one point costs 20 XPs. The exception to this rule is the Build (BLD) Attribute, which costs 40 XPs per point of improvement (not to mention the increased grocery bills). An Attribute cannot be increased more than three times in this manner, although multiple Attributes can be increased up to three times each. Beyond the purely rule-oriented issues, the player should also come up with detailed background information on the process — perhaps his character spends his free nights at the gym or the library?

◇ SKILL IMPROVEMENT

Skills are much easier to improve than Attributes — all that is required is patience and regular practice sessions. The base cost to improve a Simple Skill by one level is the next level squared, in XPs. New Simple Skills cost one XP to gain at level one. Complex Skills cost twice the XPs of Simple Skills (thus a new Complex Skill, purchased at level one, would cost 2 XPs). Skills are improved one level at a time; levels cannot be skipped in order to save XPs. All new Skills must be purchased at level one first; it is recommended that the player develops a background element about how he acquired the Skill.

SKILL IMPROVEMENT COSTS

Level	Simple	Complex
1	1	2
2	4	8
3	9	18
4	16	36
5	25	50
6	36	72
7	49	98
8	64	128

TUTORS

Tutors can be of great assistance to characters wishing to improve their abilities. Anyone who has a Skill level greater than the Skill level of the character wishing to improve can serve as a tutor. Only those possessing the Teaching Skill or a high level of Skill will really make a difference, however. Unless the tutor is another PC, it is likely that the tutor will have to be hired, often for a high fee. The suggested cost for one course is the tutor's Skill level squared, multiplied by 1000 credits — but finding such a tutor may not always be easy, especially with high level ones. Multiple students may split the costs between them, though the maximum number of students taught in one session or class normally goes down as the level of the Skill learned goes up.

A tutor can reduce the XP cost of learning or improving a Skill. A character can attempt to find a tutor and spend a period of time learning under his guidance. The period of time is a number of months equal to the XP cost of learning the Skill minus the higher of either the level of the tutor's Teaching Skill or half the level of the skill being learned (rounded up). A minimum of one week is required for the student to gain any benefits from the tutor's teaching.

It should be noted that the months referred to above are 150-hour learning periods (about 40 hours per week). In a boot camp-like environment, two of these 150-hour "months" could be squeezed into one real month. This sort of environment is highly oppressive — a Willpower or Psyche check against the Skill level being taught should be rolled every month to prevent nervous breakdown. Few individuals willingly choose to undergo training of such intensity. Alternatively, the learning period could be spread over a longer period. A minimum of one hour per week must be maintained to gain any benefit to the character. University courses would typically spread a tutor's teaching into three or six-hour courses every week.

Once the period of tutelage is finished, the tutor makes a Skill roll. This Skill roll uses either the Teaching Skill or the Skill being taught, whichever is highest. This is modified by the Creativity Attribute of the tutor and the Skill-related Attribute of the student. Half of the final modified die roll is the number of XP points that are subtracted from the cost of learning the Skill. If the roll is fumbled, the cost of learning the Skill is doubled due to the confusion induced by the tutor's poor guidance. The cost of learning the Skill cannot be reduced below a minimal XP cost which is equal to the new level of the Skill. One exception to this rule exists: if the original cost of learning the Skill was only one XP (a level one, simple Skill) and the tutor rolled a six or more on his roll, the student receives the first level Skill at no XP cost.

The effects of a tutor's teaching stay with a student until a) the student gains a new level in the taught Skill or b) a new tutor attempts to teach the student. If the student gets a new tutor, this tutor will have an effect under only two conditions. If he obtains a more beneficial reduction than the previous tutor, apply the new reduction in its place. If the new tutor fumbles, the student's previously reduced cost of improvement is doubled and no further attempts at tutoring will have effect until the student gains a level in the Skill through experience.

MENTORS AND TEACHERS

Tutors make excellent Gamemaster characters. They run the gamut from the tough drill sergeant who gets the rookies up every morning with a yell loud enough to wake the dead, to the patient old scientist showing the intricacies of a complex molecule to his best students. And of course, one must not forget what is perhaps the best-known tutor character of all, the gruffy veteran pilot. He'll take the Player Characters under his wing and teach them all he knows, then generally get killed in mid-game so they can become full-fledged heroes in their own right.

Gamemasters should be careful not to make teachers endless reserves of Experience Point discounts. Not everyone who knows something whishes to pass it on. PCs need to understand that they must respect their teachers. They should bring as much to the relationship as the tutor does. Monetary compensation is one option (say in the case of a professional instructor), but a sense of personal obligation is much more interesting. Students should expect to have to do services for their instructors, be it an apprentice merchant doing menial work aboard a freighter or a brash pilot following his grizzled wing leader off onto a mission to bring a pirate to justice. Tutors can also become memorable villains. A classic story idea — hence one rife for pilfering for your campaign — is to be betrayed by a mentor. This can lead to epic stories as Player Characters go out of their way to track down the person who betrayed their trust and made a mockery of their affection.

▶ OPTIONAL ABSTRACT VEHICLE RULES

6.5

We hope that Players and Gamemasters will enjoy using the tactical rules for vehicle combat. Some roleplayers, however, dislike tactical games and prefer to avoid them if at all possible. This section offers them an alternative rule system for vehicles that does not require special maps or detailed record sheets. For the most part, abstract vehicles follow much the same rules as characters do.

▼ MOVEMENT AND DRIVING STUNTS

6.5.1

Each vehicle has its Combat and Top speeds (or its Thrust ratings, if a space vehicle) listed in its statistics. These can be used to determine how far a vehicle can go in a given turn and whether or not it can outrun/reach other vehicles. In general, vehicles use their Combat speed value (or Thrust value) to move about.

A vehicle which moved up to its full Combat Speed can accelerate and shift to Top Speed for the next round. The Player should declare this after moving. The vehicle then uses the Top Speed modifiers for attack and defense for the rest of the combat round. In subsequent combat rounds, the vehicle may move faster than its Combat Speed, right up to its Top Speed. It may return to Combat Speed after any movement.

Some vehicles have multiple movement systems, such as walking and rolling. A vehicle may only switch movement types while at Combat Speed, not Top Speed, but movement types may be switched only once per combat round.

There are so many types of driving and piloting stunts possible that it would be futile to list them all. The Gamemaster should select a Threshold based on the action attempted — a bootlegger turn at 120 kph is a lot harder to do than a U-turn at 10 kph. Whatever the action attempted, the vehicle's Maneuver is applied as a modifier on all Piloting/Driving tests.

▼ SENSORS

6.5.2

Active sensors can be used to find something even when visual or passive sensors do not register anything. To activate sensors (provided the vehicle has any), the Player should make an Electronic Warfare Skill Test, modified by the vehicle's Sensor rating. The Gamemaster should decide on a Threshold, based on how well the target is hidden; add any applicable modifier (see the table on page 151). The target must be within the vehicle's sensor range. A success gives the Player the position of the target. Active sensor sweeps require a full action to complete.

▼ ATTACKING AND DEFENDING

6.5.3

Vehicle-based attacks are rolled using the Gunnery Skill. The vehicle's Fire Control and the weapon's Accuracy are applied as modifiers to the attack roll. Vehicle-based attacks automatically suffer a -2 modifier to hit man-sized targets unless their weapons have the Anti-Infantry characteristic. Vehicles may only target opponents that are within their weapons' firing arcs.

Vehicles dodge attacks using their appropriate Pilot/Drive Skill. The vehicle's Maneuver score applies as a modifier to the vehicle's defense roll.

◇ VEHICLE SCALE WEAPONS

Vehicle-scale weapons use a different damage level than personal-scale weapons. When a vehicle fires on a human, convert the vehicle's weapon damage to personal scale by multiplying the Damage Multiplier by 10. Vehicular weapons' range bands are given in hexes, so they should be multiplied by a factor equal to the dimension of the hex (either 50, 250 or 500) to get the range in meters. This conversion, while not entirely accurate — since weapon Damage Multipliers grow exponentially — serves its purpose well enough.

▼ DAMAGING VEHICLES

6.5.4

The use of the standard damage system from the tactical rules is highly recommended. If the Players truly loathe tactical games, however, the Gamemaster can use the following simplified damage system.

Vehicles follow the same general rules as characters. When fired upon, the total damage points are compared to the Armor Thresholds to determine what level of damage occurred. The vehicle suffers action penalties, just like a character, when it suffers "Flesh Wounds" or "Deep Wounds" and is destroyed if it suffers an "Instant Kill" result. Vehicles can't wear Armor, unlike characters, because they are already armor-plated. Movement damage applies as for characters (see page XX), with jogging being equal to Combat speed and a slow walk being equal to half Combat speed. Vehicles are disabled if their total action penalties are equal to -5 or worse.

Vehicles are much tougher than people, and as a result, are harder to damage. If a character fires on a vehicle, count its Armor as ten times higher (for example, an Armor 5 counts as 50 versus man-size weapons). On the other hand, if a vehicle fires on a character, the damage is multiplied by ten (so a x8 autocannon would do x80 damage on a character).

INTEGRATION WITH THE TACTICAL SYSTEM ◄

6.6

Many roleplayers find an occasional tactical game to be a welcome change of pace. **Silhouette** offers roleplayers this opportunity while using the tactical game to further the roleplaying game. This is done by integrating the roleplaying system and the tactical system.

The integrated system is intended to offer the best of both worlds. While the PCs are not engaged in vehicle combat, the roleplaying rules apply in their entirety. If and when the PCs engage opponents in vehicle based combat, set up a tactical battle. The GM controls the opponents, but this not only means that the GM moves them about the battlefield. This is still a roleplaying game, after all. Opponents controlled by the GM will make rational decisions about when to attack, negotiate, withdraw, or surrender. Characters can goad or insult each other. The GM should remember that ambiance and roleplaying are still important, even if the battle is unfolding in a more structured manner than a normal RPG combat.

As mentioned before, personal Damage Multipliers and vehicle Damage Multipliers have a 10 to 1 scale. In other words, every 10 points RPG damage equals one point of vehicular damage. The ranges of RPG scale weapons are in meters, while vehicular weapon ranges are given in hexes. Thus, RPG weapon ranges are divided to yield their range in tactical scale hexes (see previous page). Round down to the nearest whole number.

CHARACTERS AS DRIVERS AND PILOTS ▼

6.6.1

When a character pilots or drives a vehicle, his Pilot/Drive (depending on the vehicle type) is the Skill used. If firing weapons or operating electronic systems, the corresponding Skills (Gunnery — specific vehicle — and Electronic Warfare) are used. Likewise, Leadership and Tactics transfer directly to the tactical system.

The character's Attributes are applied to his Skill rolls as normal. Gamemasters should remember that enemy NPCs also have Attributes added to their Skill rolls.

TACTICAL/RPG CREW INJURIES ▼

6.6.2

When playing combined tactical/roleplaying scenarios, the wounds suffered by the crew may be transferred from tactical to roleplaying and vice-versa. Due to the additional level of detail (and thus complexity) involved, this method should be used for Player Characters only.

Whenever a vehicle takes a Light Damage "Crew" result, each crewmember must make a Health roll versus a Threshold equal to 4. If the roll fails, the crewmember lapses into unconsciousness and is no longer counted when determining how many actions can be spent. He may roll at the beginning of each round to regain consciousness.

If the vehicle receives a Heavy Damage "Crew" result, each crewmember must make a Health roll versus the Margin of Success of the attack. If it fails by 1 or 2 points, the crewmember takes one Flesh wound; if it fails by 3 or more, he takes a Deep Wound. All crewmembers must also test for consciousness, just as for Light Damage.

Overkilling a vehicle generally means some messy damage to the crew compartment, even if it is not the part being hit. Each crewmember must roll for ejection, even if not actually ejecting (see *Ejection*, page 159). Because this can be quite costly in Player Characters' lives, the Gamemaster is advised to let them walk away from one Overkill per game but restrain from giving the PCs any XPs at the end of the session.

In the case of large, multiple-man crews, it is often best to average the above tests in groups of four, rounded to the nearest whole number, or ignore them completely and apply the results in the damage table as they stand.

HIDDEN UNITS ▼

6.6.3

One of the advantages of having a Gamemaster control one side in a battle is that enemy units can truly remain hidden until they are spotted visually or picked up by a unit's sensors. A unit is hidden from the player's view (i.e. not placed on the mapboard) if it is not in the line of sight of one of the players and has not been detected with active sensors. Similarly, Player Characters can hide from opponents. The players should not remove their counters from the mapboard. Instead, the GM should make opponents react logically if they cannot detect the PCs (e.g. the enemy might walk into an ambush).

AMBUSHES ◇

If a hidden unit is not detected and an enemy unit strays into the short range of its weapons, the concealed unit may attempt an ambush. The ambushed unit rolls a Leadership roll against a Threshold of 6. If it succeeds, combat begins as usual, with the ambushers winning the first round of initiative. If the Leadership roll fails, the defenders (ambushees) are taken off guard and get penalized -2 to all defensive rolls for the first round. If the roll fumbles, the defenders are caught completely off guard, and their default defense rolls are equal to 0 for the first round.

end of section 6.6 integration with the tactical system

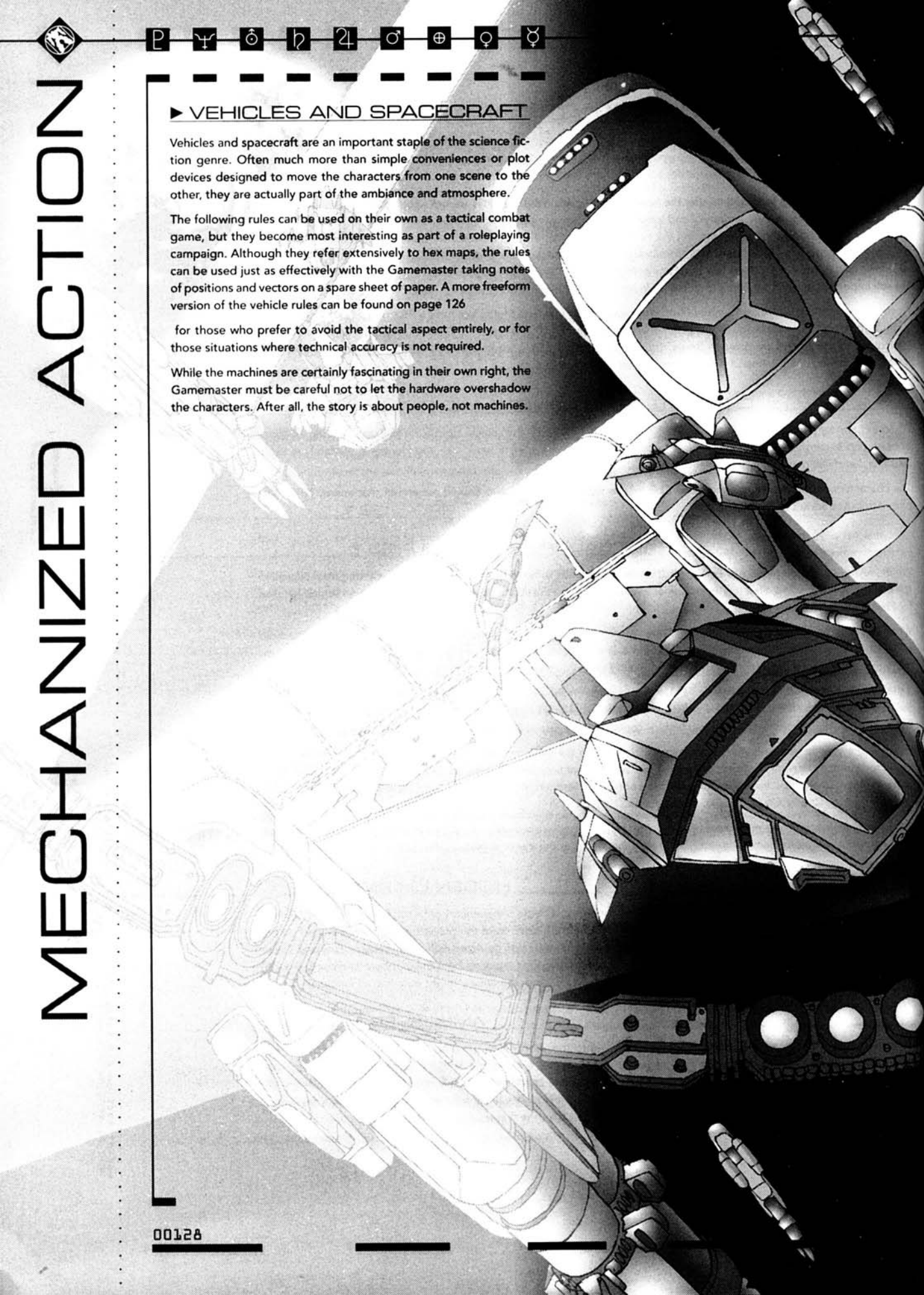
▶ VEHICLES AND SPACECRAFT

Vehicles and spacecraft are an important staple of the science fiction genre. Often much more than simple conveniences or plot devices designed to move the characters from one scene to the other, they are actually part of the ambiance and atmosphere.

The following rules can be used on their own as a tactical combat game, but they become most interesting as part of a roleplaying campaign. Although they refer extensively to hex maps, the rules can be used just as effectively with the Gamemaster taking notes of positions and vectors on a spare sheet of paper. A more freeform version of the vehicle rules can be found on page 126

for those who prefer to avoid the tactical aspect entirely, or for those situations where technical accuracy is not required.

While the machines are certainly fascinating in their own right, the Gamemaster must be careful not to let the hardware overshadow the characters. After all, the story is about people, not machines.



▶THE BASICS

7.1

The following pages contain a set of detailed rules that govern vehicle movement and combat in a large variety of environments ranging from the deepest reaches of space to the surface of a planet. The **Silhouette** tactical combat simulator is played using counters that represent combat units and a hex based map that represents the battlefield. Record sheets are used to track damage and six-sided dice are used to determine success or failure. If the players prefer, or if extreme precision is not required during a vehicular encounter, the game system can also be played free-form, without the use of a hex map (see page 126).

▼COMPONENTS

7.1.1

The standard **combat unit**, represented on the mapboard by a counter, is a single vehicle. Vehicles are generally organized into groups of two or more vehicles. Note that the group's name and number of units can change according to its origin; for simplicity, groups of fighting units are referred to as **combat groups** for game purposes.

Counters can be made very cheaply by using a small piece of paper with the name of the vehicle on it along with an arrow to show facing. A better counter can be made by photocopying the illustrations found in the Vehicle Recognition Chart on page 204 and reducing them to about 25% of the present size. A number written down in a corner will help differenciate units of the same type. Enterprising players can even color their machines to their own specifications.

Miniature models are even better. The official line of **Jovian Chronicles** miniatures is manufactured by RAFM. Although they require a larger startup investment and a bit more work to prepare for the game, they are visually very appealing. Since each player generally control is only one vehicle, the cost remains relatively low, and all can customize their paint scheme to their own specifications. Space considerations preclude an in-depth examination of modeling techniques, but there is plenty of documentation on this subject already available on the market. Most hobby stores will have at least one painter or modeler on staff that will gladly help out any newcomer.

◇MAPBOARDS

The battlefield is represented by a hex based map. For game purposes, the terrain of the entire hex is considered to be the terrain type which surrounds the dot in the center of the hex. Each increase in elevation level represents an increase in height equal to the size of the hex in the chosen game scale (smaller altitude variations are generally not significant enough to be represented, given that all pilots are assumed to take advantage of every nook and cranny they can find for protection and cover).

For a more realistic appearance, one can also use a hexless map where only the center points are printed. In such a case, the dots (sometimes represented by six-branched stars) are used to determine movement and facing. It is also possible to play using only miniatures and a scale wargame terrain — suggestions for this should be found in the **Jovian Chronicles Companion**. Space combat are especially good for this, as they require no more terrain modeling than a black cloth on the playing surface.

◇GAME SCALES

The **Jovian Chronicles** cover the story of Mankind as humans colonize the entire solar system; vehicles will be found in any type of environment, from deep interplanetary space to high in the atmosphere of a planet and down to the ground. To accomodate all these environments with the same set of rules, it is necessary to make some slight adjustments to the scale of the game surface. The specific rules, along with interface rules between the milieus, are detailed in the relevant movement rules sections.

Space is a completely different battlefield. There is no atmosphere or gravity, meaning that different rules apply to movement and combat. Space hexes are 500 meters wide. Rather than use speed values, spaceworthy vehicles have acceleration values, and are able to coast without thrust by using their momentum. Rules for fighting in space begin on page 139. Launching and re-entry rules are located on page 143.

Air and ground battles use the same combat rules but different sized hexes. Each battlefield hex represents a 50 meter wide area of terrain for tactical ground combat. Air combat hexes are five times as large — 250 meters — to accomodate the greater speed of flying vehicles. The rules to interface the two can be found on page 149.

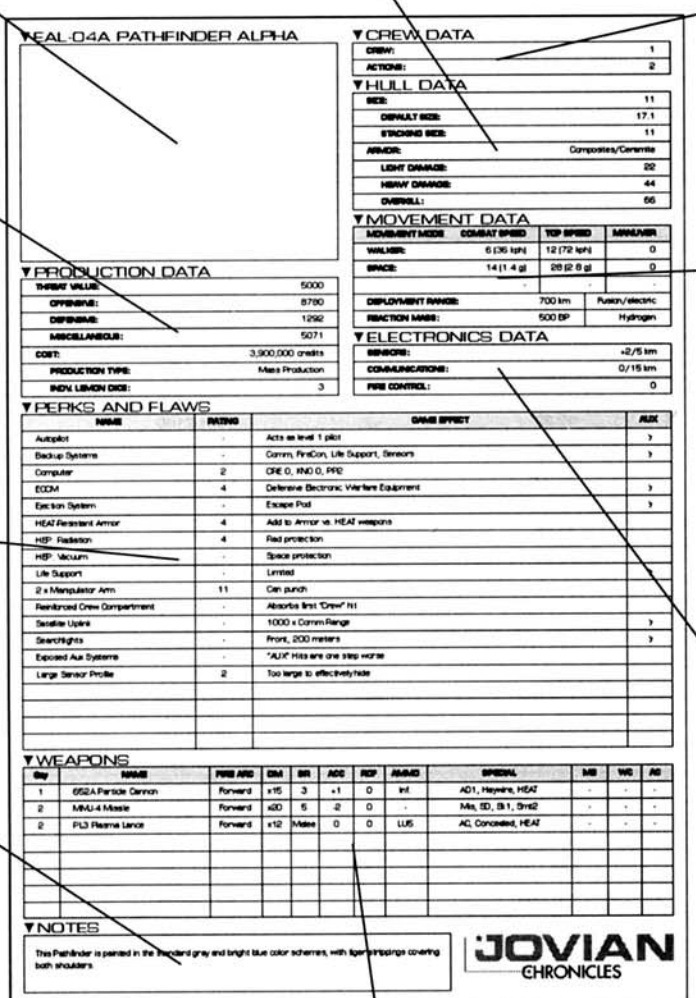
To keep the various numbers in a manageable range, combat operates on different scales for humans and vehicles. Human movement rates and weapon ranges are measured in meters instead of hexes, and the damage caused by the various weapons will usually barely scratch the surface of most armored vehicles. On the other hand, although vehicular weapons will usually kill a human target with a single shot, the odds of hitting such a small target are extremely reduced when using a weapon designed to hit a battleship. In addition, humans are adept at using any cover they might find, making them harder to detect as well. Humans are considered to have a base Obscurement of 2 wherever they might be (including space). Other differences between the vehicle scale and the personal scale have already been described on page 126 and so they will not be repeated here.

THE VEHICLE RECORD SHEET ◄

Each vehicle has an appropriate record sheet that details the necessary statistics for game play. These sheets allow a clear tally of performance levels and other important information. The information directly related to the game breaks into six major parts. The first is the Crew data, that shows the number of crew required by the vehicle and the actions they provide. Right after that comes the Hull data, which shows how large and tough the vehicle is. Movement-related data follows just after that, such as movement type(s), speed(s), maneuverability and general endurance. Electronic systems are covered next, with statistics on the various computers and electronic devices carried onboard. The Perks and Flaws section shows the various specialized systems carried by the vehicle, as well as any shortcomings in its construction (intended or otherwise). Finally, the Weapons section lists the offensive and defensive systems available to the crew.

This book contains statistics for some typical exo-armors, space fighters and vehicles of the **Jovian Chronicles** on page 184. The game statistics for these were generated using the standard Vehicle Design Procedure found in the **Jovian Chronicles Companion**. The Vehicle Design Procedure is *not* required to play a **Jovian Chronicles** campaign — it merely serves to give the Threat Values and costs of newly designed vehicles.

- The physical size and toughness of the vehicle are indicated here. The Default and Stacking Sizes are not used in the basic game — consider them equal to the Size. See page 132.
- This space normally shows a picture of the vehicle.
- This space contains information on the vehicle's cost and production. The Threat Value subscores (Offensive, Defensive and Miscellaneous), as well as the production type and Lemon Dice, are not part of the basic game and should be ignored. See page 132.
- This table shows the special systems and features present on the vehicle. When possible, a short description of the game effects is listed as well. A check in the AUX column means the feature counts as an Auxiliary System for damage purposes. See page 134.
- This blank space is useful to note down various data, such as extra fuel, cargo, etc.



EAL-04A PATHFINDER ALPHA

CREW DATA

CREW:	1
ACTIONS:	2

HULL DATA

SIZE:	11
DEFAULT SIZE:	17.1
STACKING SIZE:	11
ARMOR:	Composites/Ceramite
LIGHT DAMAGE:	22
HEAVY DAMAGE:	44
OVERKILL:	66

MOVEMENT DATA

MOVEMENT MODE	COMBAT SPEED	TOP SPEED	MANEUVER
WALKER:	6 (36 kph)	12 (72 kph)	0
SPACE:	14 (1.4 g)	28 (2.8 g)	0
	-	-	-
DEPLOYMENT RANGE:		700 km	Fusion/electric
REACTION MASS:		500 BP	Hydrogen

PRODUCTION DATA

THREAT VALUE:	5000
OFFENSIVE:	8780
DEFENSIVE:	1292
MISCELLANEOUS:	5071
COST:	3,900,000 credits
PRODUCTION TYPE:	Mass Production
IND'L LEMON DICE:	3

ELECTRONICS DATA

SENSORS:	+2/5 km
COMMUNICATIONS:	0/15 km
FIRE CONTROL:	0

PERKS AND FLAWS

NAME	RATING	GAME EFFECT	AUX
Autopilot	-	Acts as level 1 pilot	✓
Backup Systems	-	Comm, FireCon, Life Support, Sensors	✓
Computer	2	CRE 0, KNO 0, PPR	
ECCM	4	Defensive Electronic Warfare Equipment	✓
Ejection System	-	Escape Pod	✓
HEAT Resistant Armor	4	Add to Armor vs. HEAT weapons	
HEP: Radiation	4	Rad protection	
HEP: Vacuum	-	Space protection	
Life Support	-	Limited	
2 x Manipulator Arm	11	Can punch	
Reinforced Crew Compartment	-	Absorbs first "Crew" hit	
Satellite Uplink	-	1000 x Comm Range	✓
Searchlights	-	Front, 200 meters	✓
Exposed Aux Systems	-	"AUX" Hits are one step worse	
Large Sensor Profile	2	Too large to effectively hide	

WEAPONS

Qty	NAME	FIRE ARC	DM	BR	ACC	ROF	AMMO	SPECIAL	MS	WC	AC
1	652-A Particle Cannon	Forward	x15	3	+1	0	Inf.	AD1, Heavies, HEAT	-	-	-
2	MVU-4 Missile	Forward	x20	5	-2	0	-	Mis, SD, SI1, Smt2	-	-	-
2	PL3 Plasma Lance	Forward	x12	Melee	0	0	LU5	AC, Concealed, HEAT	-	-	-

NOTES

This Pathfinder is painted in the standard gray and bright blue color schemes, with tiger stripings covering both shoulders.

JOVIAN CHRONICLES

- This space shows how many crewmen are aboard and how many actions the vehicle has per combat round. The Skill level of the crew can be written down here or in the Notes box below. See page 133.
- This box shows the movement types and speeds available, as well as the endurance of the vehicle and the reaction mass tankage (if applicable). Both Deployment Range and Reaction Mass have "flavor" entries for roleplaying. See page 134.
- This box gives the statistics of the vehicle's various electronic systems. Both the sensors and the communication systems are considered Auxiliary Systems for damage purposes, but not Fire Control. The Sensor and Communication base ranges are given for ground battles; these are multiplied by a factor of 10 when flying and by a factor of 100 in space. See page 133.
- This table lists all the weapons (or defensive systems) that can used by the vehicle. Any weapon currently carried is indicated by a number in the "Qty" column. FIRE ARC shows the direction in which the weapon can fire; DM is the Damage Multiplier; BR is the Base Range; ACC is the Accuracy; ROF is the Rate of Fire. AMMO lists how many time the weapon can be fired; exceptions are indicated by letter codes. SPECIAL shows any special characteristic the weapon might have. The MS, WC and AC columns are not part of the basic game and should be ignored. See page 135.

▼VEHICLE ATTRIBUTES

Vehicle Attributes are values that define a vehicle. The numbers are used as indicators to show how good or bad, strong or weak each machine is. Variation in these numbers between vehicles indicates various design objectives.

◇THREAT VALUE

Threat Values are a good measure of a vehicle's strength. Every combat unit is rated according to a Threat Value. This value is calculated by a few formulas to reflect the vehicle's offensive, defensive and miscellaneous abilities. The higher the number, the more powerful the unit is in that particular field. The basic Silhouette system provides Threat Values for stock units and the ability to upgrade them with various weapons and systems. NPC pilots are assumed to be level 2 in alltheir abilities. Gamemasters may change the pilots' levels, but that affects the Threat Value of the crew-vehicle combination (Level 1: TV x 0.25; Level 3: TV x 2.25; Level 4: TV x 4). Games can be easily balanced by allocating an equal number of points to each side, which are then used to purchase vehicles and their crews.

◇SIZE

Every vehicle is assigned a Size value based upon its mass. Size values are primarily used to determine the outcome of physical attacks such as ramming attempts. The following table lists the mass range that each Size represents. The table is not linear; that is, a Size 10 vehicle is not just twice as big as a Size 5 vehicle, but four times as big. Size is also used to define volume, mostly for stacking purposes.

◫SIZE TO MASS CHART

Size	Mass in Tons	Size	Mass in Tons	Size	Mass in Tons
1	0-0.08	34	1001-1100	67	7901-8300
2	0.09-0.3	35	1101-1210	68	8301-8700
3	0.4-1.1	36	1201-1300	69	8701-9100
4	1.2-2.4	37	1301-1400	70	9101-9500
5	2.5-4.4	38	1401-1500	71	9501-9900
6	4.5-7.3	39	1501-1700	72	9901-10300
7	7.4-10	40	1701-1800	73	10301-10700
8	11-16	41	1801-1900	74	10701-11200
9	17-22	42	1901-2100	75	11201-11600
10	23-30	43	2101-2200	76	11601-12100
11	31-40	44	2201-2400	77	12101-12600
12	41-52	45	2401-2500	78	12601-13100
13	53-65	46	2501-2700	79	13101-13600
14	66-81	47	2701-2900	80	13601-14100
15	82-100	48	2901-3100	81	14101-14600
16	101-120	49	3101-3300	82	14601-15200
17	121-145	50	3301-3500	83	15201-15700
18	146-170	51	3501-3700	84	15701-16300
19	171-200	52	3701-3900	85	16301-16900
20	201-230	53	3901-4100	86	16901-17500
21	231-270	54	4101-4400	87	17501-18100
22	271-310	55	4401-4600	88	18101-18700
23	311-350	56	4601-4900	89	18701-19400
24	351-400	57	4901-5100	90	19401-20000
25	401-450	58	5101-5400	91	20001-20700
26	451-500	59	5401-5700	92	20701-21400
27	501-560	60	5701-6000	93	21401-22100
28	561-630	61	6001-6300	94	22101-22800
29	631-690	62	6301-6600	95	22801-23500
30	691-770	63	6601-6900	96	23501-24100
31	771-840	64	6901-7200	97	24101-25000
32	841-930	65	7201-7600	98	25001-25800
33	931-1000	66	7601-7900	99	25801-26600

CREW ◇

Combat vehicles always carry a crew, although hi-tech vehicles may replace living crew members with computers, robotic systems and such. Additional crew members increase the number of actions a vehicle can perform every comat round. Big vehicles generally need many crewmen just to function at all.

MOVEMENT TYPE AND SPEED ◇

Movement types define how a vehicle moves along. Each movement type confers some advantages and some disadvantages, depending on the environment where the vehicle operates; for example, Walker movement is not very useful in space, but extremely potent on broken ground.

A vehicle may have more than one movement type. Some walkers might mount fusion thrusters to move about in space; some ground vehicles are fully capable of operating like a boat. Although there is no limit to the number of movement types a vehicle may use, few have more than one or two, since the cost simply outstrips the added flexibility. Having more than one movement type does not represent an actual transformation — the movement types are available at all times.

Flight: this movement type is used by all flight-capable vehicles. This includes aircraft of all types as well as helicopters and vectored thrust vehicles. Each aircraft's flight characteristics are provided by suitable Perks and Flaws (see page 170).

Ground: any wheeled or tracked vehicle. Note that wheeled vehicles are assumed to be equipped with large wheels and strong suspension for rough terrain and thus are grouped with tracked vehicles in the Ground movement type. The movement speeds listed for Ground Movement also assume that the vehicle is crossing clear, but not paved, terrain (see page 145 for full effects of terrain). Ground vehicles that spend the entire round on a road multiply their speedy by 1.5.

Hover: this movement type is used by all vehicles which travel above but near the ground, such as ground-effect hovercraft and other air-cushion vehicles. Ground-effect systems only work within an atmosphere.

Naval: any conventional water vessel or hydrofoil or anything else that can float. This makes only the vehicle's hull watertight, however: it is still susceptible to flooding and capsizing.

Rail: any vehicle which uses a rail or guide of some kind to move about is part of this category. This includes classic steel railroad, MagLev, monorail, and many others. This type of movement can only move along a rail line, and the rail(s) must be of the same type as the one the movement system was designed for. Rail movement costs only 1 MP per hex (see p. 144).

Space: this movement system represents a reaction system of some kind. It does not confer the ability to perform atmospheric flight or reentry — these must be purchased separately. Space movement can also be used as a "jumpjet" system while on a planetary surface, provided it supplies enough thrust to counteract the gravitational pull (see page 143).

Submarine: this movement type covers underwater craft of all sorts. Most Submarine vehicles also have the Naval movement type, but it is not required.

Walker: this represents a multi-legged walking vehicle. The exact number of legs present is totally up to the designer and has no bearing on either speed or toughness, both of which are determined separately.

A speed in kilometers per hour (kph) and in Movement Points (MP) corresponds to each movement type. The only exception is Space, which is measured by acceleration (see *Space*, page 139). A vehicle's speed or thrust translates directly into MPs. Entering a map area, denoted by a hex, costs a certain number of Movement Points. Each vehicle can move at two different rates, or "speeds." Combat Speed is the highest speed a vehicle can achieve and still take an efficient part in combat. Top Speed is twice as fast as Combat Speed, but the vehicle's combat effectiveness is strongly impaired and it is limited in its maneuvering.

MANEUVER ◇

Maneuver indicates a vehicle's ease of control and its responsiveness to sudden changes of direction. It is a zero-average value based on the average walker system agility and is used as a modifier to all Piloting Skill rolls. Most vehicles will have a negative Maneuver value, though a few extremely agile ones (including many exo-vehicles) have positive ones.

SENSORS ◇

Sensors is a generalized rating of the number, quality and sophistication of a vehicle's detection systems. This value covers the various sensor systems installed in the vehicle regardless of their actual nature. Military-grade systems are assumed as default; civilian systems (if present) generally have a low rating because they are not designed to function in electronic warfare-intensive environments.

Sensor Range is the maximum range at which a vehicle's sensor can detect objects without going into active mode (performing an Active Sensor check — see page 150). Sensor range is multiplied by 10 when flying and by 100 in space.

◇ COMMUNICATION

The Communication score of a vehicle is a rating of the broadcast strength, reception clarity, encryption and anti-jamming mechanisms built into the vehicle's communication's suite. Like sensor systems, military-grade communication devices are assumed as default.

Communication Range is the maximum range at which a vehicle can transmit a message in battlefield conditions. For two vehicles to establish communications, at least one must be within the communication range of the other. Vehicles can relay messages sent by one vehicle to another. Communication range is multiplied by 10 when flying and by 100 in space.

◇ FIRE CONTROL

Fire Control is a catch-all rating for the vehicle's quality as a weapon platform. The rating includes how effective the targeting devices for weaponry are (from expensive combat computers to primitive mechanical sights) and how stable the vehicle is. The value is used as a modifier to all weapon attack rolls.

◇ ARMOR

Armor represents the toughness of the vehicle's armored hide and general structure — in effect, its strongest location. Three values are listed: Light Damage, Heavy Damage, and Overkill. They are equal to one, two, and three times the base Armor value, respectively. When a vehicle is hit, the attacker's damage is compared to each of the vehicle's Armor values in turn. The attack's effect is the last armor stage it has exceeded (see *Damage*, page 158).

◇ DEPLOYMENT RANGE

Deployment Range is the maximum distance (in kilometers) a vehicle may travel without being refueled or otherwise serviced. Vehicles traveling at Top Speed are very inefficient and guzzle fuel. While traveling at Top Speed, every kilometer traveled is worth 2 km for the purposes of Deployment Range. Vehicles traveling at Combat Speed consume fuel normally.

Space vehicles obviously cover far larger distances and, thanks to inertia, may not even need to expend fuel to do so. When in space, each hour of operation is treated as one kilometer of Deployment Range. Thus, an exo-armor with a DR of 500 km could walk 500 kilometers or stay in space for 500 hours (or any combination thereof) before requiring maintenance and refueling. Deployment Range also shows the duration of life support for vehicles with only a Limited system (see page 172).

◇ REACTION MASS

Space thrusters require some type of reaction mass in order to function. This value, measured in Burn Points (BPs), represents the amount of reaction mass that may be carried by the vehicle in its internal tanks. Depending on the design, the internal fuel tanks will yield a certain number of Burn Points. Additional reaction mass tanks may be carried outside the vehicle but will affect its performance.

▼ PERKS AND FLAWS

7.2.2

Many vehicles have special features or defects that cannot be adequatly represented by the basic statistics: these are called Perks (for useful features) and Flaws (for defects or design shortcomings). The *Perks and Flaws* section (page 170) lists and defines the game effect of each Perk and Flaw used by the vehicles contained in this book. Many more Perks and Flaws are possible, but they are not listed here in order to save space.

▼ CREW SKILLS

7.2.3

Combat vehicles always carry a crew of some sort, and Skills are used to indicate the crew's quality. Skills are rated by experience; higher Skill indicates greater ability. See *Ratings, Skills and Skill Tests*, page 55, for a list of Skill equivalencies (Skills are the same in both RPG and tactical combat systems). In the tactical game, anyone who has a Skill at level 0 cannot perform any task which requires this Skill.

◇ LEADERSHIP

Leadership is the commanding officer's ability to lead troops into battle, place them effectively and plan good tactics. The Leadership Skill of the highest ranking person present is used to check for combat initiative.

◇ PILOTING/DRIVE

The Skill of piloting and maneuvering a vehicle. Piloting is required to evade attacks, fight in melee and perform difficult maneuvers. There are specialized Piloting or Driving Skill for all types of vehicle. Driving and Naval Piloting are used for ground and naval vehicles, respectively, but they serve the same purpose.

GUNNERY ◇

The Skill of aiming vehicle-mounted weapons or using fire control mechanisms. Gunnery is crucial to all ranged attacks. Each type of environment and vehicle type has its own Gunnery Skill (see page 81).

ELECTRONIC WARFARE (EW) ◇

The Skill of using sensors, jamming equipment and other electronic packages in combat vehicles. This Skill is used when calculating a vehicle's Detection value (see *Detection*, below, and *Line of Sight*, page 150) and for checking the position of an object using the vehicle's sensor systems.

DETECTION ◇

The Detection scores are measures of the unit's ability to passively detect opponents who are far away or well hidden, that is, without using Active Sensor. Detection scores and the Active Sensor procedure are discussed more fully in the *Line of Sight* section, page 150.

WEAPONS ▼

Most military vehicles carry weapons of some kind. The record sheet shows all of the weapons that can be used by the vehicle, even if only a fraction of these can be carried at any one time. Weapons not currently carried (or destroyed) are simply blacked-out.

The game statistics for the pre-filled vehicle sheets' weapons and systems were generated using the Offensive & Defensive System Design Procedure found in the **Jovian Chronicles Companion**. The O&DS Design Procedure is *not* required for playing a **Jovian Chronicles** campaign — full explanations for using the various characteristics of the weapons used in this book are given on page 176.

7.2.4

ACCURACY ◇

In addition to the effects of the vehicle's main fire control systems (the Fire Control rating), the Accuracy (Acc) of each individual weapon affects the odds of successfully damaging opponents. It is applied as a modifier to each attack roll made with the weapon. Accuracy can drop because of damage (see *Fire Control Damage*, page 159).

DAMAGE MULTIPLIER ◇

The Damage Multiplier (DM) of a weapon is a rating of how effective or destructive the weapon's attack is. The Damage Multipliers work on an exponential scale, not a linear one. A Damage Multiplier of 10 is more than twice as effective as a Damage Multiplier of 5; in fact, it is four times as effective.

BASE RANGE ◇

The Base Range (BR) of each weapon is listed on the stat sheet. The Base Range is equal to the Short Range of the weapon; the Medium, Long and Extreme ranges are equal to twice, four times and eight times the Base Range, respectively. All vehicular weapon ranges are listed in hexes. Obscurement, the movements of both attacker and defender, the limitations of targeting system, all reduce the theoretical range of weapons. The Base Range is the effective combat range.

For simplicity, weapon ranges are given in hexes. Weapon ranges (in hexes) do not change with hex size because of conditions such as atmospheric interference and ground cover that reduce effective range.

RATE OF FIRE ◇

The Rate Of Fire (ROF) of a weapon is listed in its own column. A weapon with an ROF of 0 fires a single shot and is then reloaded; it expends one round of ammunition per attack. Weapons with ROF of 1 or more are rapid-loading and can fire many more shots during the same interval of time. Rapid-fire rules can be found on page 156.

AMMUNITION ◇

If a weapon's ammunition drops to zero, it is out of ammo and can no longer fire. Some attack types, such as physical attacks, do not expend ammunition. Other weapons have a built-in ammunition or energy supply, but can only be used for a short while before running out: these are termed Limited Use weapons, and are identified by the letters "LU" in the ammunition column (the number shows the number of turns they can remain active).

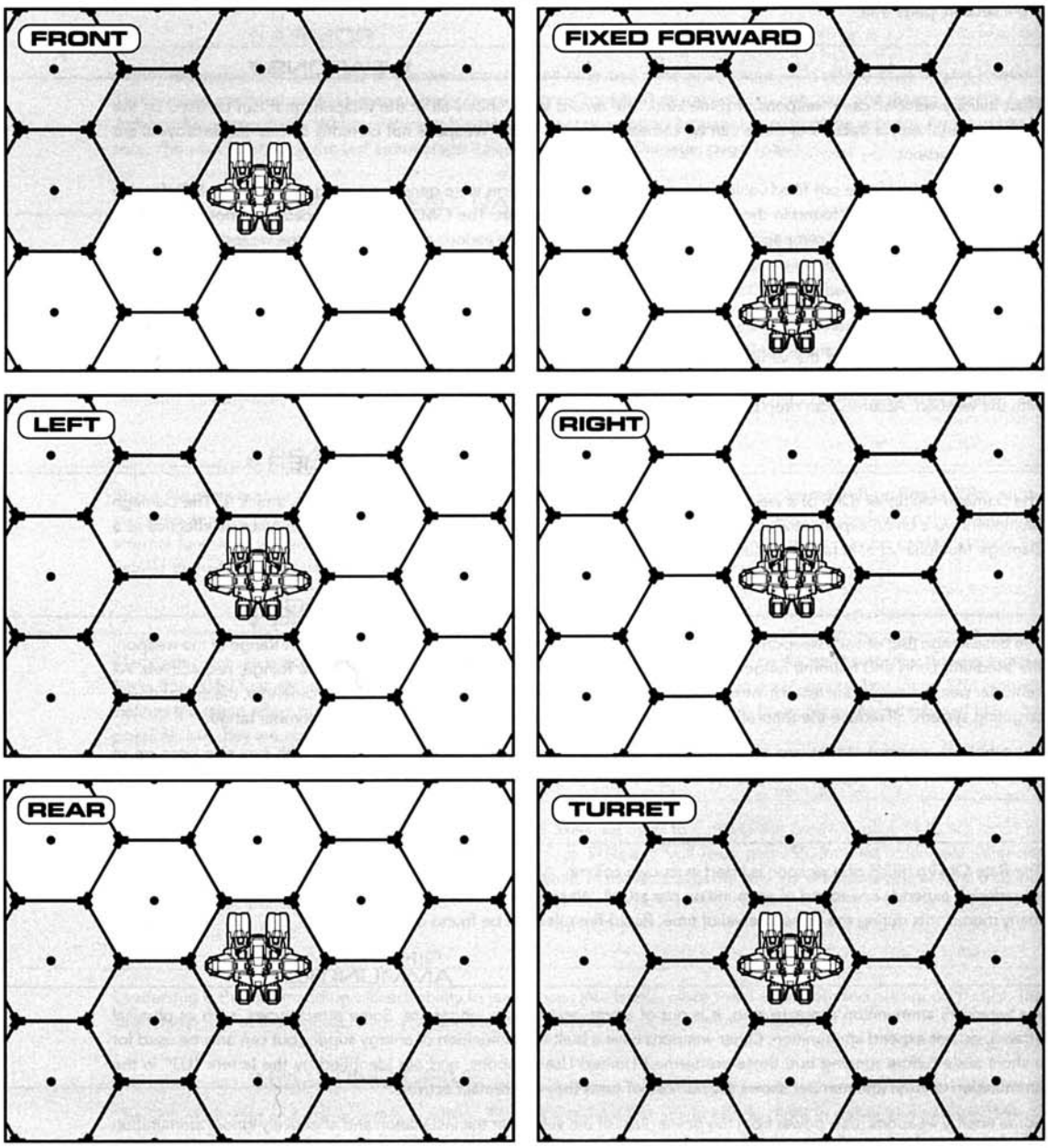
Some energy weapons draw power from the powerplant of the vehicle or the installation and effectively ignore ammunition requirement. These are termed Infinite Ammo weapons and are identified by the letters "Inf." in the Ammunition column.

◇ ARC OF FIRE

Firing arcs determine whether or not a given weapon can be aimed at a target. Each weapon has its own fire arc depending on how it was designed into the vehicle. Arm-carried weapons always have a Forward arc. The six standard fire arcs are defined as follows. In space, fire arcs have the same profile vertically as horizontally.

◫ ABBREVIATIONS FOR FIRE ARCS

F	forward (180 degrees)
Rt	right (180 degrees)
L	left (180 degrees)
Rr	rear (180 degrees)
FF	forward fixed (120 degrees, begin arc one hex ahead of vehicle)
T	turreted (360 degrees)



THE COMBAT ROUND ◄

7.3

A battle always begins with the Set-up phase. Set-up takes place before the first round of the combat and occurs only once. An overall commander must be chosen for each side, with a second in command. His identity can remain secret, but must be noted down for future reference. If the commander becomes a casualty, he is replaced by the second in command. If both are put out of action, all future Leadership Skill tests are rolled at level 1. The only exception to this rule occurs during integrated roleplaying/tactical games: if a Player Character has a higher Leadership than 1, he may choose to replace the commander or second in command if they both become casualties. Otherwise, the rule stands as is.

A Tactics Skill test is made by each side based upon the Skill level of the commander. Fumbles count as a die result of one. The winner chooses which player will first place a combat group upon the map. Reroll ties. Players should alternate, each placing one combat group at a time on the mapboard. After placing a unit on the mapboard, the player must declare what speed (stationary, Combat, or Top Speed) or velocity (for space combat) it is moving at. Pre-designed scenarios should have clearly defined set-up locations for each faction. When not using pre-designed scenarios, the players should agree on which mapboards to use and set up on the first two rows of hexes on either side. If, during the first round, a unit is attacked before it has been moved, it is treated as if it was moving at the maximum number of hexes possible for its speed (or acceleration, in space) for the purpose of defense rolls.

The die result of the Tactics roll should be recorded by each player. Each point represents one Tactical Command Point that can be played at any time during the game. Command Points represent an action reserve to face unexpected situations; they are fully explained further on.

COMBAT ROUND PROCEDURE ▼

7.3.1

The battle is subdivided into combat rounds that simulate approximately 30 seconds of real life events. During each combat round, the following steps occur in order:

STEP ONE: DECLARATION PHASE ◇

Both sides declare any extra actions and individual evasive maneuvers for the round. A counter or token can represent extra actions to avoid confusion. This token can be placed either near the playing piece or on the record sheet, whichever is more suitable to the player.

STEP TWO: INITIATIVE PHASE ◇

Initiative decides which side has the advantage during the present round of combat. Each side rolls an action test based on their commander's Leadership Skill. If only two machines are facing each other, the Piloting Skill is used instead of the Leadership Skill. The highest result wins. Draws are rerolled.

Each side receives a number of Initiative Command Points equal to their Leadership roll. The Loser may also use Tactical Command Points. The side with the least number of combat groups decides which side will play first. If both sides have the same number of combat groups, the winner of the Leadership roll makes the decision.

STEP THREE: ACTIVATION PHASE ◇

The side whose turn it is to play may move any or all units in one of their combat groups. Units that shift speeds (Combat to Top and vice-versa) must declare so immediately after movement. Actions, such as firing or activating a system, may be resolved at any time before, during or after the movement. Attack modifiers are based on the unit's total movement: for example, if Half-Combat Speed is announced, the unit cannot spend more than half its Combat MPs.

Each unit in a group moves and takes its actions before an another unit is activated. If a unit does not move or act when its combat group is activated, it cannot do so at a later point in the round.

At any time during this movement, any unit may use one (or more) of its actions to fire or perform a task against the moving unit (and only against the moving unit). Attacks may be directed at any point along the moving unit's path, but the unit's full movement counts for the Defense roll. The total MP allocation of the target is used to determine the defense speed modifier, even though the actual displacement may be shorter, because this is a hurried reaction for the attacker. The defender must spend at least one MP or end its movement before each of the attacker's actions if more than one action is used. Forward observers must act before the firing unit(s).

Once every unit in the combat group has moved and acted (or forfeited its chance to do either), the other side activates one of its combat groups, which may move and take action. This exchange goes back and forth until all combat groups have moved and acted.

A combat group may only move once per combat round. If one player no longer has any combat groups left to use, the opponent activates his remaining combat groups one by one until they all have been moved.

◇ STEP FOUR: MISCELLANEOUS EVENTS PHASE

During this phase, any unusual events, such as long-range artillery and off-board bombing attacks, are resolved. Ejection rolls, wound checks and general bookkeeping procedures should also be done here. Initiative Command points go back to zero. Any action not spent at this point is lost.

Repeat steps 1 to 4 until the battle is resolved or pre-planned objectives are met. A combat group may only move once per combat round.

▼ COMMAND POINTS

7.3.2

Command points represent the commander of a combat force reacting to or anticipating the enemy's actions. There are two types of Command points, both roughly equivalent. Tactical Command points are available throughout the game when losing the initiative but cannot be regained once spent. Initiative Command points are valid for one turn only, but are restored during each new Initiative roll. Other than this, there is no difference between the two. Two dice of different color can be used to keep track of Command point totals.

Command points may be used by any unit with a functional Communication system. They can be used as an additional regular action, incurring no die penalty. They can be used to buy a +2 modifier to a single Defense roll. Finally, they can be used to activate a unit out of its turn sequence — to get out of harm's way, for example. In the latter case, the unit must not have been activated (i.e., moved) previously and it cannot be moved again when its combat group is activated (though it may act if it has any actions left).

▼ NUMBER OF ACTIONS

7.3.3

A vehicle's actions are limited by the total number of crewmen. Some or all of these additional actions are lost when crew casualties occur. All vehicles have one base action: the table below lists the lowest crew sizes required to obtain additional actions. The minimum crew requirement to gain more actions is doubled for each additional action.

A vehicle's crew can get more actions by penalizing *all* their action test rolls by one (1) for each additional action taken. For example, a single crewman could fire twice and activate a system, with a -1 to all these die rolls, or fire four times with a -2 to all attacks. These additional actions *must* be declared at the beginning of a round, in Step One.

◫ CREW AND ACTIONS

Min. Crew Size	Additional Actions	Total Actions
1	1	2
2	2	3
4	3	4
8	4	5
16	5	6
32	6	7
64	7	8
128	8	9
256	9	10
Etc., doubling every time.		

◇ TYPICAL ACTIONS

An action is normally defined as anything that requires at least one crewman's complete attention. Some systems are completely automated, but these normally get their own actions to function (see *Computers*, page 180, or *Smart Weapons* page 179). Actions can be lost due to combat damage, such as "Crew Stunned" results. If the actions were already spent for the round, there is no further effect. If more actions are lost due to damage than are available, they must be made up for during the next round.

◫ ACTIONS EXAMPLE

Among possible combat actions
• fire one weapon
• fire one set of linked weapons
• embark/disembark one (1) crewman for each Size point of the vehicle
• perform a physical attack (ramming, kicking, punching, etc.)
• activate an Auxiliary system (ECM, active sensors, communication, etc.)

SPACE MOVEMENT ◀

7.4

Because of the absence of atmosphere and gravity, space combat is very different from planet-bound battles. There are two possible forms of space warfare. The most common situation is when two (or more) hostile groups wish to engage each other (or one side is defending a static location or installation) and all match overall velocities in order to make combat manageable. "Lightning strike" combat occurs when one of the antagonists does not wish to match velocities, causing the groups of opponents to streak past each other. Each group only has a few split seconds to attack the other as they get in range — every shot must count.

Space combat hexes are 500 meters across. The combat rounds represent 30 seconds of real time, just like the planet-bound combat round. Unlike ground and air vehicles, spacecraft have "Thrust" and "Overthrust" MP scores. Both are game equivalents to the Combat and Top Speed MP scores, except that they represent acceleration rather than speed.

While logic dictates that space combat is a total 3-D experience, the confusion of actual 3-D battles can seriously slow down the game. For faster games, or for first-time players, the 2-D version, which uses only three vectors (X, Y and Z; see below), is strongly recommended. The same rules apply to both versions of the game, the only difference being that the 3-D game features one more vector for vertical motion. The six-faced hexes on the map dictate the use of this vector configuration, which might be slightly confusing at first for anyone used to the usual "X,Y" perpendicular vector model — read on.

This section details the differences between matched-velocities space combat and standard ground and aerial combat. Even though it includes more than movement, lightning strike combat is detailed at the end of the section for simplicity.

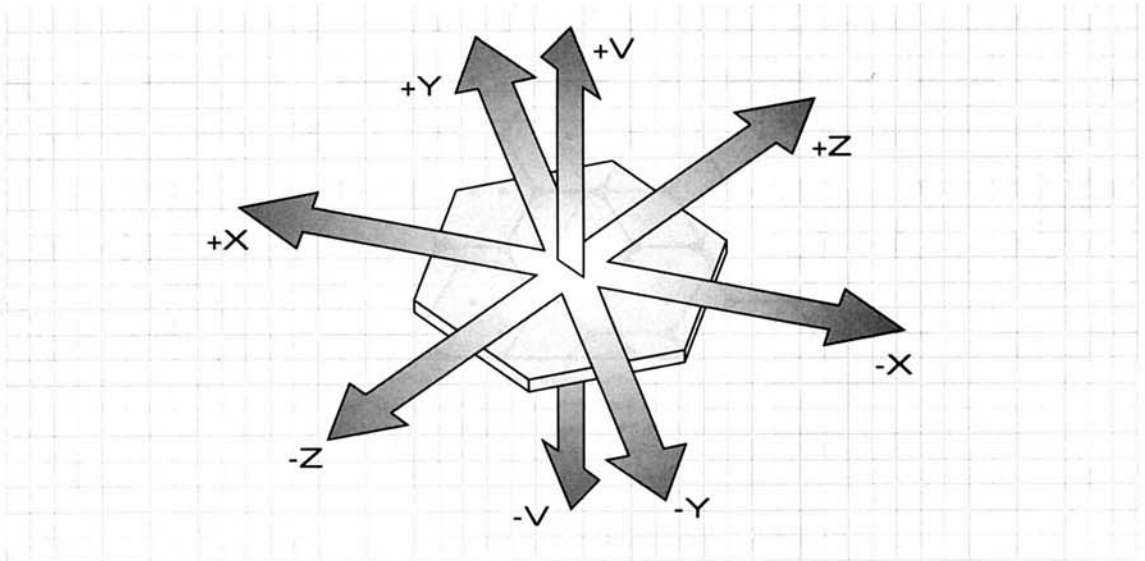
VECTORS ▼

7.4.1

In space, there is no friction to slow vehicles down. Because of this, the movement of previous round will affect the current round's movement.

Each vehicle is considered to have four velocity vectors (three if playing in 2-D). These are labeled X (diagonal upper left to lower right), Y (top of mapboard to bottom of mapboard), Z (diagonal upper right to lower left) and V (vertical up and down). Movement along one direction will either add or subtract from one of these vectors. The diagram below illustrates the various vectors and their directions on a standard game hex map.

VECTOR DIAGRAM ◐



For example, if a vehicle moves 3 hexes in the Y direction, it is considered to have a +3Y vector. If that vehicle then apply thrust to move 4 hexes in the -X direction, the vehicle now has a -4X +3Y vector. While this may sound arcane, it simply means that the vehicle will move four hexes in the -X direction and three hexes in the +Y direction. The vehicle kept the +3Y from the previous round of movement because in space, there is no significant friction to slow it down.

If the same vehicle thrusts to move 5 hexes in a +X direction, it will have a vector of +1X +3Y, *not* +5X +3Y. The first four MP of thrust go towards reducing the X vector to 0 while the final point brings it up to +1X. The old +3Y was never neutralized, so it stays in effect. If the vehicle now applies thrust to move 7 hexes straight up (+7V), the vehicle will have a new movement of +7V +1X +3Y. If no further thrust is applied, the vehicle will move up seven levels of "altitude," one hex diagonally to the upper left and three hexes towards the north of the mapboard every turn.

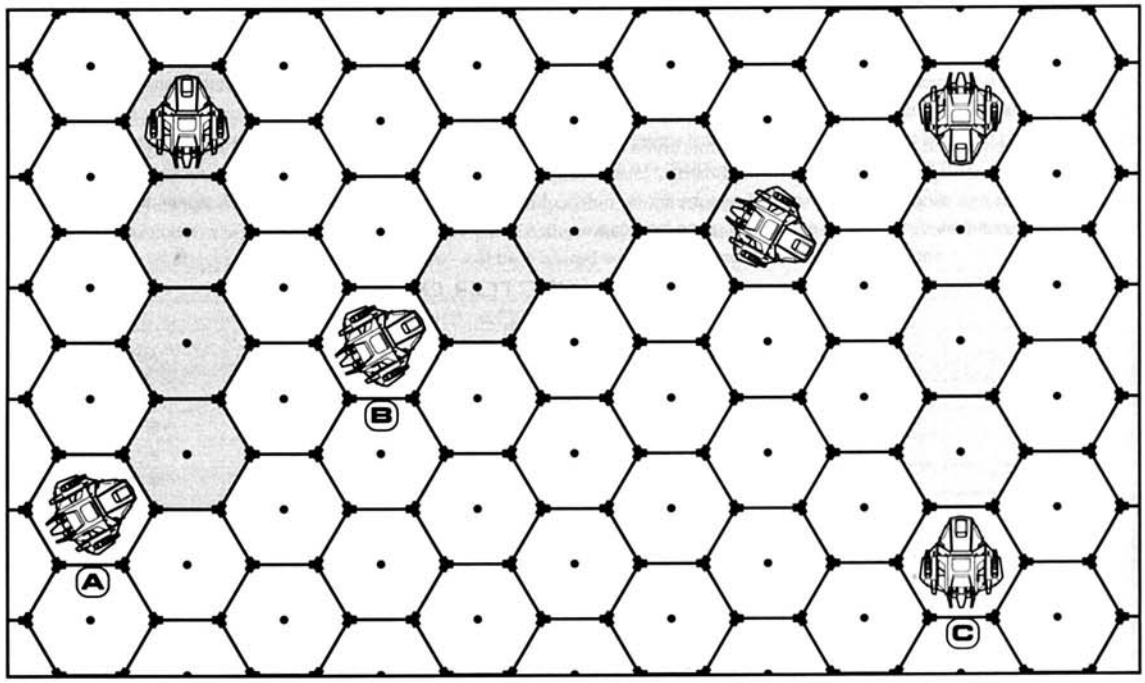
▼THRUST VERSUS MOVEMENT

One Space MP is roughly equal to 0.1 gee of thrust. One gee (also noted simply as "g") is equal to the surface gravity of the Earth and is a standard measure of acceleration — the exact value is 9.8 m/s², generally rounded up to 10 m/s². It costs one MP to add or subtract one point from any of a vehicle's four vectors. The actual flight trajectories and geometries are a little more complex than that, but this approximation is good enough for game purposes.

Some vehicles are so underpowered or massive, their thrust is less than 0.1 gee. In space, even the tiniest amount of thrust will move a large object — just a lot more slowly. Ships and other spacecraft with low thrust can still move, but must accumulate at least one-tenth of a gee to change one vector by one point. For example, a ponderous Mercurian cargo mag-sail with a maximum 0.01 gee acceleration can modify one of its vectors by one point every ten combat rounds (0.01 gee x 10 turns = 0.1 gee, or one MP) spent applying thrust.

Facing is decided using one of the four vectors — a somewhat limiting solution, but one which greatly simplifies gameplay. The vessel points towards the direction it accelerated in the most *this round* (see diagram 1 for examples), regardless of its actual motions on the board. It is also possible to further adjust the facing by spending unused Movement Points. How many Space MPs it costs to change facing depends on the spacecraft's Maneuver bonus, as detailed on the Facing Change Cost table (see bottom of page).

◑FACING AFTER MOVEMENT



Unit A has accelerated from being stationary to speed vectors of +3Y +1Z: the vector modified by the greatest amount of thrust has been positive Y, so this becomes the unit's new facing. Unit B already had a speed of +3Z, and apply a thrust of -1X. Since negative X is the vector that has been modified by the largest amount this round, it becomes Unit B's new facing. Unit C had a speed of +7Y and applies a thrust of 3 on the negative Y axis: the unit still moves 4 hexes on the positive Y axis, but its facing is determined by thrust, not movement, and so it faces the negative Y axis.

◫FACING CHANGE COST

Maneuver	1 Side	2 Sides	3 Sides
+1 and up	0	1	1
-1 to 0	0	1	2
-4 to -2	1	2	4
-7 to -5	2	4	8
-8 and less	3	6	12

Maneuver is the vehicle's Maneuver bonus.

1 Side, 2 Sides, 3 Sides is the number of hexsides by which the ship changes facing.

REACTION MASS ◇

According to Newton's Third Law of Motion, vehicles must jettison something backward in order to move forward. When changing vector, each MP of Thrust spent removes one Burn Point (BP) from the vehicle's Reaction Mass. Overthrust is not as efficient and uses two BPs per MP spent. When the vehicle reaches zero Reaction Mass, it can no longer change its vector.

To speed up game play, the reduction in mass does not increase the vehicle's acceleration. Purists may wish to recalculate performances at various Reaction Mass levels to realistically portrait the behavior of a space vehicle; see *Space Towing Capacity*, page 143.

"ALTITUDE" AND "DESTINATION" COUNTERS ▼

While it is possible to record both the "altitude" (the position on the "V" Vector) and current vector values on a piece of scrap paper, another method both simplifies bookkeeping and speeds up play: the use of elevation and destination counters.

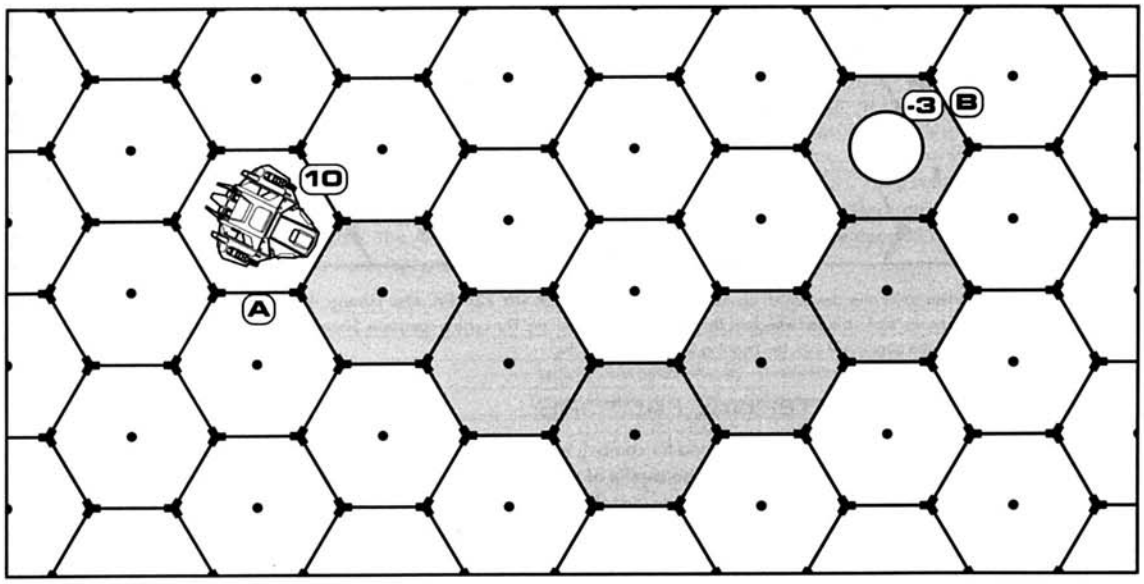
A destination counter is used to keep track of speed vectors without using pencil and paper. Each counter is identified as belonging to a specific unit. In a 3-D game, the counter is used with the elevation die. At the end a unit's movement phase, the counter is moved away from its unit the *exact same number* of hexes the unit just moved, in the *exact same direction* (see *Destination Counter* diagram). Using this system, the different vectors of a given craft needs never be written down.

For vertical position (if used), one or more 10- and 20-sided dice can be used to record the relative "altitude" between ships: these dice are placed next to the unit. When "moving up" one hex, the number is increased by one; when "moving down", the number is decreased. Different colors of dice can mark negative and positive numbers, or zero can be chosen as being the lower end of the 3-D game area. A numbered counter can also be used if no proper die is available.

If in 3-D play, a second die is also turned so it shows how many altitude levels the vehicle climbed or dropped this turn. For horizontally stationary spacecraft, the counter is temporarily taken off the mapboard. For vertically stationary spacecraft, the same is done with the altitude change die. Thus, a totally stationary spacecraft has neither destination counter nor altitude change die beside it.

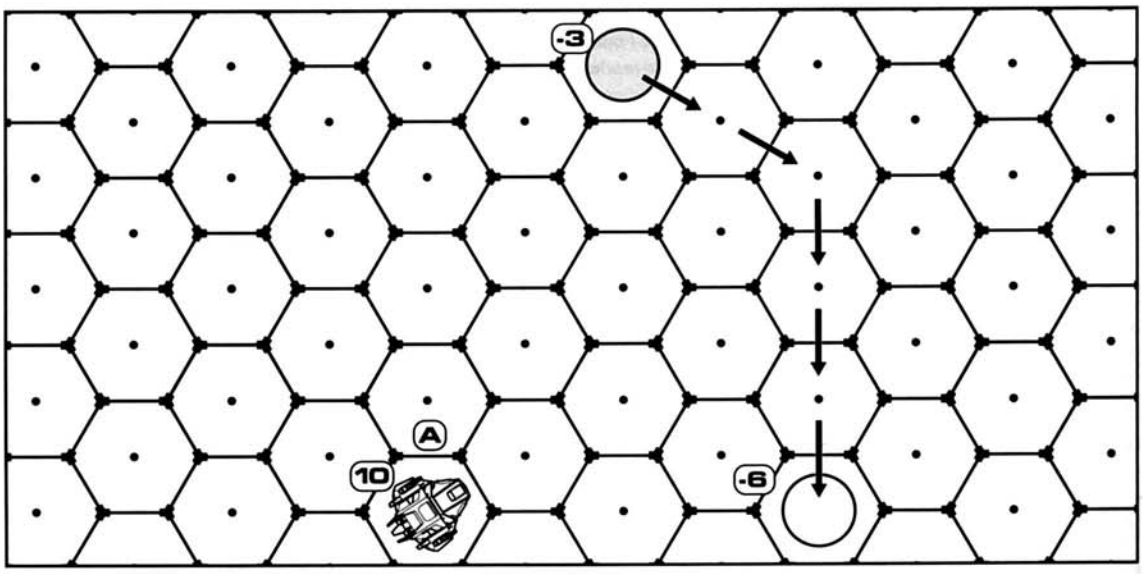
At the beginning of the unit movement phase, a unit can modify its vector by moving the destination counter a number of hexes equal to the craft's total MPs, effectively changing the unit's destination by applying thrust to the different vectors. MPs can also be used to lower or increase the elevation on a 1:1 basis. Once the counter is moved, the unit moves to the counter and the counter is once again moved away the exact same number of hexes and in the same direction the unit just moved (see diagrams on next page). The player also modifies the altitude die by the amount of MPs spent vertically. For stationary units, the destination counter is considered to be in the same hex as the unit.

DESTINATION COUNTER ◑



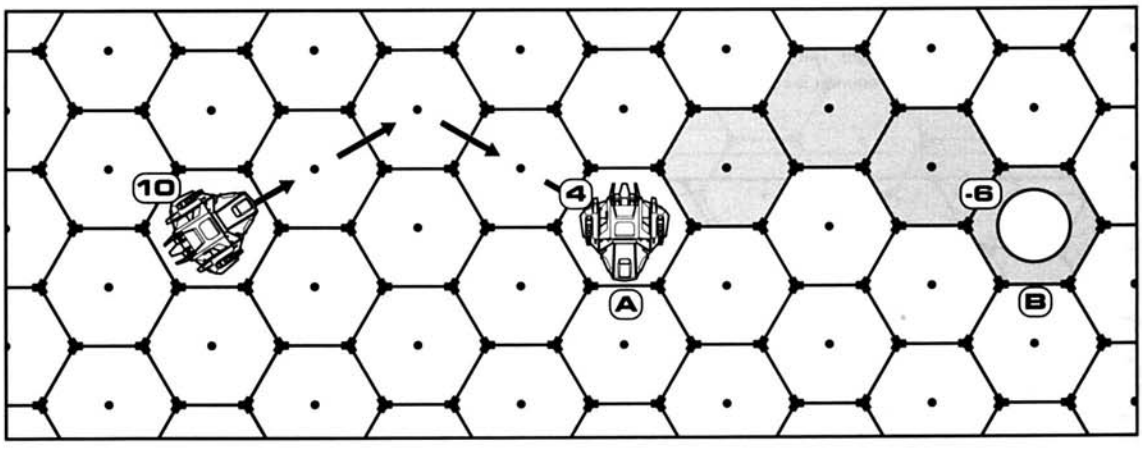
Unit A has just completed its movement. Its vectors are -3X +1Y +2Z -3V; it just moved 3 hex on the negative X axis (to the lower right of the map), 1 hexes along the positive Y axis (to the top of the map) and 2 hexes along the positive Z axis (to the top right of the map), as well as losing three altitude levels, from 13 to the present 10 (as indicated on the altitude die). The player places the destination counter (B) at -3X +1Y +2Z from the unit, and turns the altitude change die to -3, the current vertical vector. In a 2-D game, there would be no altitude die.

◑ MOVEMENT EXAMPLE — PART 1



Unit A has 8 Movement Points to spare: it changes its speed vectors by 2 hexes along the negative X axis (to the lower right of the map) and 3 hexes down the negative Y axis (to the bottom of the map); the destination counter is moved accordingly. This uses 5 Movement Points; with the 3 MPs left, unit A increases its velocity down the negative V axis, from -3 to -6, and turns the altitude die to reflect this.

◑ MOVEMENT EXAMPLE — PART 2



Unit A moves to its new destination (its speed vectors are now -2X +0Y +2Z -6V). After moving, the destination counter is moved the same number of hexes, along the same vectors, from the unit's new position. The cycle is complete. Since the vector that was modified by the greatest amount was the negative V axis, the heading is now the -V vector.

◇ EXTERNAL FACTORS

Many vehicles, especially those designed for combat, have tens of Thrust points available every turn. Given the size of the average game map, pilots will have to be careful of where their craft is heading. Loose sheets of hex paper can be used when a spacecraft's present speed vectors would take it out of the playing map. In such cases, the sheet is placed so that the destination counter can be placed correctly. The craft will (hopefully) be able to correct its speed vectors so it does not fly off the map — and out of the game!

Because the acceleration required to change a vector by one point is relatively high, the gravitational effects of large bodies of mass is negligible in game terms, even when vehicles are fighting in orbit around a planet. For simplicity, they have no effects upon game movement, though they are present. Some scenarios might be fought exceptionally close to a large gravity well, however. This can be simulated by an "Automatic Thrust" in one of the vectors.

LIGHTNING STRIKE COMBAT ▼

7.4.4

Lightning strike combat occurs when two opposing groups of spacecraft are streaking past each other at speeds that are measured in thousands of kilometers per second. If the combined, total velocity vectors of the combat units are greater than the number of hexes on the map, the vehicles enter and exit in a single turn, enough for only one attack.

As they hurtle toward or across each other, both factions will try to change their vectors in such a way that they will be at an advantageous distance when they pass by each other. An opposed Space Navigation Skill test is made. The side with the higher thrust rating adds +1 to its roll. Both sides also add the minimum defense modifier (page 153) for the thrust rating that they will be using for the engagement. The side with the highest result chooses the range (in hexes) at which the vehicles will engage. Ties are rerolled.

Targets are selected by all combatants; they may not be changed in mid-attack. Attacks are then rolled normally. Any and all weapons that are in range may attack once and only once. ROF points may not be used for Walking Fire. Defense rolls are Piloting Skill tests, modified by the defender's Maneuver and his chosen speed. All attacks are simultaneous: both sides get to make *all* their attack and defense rolls *before* any damage is allocated. Whether or not either side is destroyed, the confrontation is over as the two forces streak away from each other with phenomenal velocity.

LIGHTNING STRIKE PROCEDURE ◫

1)	All combatants choose their Thrust;
2)	Both sides roll an Opposed Space Navigation Skill Test;
3)	Winner chooses engagement's Range;
4)	All combatants declare targets;
5)	Both sides roll all attacks (targets may not be changed);
6)	Any resulting damage takes effect.

SPACE TOWING CAPACITY ▼

7.4.5

The effective acceleration given by the thruster array diminishes as the total mass of the vehicle increases. The mass of the vehicle (in kg) should be multiplied by the acceleration (in m/s) to get its thrust. The mass of any cargo or towed items is then added to the mass of the vehicle, then the thrust is divided by this total mass to get the new acceleration (rounded down to the nearest whole MP value). Players wanting a more realistic representation of space movement may use this method to recalculate the new performances of their vehicle when fuel is consumed and extra mass is dropped. Just subtract the mass dropped from the mass of the vehicle and recalculate the acceleration normally.

FLIGHT/SPACE INTERFACE ▼

7.4.6

To reach orbit, a vehicle must be capable of reaching orbital velocity by itself (see formula below). **Required Velocity** is equal to the planet's orbital velocity minus the vehicle's starting velocity (generally zero, but can be positive — a flying aircraft, for example). If the vehicle starts from the equatorial region and uses the planet's rotation to boost itself, the required velocity is reduced by ten percent. **Acceleration** is the vehicle's acceleration in meters/second. Vehicles without the Flying movement system must subtract the planet's gravity from their acceleration before entering it in the formula. Flying vehicles can start from a higher altitude and only use three-quarters of the planet's gravity, half if flying in the stratosphere (with the proper Perk). **Time to Orbit** shows how long the vehicle's engines must operate to reach orbit, in turns (divide by two to get the number of minutes). The vehicle must carry enough Reaction Mass to allow the thrusters to operate that long at the required thrust level, or it will fall back to Earth.

REACHING ORBIT ◫

•	Square root of (Orbital Velocity ÷ Acceleration) = Time to Orbit (turn)
•	Orbital Velocity is equal to (Escape Velocity ÷ 1.4), in meters/second.

RE-ENTRY ◇

Re-entry procedures are somewhat different from a launch. A vehicle only needs a minimal amount of thrust to come out of orbit, and practically none for the re-entry proper. For game purposes, re-entry is assumed to last ten minutes, or 20 tactical game turns. The vehicle *must* be equipped with the Re-entry Perk, either a one-shot system (a ballute or other ablative shield) or a permanent feature (Wave-Rider design, built-in heat shielding). If such a system is not present, the vehicle will suffer a Fire attack every turn during the descent. The Intensity of the attack is equal to the current velocity (in hexes) of the vehicle, times 20. Once the re-entry is finished, the vehicle is considered to be at Altitude 12 (Air War scale) and must have some other way of stopping its fall, either a flight system, extra reaction mass for its thrusters or a parachute.

▶ PLANETARY MOVEMENT — GROUND

7.5

For the purpose of the rules, "planetary" refers to any place that has gravity, be it a moon, the interior of a space colony, or an actual planet. The effects of the local gravity level and other environmental conditions are detailed further on.

The record sheet of a vehicle contains values for Combat Speed and Top Speed. These are indicated in Movement Points (MPs) and in kilometers per hour (kph). The speed in MPs is one-sixth of the kph value, rounded to the nearest whole number. An MP equals movement across one clear mapboard hex or about 6 kph across clear terrain. Thus a vehicle with a Combat Speed of 70 kph has 12 MPs. At its Top Speed of 140 kph, it has 23 MPs. The Top Speed of a vehicle is double its Combat Speed in kilometers per hour. Every turn, each vehicle receives as many MPs as its current speed (Combat or Top).

▼ STACKING

7.5.1

The term "stacking" refers to how many units can reside in a single mapboard hex. The standard 50-meter hex can take up to 30 Size points of vehicles and other units. A group of five or less people count as a Size 3 vehicle for stacking purposes. If combat occurs between units in the same hex, range is considered Point Blank (0).

If a vehicle is bigger than Size 30, it will occupy more than one hex. For example, a Size 61 vehicle takes three hexes (61 ÷ 30 = 2.034, rounded up to 3). How many points of Size are assigned to each hex depends on the design, and may be less than 30 per hex (though all Size points must be allocated). Range is measured from the attacker's closest target hex.

▼ COMBAT SPEED

7.5.2

A vehicle normally receives a number of Movement Points equal to its Combat Speed. If the vehicle expends none of these MPs to move, it is considered to be stationary. Otherwise, the vehicle is said to be moving at Combat Speed. Attacks can be made normally at this rate of movement. Vehicles moving at half their Combat Speed or less gain an additional +1 to their attack rolls due to the additional stability provided by lower speeds (see *Attacker Movement*, page 153).

A vehicle moving at up to half Combat Speed can opt to move backward instead of forward. Reverse movement is not possible at higher speeds.

▼ TOP SPEED

7.5.3

A vehicle which expended its full Combat Speed MP can shift to Top Speed in the next round. This shift must be declared by the player *immediately* after moving the unit. The vehicle is considered to be at Top Speed for attack and defense purposes for the rest of the combat round. Players are advised to put chits or markers of some sort on the vehicles moving at Top Speed. This helps prevents disputes on the speed at which a vehicle is moving.

In subsequent combat rounds, the vehicle receives movement points equal to its Top Speed value. The vehicle *must* expend a number of movement points greater than its Combat Speed while moving at Top Speed. A vehicle may return to Combat Speed after any number of rounds of Top Speed movement. The player declares the return to Combat Speed *immediately* after moving the unit.

▼ MULTIPLE MOVEMENT SYSTEMS

7.5.4

Vehicles with multiple movement systems are able to switch between them during movement. A vehicle may only switch movement types while at Combat Speed. During the switching round, the initial movement type is used to determine the available MP. The vehicle expends MPs as allowed by its original movement type until the switch is declared. The remaining MPs are expended at the terrain costs of the new movement type. A vehicle may switch movement types only once per combat round. This option is available to any unit that meets the criteria and announces the fact during its movement.

▼ TERRAIN EFFECTS

7.5.5

Various terrain types affect locomotion methods negatively. The following chart lists the MP cost to traverse different types of terrain. Certain types of terrain also reduce visibility. This is represented by the Obscurement of the terrain (see page 150).

Note that some terrains are found only in space, such as Moon Dust and Liquid Gasses. Unless there is a tangible atmosphere (0.8 atm and more) present, as on Titan, vehicles without the proper environmental protection and hovercraft will not be able to function there.

◇ AQUATIC MOVEMENT

Vehicles with the Naval and Submarine movement types expend 1 MP per Water hex or Liquefied Gasses hex. Certain unusual vehicles lack these movement types but are sealed against underwater environments. These "bottom-crawlers" pay their normal Water-related MP cost (see table).

TERRAIN COSTS

Terrain Type	Walker	Ground	Hover	Obscurement
Clear	1	1	1	-
Rough	1	2	1	-
Sand, Moon Dust	2	2	1	-
Woodland	1	2	2	1
Jungle	2	3	n/a	2
Swamp	3	4	1	1
Water, Liquefied Gasses	2*	3*	1	2**
Deep Water, Deep Liquefied Gasses	2*	3*	1	4**
Snow, Frozen Gases	2	2	1	-
Deep Snow	3	4	1	1
Ice	2	3	1	-
+1 elevation	add 2	add 2	add 4	-
-1 elevation	add 1	-	-	-

* Only vehicles with the Amphibious Perk and proper environment protection (if appropriate) may enter these hexes. Other vehicles will flood and automatically be put out of action. In addition, Amphibious vehicles cannot enter or exit this type of hex while moving at Top Speed.

** These only produces Obscurement if the defender is in the hex and is not a Hover, Naval or Amphibious vehicle.

TURNING ▼

7.5.6

A vehicle spends zero movement points to turn a single hex facing (60 degrees). Turning two or more hex facings (120 degrees or more) costs one movement point. Thus, single hex turns are free, while anything up to 360 degrees (full spin) is 1 point. Each turn must be followed by at least one hex of forward movement before another can be performed.

Turning more than two hex facings while moving at Top Speed requires a Piloting Skill test versus 3 + terrain's MP cost. If the roll fails, the vehicle skids forward one hex (if something is already in the hex, treat as a ram — page 154). If the roll fumbles, the vehicle crashes. This immediately ends the vehicle's movement. Roll one die: this gives Light (1 to 3) or Heavy (4 to 6) damage, depending upon the number rolled (see *Damage*, page 158).

JUMPING ▼

7.5.7

The distance covered while jumping depends on the angle of the jump and the speed (in meters/second) of the vehicle. If the vehicle has thrusters (Space movement system), it may subtract their thrust (in g) from G in the formula (vehicles with more than 1 g of thrust may fly instead, see page 148). Walker vehicles may pick any jump angle, even when using other movement types. Others will need a ramp of some sort (elevation levels count as 30 degrees). **Speed** in m/s is equal to the speed in kph divided by 3.6; **G** is the gravity of the body on which the vehicle is, in g.

JUMPING DISTANCES

Angle of Jump	Max. Distance (m)
15 degrees	(speed squared/19)/G
30 degrees	(speed squared/11)/G
45 degrees	(speed squared/9)/G

GROUND TOWING CAPACITY ▼

7.5.8

All types of ground vehicles are assumed to be capable of towing objects. Unless modified by a perk, a vehicle's maximum towing capacity (in kilograms) is equal to the vehicle's mass. This assumes that the towed item is easily towed, else it counts as double its usual mass for towing purposes. Vehicles can tow up to half their maximum towing weight without a reduction in speed. Vehicles towing between half and three-fourth of their capacity are limited to Combat speed. Loads from three-fourth to full towing capacity reduce the speed to half Combat speed until the load is dropped.

GRAVITY EFFECTS ▼

7.5.9

The speed and acceleration of a vehicle are not greatly affected by gravity, since they have more to do with mass (which does not change) than weight. It is, however, harder to maneuver in low-g environments because of reduced ground pressure. If the local gravity is lower than Earth's, apply a -1 Maneuver penalty to all rolls; if higher, apply a +1 bonus per additional g. The maximal jumping distance is, of course, also increased or lowered. See *Jumping*, above, for the actual effects. Falling damage is calculated as usual, then multiplied by the local gravity (in g).

▶ PLANETARY MOVEMENT — AIR

7.6

Aerial movement follows the same basic rules as ground movement, with the addition of altitude levels. The Aerial Movement rules can optionally be used for space combat if the style of the campaign is more cinematic than realistic (see page 223 for suggested campaign styles).

Since aerial combat hexes are not only larger but also in three dimensions instead of two, there is a lot more room in them than ground tactical hexes. Therefore, stacking is not really an issue: in Air War scale, up to 150 Size points may stack in one hex.

▼ ALTITUDE

7.6.1

Aircraft must keep track of what altitude level they are at. One altitude level is equal to one "hex" of elevation (250 m). Climbing one level of altitude costs 3 MP. Dropping one level of altitude costs 1 MP. Aircraft must stay at one level of altitude above the ground or crash (treat as automatic Heavy Damage if at Combat Speed, Overkill if at Top Speed).

Some aircraft have the Maximum Angle of Attack flaw, which forces them to move a certain number of hexes before being able to climb one hex. Aircraft without this flaw can climb straight up if they want, spending all their MPs in a single hex.

Always record a vehicle's altitude every round after moving it. It can be written down on a piece of scrap paper, in the margin of the record sheet, or marked with one or more 10-sided or 20-sided dice placed next to the unit on the map board.

Since most aircraft fly at considerable altitudes, the terrain effects of the hexes below them are irrelevant — all hexes cost one MP to move through. Terrain effects are ignored unless attacking ground targets: the Obscurement (see page 150) of the target hex counts. If the aircraft has the Nap-of-Earth Flying Perk, it may use ground Obscurement between the attacker and itself for protection. Some high ground, such as mountains, may also obstruct the line of sight between two aircraft.

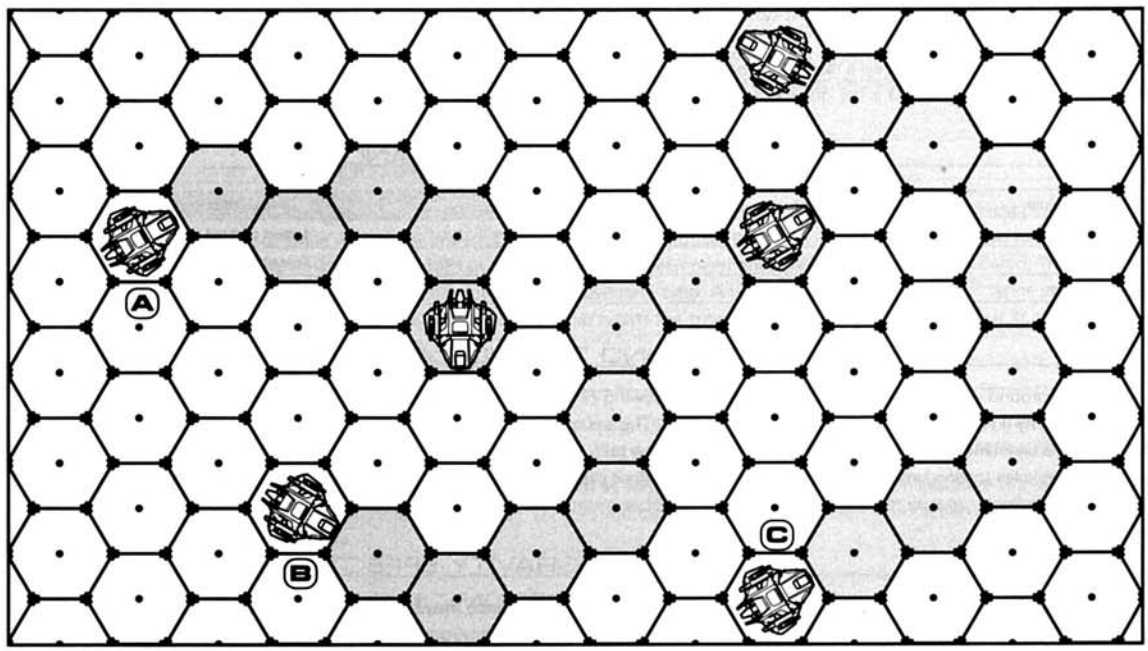
▼ MANEUVERING

7.6.2

Aircraft in the Air War scale use the ground tactical rules for maneuvering, with one exception: only VTOL craft can change their facing more than one hexside per hex moved. Non-VTOL aircraft with negative maneuver bonuses must travel straight ahead one more hex per negative maneuver point before turning one hexside. The number of hexes needed to be traveled before turning is called "turn radius."

Aircraft moving at speeds below 6 have their turn radius reduced by one. If the turn radius is equal to 0, treat the aircraft as VTOL for purposes of maneuvering. Aircraft moving at speeds greater than 20 have their turn radius increased by one.

◑ TURN RADIUSES



Aircraft A has a Maneuver bonus of 0 and can change its facing by one (and only one) for every hex it moves. Aircraft B has a Maneuver rating of -1: it must travel one more hex before changing its facing (by one hexside only); it is said to have a turn radius of 2. Aircraft C has a Maneuver rating of -2: it therefore has a turn radius of 3, which means it has to travel three hexes before turning by one hexside.

TIGHT TURNS ◇

Aircraft can try to make turns tighter than their Turn Radius will allow, but must make a Piloting roll against a Threshold equal to three, adding one for every point the actual Turn Radius was tighter than the aircraft's normal Turn Radius. A failure means the pilot must roll on the *Aircraft Control Loss* Table (see p.148), adding one per point of Margin of Failure. The pilot must also make a Fitness roll against the same Threshold to avoid blacking out (lose one Action). A fumbled FIT roll means the pilot loses consciousness for the turn.

Aircraft can also use the sideslip maneuver, in which the plane moves to a hex situated forward and 60° to the right or left, without changing headings. Sidesliping costs 1 MP per hex. If more than five sideslips are performed in the turn, the aircraft automatically loses one Altitude Level.

DIVING ◇

An aircraft dives when it spends a number of Movement Points equal or greater than half its Combat Speed to lower its altitude. At the end of the movement, the pilot may attempt to pull out of the dive. Pulling out requires a Piloting roll vs. 4, counting the aircraft's Maneuver rating.

A failed Piloting test means that the aircraft cannot pull out and begins to fall as if it were Stalling (see below). The aircraft loses every round an additional number of altitude levels equal to the MPs it originally spent in beginning the dive, until it pulls out of this uncontrolled fall (Piloting vs. 6). If the aircraft's altitude level goes under that of the ground on that hex, the vehicle crashes and is completely destroyed.

A fumble on the Piloting roll to pull out of the dive requires another die roll, this time on the *Aircraft Control Loss* Table (see page 148); the effects indicated are applied in addition to the normal effects of the failed Piloting roll, unless they are redundant or contradictory.

The pilot of an aircraft pulling out of a dive can choose any facing he wants; see the section on Stalling, below, for finding out the aircraft's heading when coming out of an uncontrolled fall. The speed of an aircraft pulling out of a dive is equal to the number of altitude levels dropped in the last round of the dive.

FALLING AND STALLING ▼

Aircraft have a Stall Speed attribute which dictates the *minimum* speed at which they must fly to avoid stalling, or losing altitude due to the wings' reduced lift. At the end of any turn, if the aircraft is moving below its designated Stall speed, it will begin to stall and fall. Any aircraft that is reduced to zero MP *because of Structure damage* (loss of the lifting surfaces) automatically falls. Every round the craft stalls or falls it loses an increasing number of altitude levels, as indicated on the *Altitude Loss* Table.

To pull out of a stall, the pilot must first wait until the number of altitude levels lost is equal or higher than his aircraft's Stall Speed, then make a Piloting roll against a Threshold of 6 (this can be during the first turn of falling/stalling). If the pilot's Margin of Success is of 2 or higher, he can select his craft's heading when he pulls out of a stall; on a MoS of 1, determine randomly with the roll of a die. If the roll does not succeed, the pilot may try again once his aircraft has again lost a number of altitude levels equal or greater than the Stall Speed. He may try repeatedly until the aircraft has lost the prescribed number of altitude levels for the turn.

If the aircraft reaches the ground, it suffers damage equal to the roll of two dice times the Size of the vehicle, times the number of altitude level fallen. The pilot may attempt to turn a straight-on dive into a crash-landing by making a Piloting roll vs Threshold of 6, then following the rules in *Crash-landing* on page 149.

ALTITUDE LOSS TABLE ◫

# of Turns	Drop
1	18
2	32
3	36
4+	36

# of Turns is the number of turns the aircraft has been stalled.

Drop is the number of 250 m altitude levels lost during the turn. The maximum number of altitude levels lost in one turn is 36.

▼GLIDING

7.6.4

It is possible for an aircraft to keep on flying even if it no longer exerts any thrust, by gliding down to the ground. Each round a plane glides, it must lose any combination of 2 MPs of speed or altitude levels. Should the aircraft's speed fall below its Stall Speed, it will immediately stall and lose altitude levels accordingly. Gliding aircraft can use the diving maneuver (see previous page) to gain speed. Another way is to Skillfully control the descent of the aircraft to exploit its lifting capacity to the maximum. A Piloting Skill test can be made at the cost of one action, versus a Threshold of 5. If successful, the Margin of Success of the roll can be subtracted from the speed or altitude levels lost this combat round. It is thus actually possible for a very good pilot to *gain* speed or altitude levels if the Margin of Success exceeds 2.

Planes that can reach supersonic speeds (i.e. with Top Speeds of 35 or more) are not very good at gliding. They must lose any combination of 3 MPs of speed or altitude levels, with a minimum altitude level loss of one, for each round spent gliding. Planes with the Glider Perk, on the other hand, only have to lose one altitude level or MP of speed per combat round. Supersonic gliders, such as a shuttle, use the normal Gliding rules.

▼LOSS OF CONTROL

7.6.5

Whenever a pilot fails during a delicate aerial maneuver, or *fumbles any piloting roll*, he must roll one die and compare the result on the following *Aircraft Control Loss* Table. Specific maneuvers may give bonuses or penalties on the roll, otherwise the roll is taken straight. If the result given is redundant or contradictory to the current situation of the aircraft, the result is ignored.

◫ AIRCRAFT CONTROL LOSS TABLE

Roll	Effect
1	Nothing more than a good scare... Pilot loses 1 action.
2	Aircraft Sideslips, as per maneuver. Roll randomly for left or right.
3	Aircraft Skids (turns one hexside but keeps going in the same direction) for a number of hexes equal to the roll of one die. Roll randomly for left or right if necessary. If the aircraft runs out of MPs during the skid, it must begin its next movement phase with the remainder of the skid.
4	Aircraft suffers Light Structural Damage.
5	Aircraft loses a number of altitude levels equal to the roll of one die.
6-7	Aircraft Stalls — see Stalling rules.
8-9	Aircraft suffers Light Structural Damage and Stalls.
10	Aircraft suffers Heavy Structural Damage.
11	Aircraft Suffers Heavy Structural Damage and Stalls.
12+	Aircraft goes into an uncontrollable spin. It suffers Heavy Structural Damage and will crash unless the pilot makes a Piloting roll vs. a Threshold of 10 to regain control.

▼AIR TOWING CAPACITY

7.6.6

All types of air vehicles are assumed to be capable of lifting or towing objects. Unless modified by a perk, a flying vehicle's maximum lifting capacity (in kilograms) is equal to *half* the vehicle's mass. Cargo must fit within the vehicle, though VTOLs can also use an underslung cargo net. Towed items must be able to fly (a glider or another air vehicle, for example).

Vehicles can lift/tow up to half their maximum capacity without a reduction in speed. Vehicles towing or lifting between half to three-fourths of their capacity are limited to Combat speed and suffer a -1 modifier to all Piloting rolls. Loads from three-fourth to full towing capacity reduce the speed to half Combat speed and give a -2 modifier to all Piloting rolls until the load is dropped.

▼FLYING WITH THRUSTERS

7.6.7

If the vehicle is equipped with a Space movement system that creates more thrust than the local gravity, the vehicle can use any extra thrust to fly. The following formula shows the extra speed supplied by the thrusters, assuming a generic, moderately streamlined vehicle. This can be added to the speed of another movement system, but if the resulting speed is greater than one and a half the normal Flight speed, the vehicle suffers a -1 penalty to Maneuver.

◫ FLIGHT SPEED CALCULATION

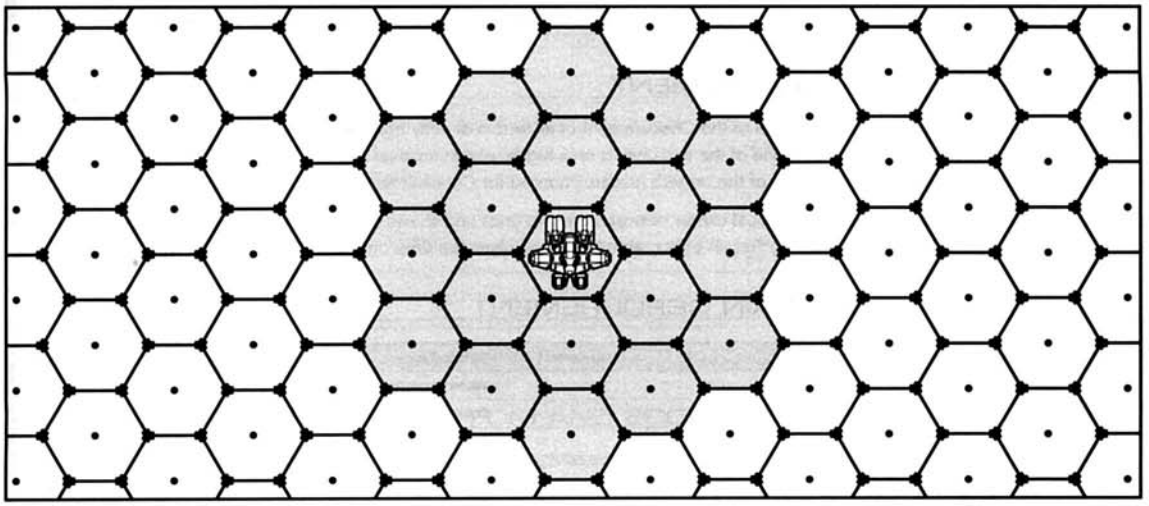
- Thrust = Mass (tons) x (Acceleration (m/s) - local gravity (m/s))
- Drag = (Size - 0.5) cubed/2 (divide by 4 if it has the Streamlined Perk)
- Thruster Flight Speed = square root of (50 x (thrust ÷ drag))

GROUND/FLIGHT INTERFACE ▼

For hybrid games, which combine Air War with ground tactical combat, a good solution is to use two maps: one for ground forces and one for aircraft, (include a miniature version of the ground map with the air map). In effect, the two maps represent roughly the same battlefield (though the Air War map will usually cover a larger area). The individual Air War hexes correspond to the ground hexes in groups of nineteen.

Another way of combining both aircraft and ground units is to multiply the aircraft's Combat and Top Speed values, as well as their Turn Radiuses (see below), by a factor of five (5). VTOLs are considered as having a Turn Radius equal to the absolute value of their Maneuver, with a minimum of one (hence a -3 Maneuver VTOL would move three tactical hexes before turning).

AIR/GROUND HEX INTERFACE ◑



INTERFACE ATTACKS ◇

Interface attacks refer to ground-to-air and air-to-ground combat. Combat units have to contend with very short attack windows and extremely different ranges. Ground vehicles are generally not equipped to attack aircraft: targeting computers are not correctly calibrated, guns cannot be elevated far enough, etc. Ground attacks versus aircraft suffers a -2 penalty, but use the Air War's weapon ranges against anything that flies above NOE altitude.

Aircraft attacking ground units suffer from similar problems. Air-to-ground attacks have a -1 penalty and must use the tactical weapon ranges. The exception to this is any indirect fire or freefall weapon, which can be "lobbed" from further away and thus use the regular Air War ranges.

LANDING/TAKE-OFF ◇

Aircraft must stay at one level of altitude above the ground or crash. The exception to this rule is landing. When a vehicle lands, it must end its movement at Combat Speed, on terrain with a Ground vehicle MP cost of no more than 1 (rougher terrain will result in a crash-landing; see below). On the following round, the vehicle switches to its Ground movement mode, if any — otherwise, it must remain stationary. Some vehicles have Hover or Naval landing gear, but the landing procedure remains the same (obviously, an aircraft with Naval movement must land on water).

Vehicles may be equipped with extra-heavy landing gear (Improved Movement System Perk). These can land in any terrain that has a MP cost of 2 or less for the chosen movement system.

CRASH-LANDING ◇

Whenever an aircraft is forced to land on rough terrain or no longer has a landing gear/system (Ground Movement System destroyed), it is said to be crash-landing. Treat a crash-landing as a fall, replacing the number of elevation levels fallen by half the speed (in MPs — usually the Stall speed; round up) of the aircraft as it lands.

The pilot has a chance to lessen or totally eliminate the damage. A Piloting roll (with Maneuver bonus) is made against a Threshold equal to the cost in Ground MPs of the surface he is landing on. The Margin of Success from that roll is subtracted from the die roll used to determine crash-landing damage.

▶ LINE OF SIGHT AND OBSCURMENT

7.7

A unit must "see" its target to fire. The ability to detect and target an opposing unit is called, for simplicity, having a Line of Sight (LOS). This does not necessarily imply that the target is within human visual sight, merely that it can be acquired and locked on by the sensors and fire control computers available to the detecting unit. Units are considered to have a LOS to their target unless one (or more) of the following conditions exist.

◫ LINE OF SIGHT NON-EXISTANT IF...

- The target is beyond the detecting unit's Sensor range.
- Any terrain between the two units is one or more elevation levels higher than both the units.
- Either unit is within the dead zone of an intervening elevation level (adjacent to an interceding elevation increase).
- The Concealment value between the vehicle and the target is greater than the vehicle's Detection rating (see below). 0

▼ CONCEALMENT

7.7.1

The Concealment value is equal to the Obscurement of all terrain directly between the two units, plus the Obscurement of the terrain the target is in. If one of the two units is on a higher elevation level than the other, only the terrain at the higher elevation level and the terrain of the target's hex are counted for Concealment purposes.

Concealment represents the visual clutter between the two units and shows how difficult it is to spot a target with passive sensors or the naked eye. The Terrain Effect table below indicates the Obscurement scores for each type of terrain.

◫ TERRAIN OBSCUREMENT

Terrain Type	Obscurement	Terrain Type	Obscurement
Clear	-	Water, Liquefied Gasses	2*
Rough	-	Deep Water, Deep Liquefied Gases	4*
Sand, Moon Dust	-	Snow, Frozen Gases	-
Woodland	1	Deep Snow	1
Jungle	2	Ice	-
Swamp	1	Elevation	-

* These only produce Obscurement if the defender is in the hex and is not a Hover, Naval or Amphibious vehicle.

◇ SPACE OBSCUREMENT

As a rule, there is little obscurement to be found in space. The dense asteroid field where rocks tumble and collide with each other is mostly a science-fiction invention — even in the main belt, kilometers separate the various rocks. A few elements however, do influence detection in space.

The most common form of tangible "dust" in space is ice crystals forming out of the atmosphere or tankage of a leaking space vessel. They are otherwise very rare, found only in planetary rings. Clouds of dust absorb light and reduce visibility, causing one point of Obscurement per hex. Debris particles are somewhat bigger, but have effects similar to dust. They cause two points of Obscurement per hex. Debris hexes can be used to represent a recently pulverized asteroid, the core of a planetary ring, or the remains of an unlucky spaceship.

The shadows of planets and other celestial bodies are extremely dark, because there is usually nothing nearby to reflect light into them. Anything located in shadows gets an automatic base Obscurement of 4.

▼ DETECTION RATING

7.7.2

The vehicle's Sensor rating is added to its crew's EW Skill level to produce the vehicle's passive sensor value, or Detection rating. All units, including infantry, get a default rating of 4 in daylight or 2 at night from unassisted vision. The highest value of the two is the vehicle's Detection rating. Unassisted vision has a range of 1 kilometer; if sensors are available, their range is used instead.

▼ ACTIVE SENSOR LOS

7.7.3

Active Sensors can obtain a Line-of-Sight (LOS) when visual or passive sensor LOS is impossible. An EW Skill test is made, modified by the vehicle's Sensor rating. The Threshold is equal to the target's Concealment value, minus the Detection Threshold Modifiers (see table next page). A success gives the detecting unit a LOS to the defender, a draw, failure, or fumble does not. Vehicles without sensors cannot perform an Active Sensor detection. Active Sensor sweeps, unlike passive or visual detection, require a full action to complete.

▷ ACTIVE SENSORS CONTINUED

The range of the sensor and communication system can be augmented by increasing power, but this gives a much larger sensor signature and somewhat reduces the sensor's precision. The listed range is the base range in which the vehicle's passive sensors operate. Using active sensors in that range gives no penalty. Each doubling of the range requires an Active Sensor action and gives a -1 modifier to detect (others also get a +2 modifier to detect the unit using active sensors).

On a planetary surface, unless using a relay station or friendly vehicle as a spotter, the maximum range is equal to the distance to the horizon. This distance will increase if the unit is placed on a high vantage point, such as a mountain or other high ground, and decrease if the vehicle is on low ground (valley, canyon). Similarly, the horizon will be much closer on a smaller body, such as a moon or an asteroid.

DETECTION THRESHOLD MODIFIERS

Applied to attacker's roll	
Sensor Rating	variable, by default 0
Range and Arc Modifier	-1 per extra range band; arcs as *Firing Arcs* below
Target Sensor Profile	variable, by default 0 (see page 175)
Target Sensor Signature*	+2 per extra range band used by target
Applied to (Concealment) Threshold	
Stealth Rating	variable, by default 0
Ground Movement Penalty	-1 per hex moved by target
Air Movement Penalty	-1 per five Air War hexes moved by target
Space Movement Penalty	-1 per Thrust Point applied by target
Combat Penalty	-1 per weapon fired by target

*Applicable only if target used Active Sensors this combat round.

ECM AND ECCM EFFECTS ▼

Electronic Counter Measures and Electronic Counter Counter Measures are used to affect communication and sensor transmissions. ECM and ECCM thresholds (Electronic Warfare Skill + Rating) are rolled immediately after the action is spent to activate these systems, but their effect is not felt until the beginning of the next round.

If ECM is active and functional during the initiative phase, all Sensor and Communication rolls for the round are affected and must beat the ECM Threshold. The unit which is using either of these systems is the one testing, not the receiver. Transfering Command points requires a Communication test from the commander's unit (if an infantry squad, use Infantry Skill with Comm 0). ECM affects all enemy units within the emitter's Sensor range.

If ECCM is active during the initiative phase of the turn, all active ECM systems within the Sensor range of the ECCM unit must compare their own Threshold to the ECCM's Threshold (or Thresholds, if there are more than one ECCM system active). If the ECCM Threshold is equal to or higher than the ECM's Threshold, the ECM has no effect that turn.

The ECM unit may spend an action during the turn to try and increase its own Threshold in order to beat the ECCM in the next round. Likewise, the ECCM unit may spend an action to try to raise its own Threshold for the next round. The new result stands, even if it is lower than the previous one. Friendly ECM units are not affected by their side's ECCM.

STEALTH EFFECTS ▼

During daytime, the rating of a Stealth system is added to the Concealment total only when there is Obscurement between the attacker and the defender (Stealth does not confer invisibility). Stealth systems are always added to the defender's Concealment at night, since most stealth vehicles are painted in dark shades and feature silent running drive trains.

Stealth aircraft are designed to escape long range sensors. In addition, they don't cause as much of a visual disturbance as a ground stealth unit would cause on the ground (no bushes to push around, for example). Flying Stealth units apply a -1 modifier for every five (5) Air War hexes traveled.

Space units are hard to detect against the background of deep space, but fusion engine exhaust and rapid movement make it impossible to conceal a "burn" when changing vectors. Stealth vehicles are nearly impossible to detect unless they fire their engines or a weapon system; Stealth is always in effect for space vehicles.

FIRING ARCS ▼

Sensors use the same modifiers as the Defense Arc (page 154). Vehicles may only target opponents that are within their weapons' firing arcs. There are six common firing arcs: forward, right, left, rear, fixed forward, and turreted. If a weapon does not have a clearly stated firing arc, the default arc is the forward arc. See page 154 for diagrams.

7.7.4

7.7.5

7.7.6

end of section 7.7 Line of sight and obscurment

▶ATTACKS

7.8

If a unit has a LOS to a target within its weapon's firing arc and range, it can attack that unit. When an attack occurs, an opposed Skill test is required to determine the success of an attack. The attacker uses his unit's Gunnery Skill and the defender uses his unit's Piloting Skill to make the roll. If the attacker wins the Skill test, the attack succeeds. If the defender wins or if a draw occurs, the attack misses. The following is a short list of the modifiers to both rolls; they are explained further in the text.

◫ATTACK AND DEFENSE MODIFIERS

Attack Roll Modifiers:	
•	Fire Control Rating
•	Weapon Accuracy Rating
•	Range Modifier
•	Attacker "Speed" Modifier
•	Obscurement Penalty
Defense Roll Modifiers:	
•	Maneuver Rating
•	Defender Movement Modifier
•	Arc Of Attack Modifier
Possible Outcomes	
If Attackers total is above Defender's	HIT
If Attacker's total is equal to or below Defender's	MISS

▼ATTACKER MODIFIERS

7.8.1

Life is not a firing range; combat is harder under certain conditions and easier under others. Modifiers resolve this by introducing penalties and bonuses to each combat roll. Apart from the quality of the vehicle's Fire Control computer and the Accuracy of the weapon, three other factors apply: the range to the target, the obscurement (or cover) between the attacker and defender and the attacker's own movement.

◇RANGE

Every weapon is rated by a value known as Base Range. The Base Range is expanded into four range bands, each doubling the distance of the last. An additional range, Point Blank, is available for close combat within the same map hex. Although there is no theoretical limit on certain weapons' ranges, such as lasers, the following ranges are practical combat limits.

◫RANGE MODIFIERS

Point Blank	+1	Special range (same hex)
Short	0	(from 1 hex to base range)
Medium	-1	(from previous to two (2) times base range)
Long	-2	(from previous to four (4) times base range)
Extreme	-3	(from previous to eight (8) times base range)

◇OBSCUREMENT

Various terrain types, such as swamp and wooded areas, obscure a target and make it difficult to hit. The Concealment value of the defender (see *Line of Sight*, page 150) is subtracted from the attacker's roll to represent the lack of accuracy and the damage absorbtion caused by intervening cover.

Indirect fire (see page 156) is an exception to this. Since the attack is arcing through the air above the intervening terrain, only the Obscurement of the defender's hex counts for the attack roll.

◫OBSCUREMENT MODIFIERS

Swamp	1
Woodlands	1
Jungle	2
Water	2/4*

* Only produces Obscurement in the defender's hex and only if defender is not a Hover, Naval or Amphibious vehicle.

ATTACKER MOVEMENT ◇

A moving gun platform has a harder time hitting than a stationary one. Conversely, a unit that is moving slowly will generally have much less trouble keeping its weapons trained on a target. In space, applying sudden bursts of thrust tends to throw the aim of the gunner and thus causes misses. The less thrust applied by the unit during the combat round, the easier and more stable the shot is.

MOVEMENT MODIFIERS ◫

Stationary	+2
Half Combat Speed/Thrust or less	+1
Combat Speed/Thrust	+0
Top Speed/Overthrust	-3

DEFENDER MODIFIERS ▼

Targets rely on the following modifiers to help them avoid shots. In general, the only defense of large and ungainly vehicles is their speed, as their poor Maneuver rating will severely hamper their defense. Attacks coming from the rear are also much more dangerous than attacks from the front, both because the armor is thinner there and because the crew's attention is much more focused on the front arc. If the Players so prefer, the sign of the following modifiers can be inversed and applied to the attacker's roll instead.

MANEUVER VALUE ◇

Each vehicle has a set Maneuver value by design. Negative Maneuver values are for slow and ponderous vehicles like battleships and large tanks. Positive Maneuver values are for fast and agile vehicles like motorcycles, combat helicopters and exo-armors.

TARGET SPEED ◇

An enemy platform's speed affects how easy it is to hit. Speed works on the following ever increasing scale. If the target has not moved yet in the round, its last recorded movement is used to determine its modifier.

In space combat, use the number of Movement Points spent by the target instead of the number of hexes moved.

TARGET SPEED MODIFIERS ◫

Hexes Moved	Defense Modifier
0	-3
1-2	-2
3-4	-1
5-6	+0
7-9	+1
10-19	+2
20-99	+3
100-999	+4

HANDLING COMBAT ◪

Combat is both a bane and a relief for the Gamemaster. A bane, because it often takes a long time of actual game play to resolve even a short encounter, and a relief, because nothing spices up a tranquil session like a sudden burst of action.

The best trick is to keep it lose and fast. Pull out the hex maps only if the battle is the main event of the scenario. Smaller battles can generally be ad-libbed using notes on a sheet of paper. Make sure you have all the information that you need on hand — it might be worth it to create generic pilot groups, complete with stats, vehicles and favorite tactics. You'll probably want to use the Cinematic rules on page 223 and the scribbled notes mentioned above, so that you can ignore a lot of the bookkeeping and keep the focus on the story and the characters.

Some playing groups prefer detailed results in combat. They'll insist on tracking every shot, every missile and every Burn Point expended. That's fine too, but be prepared to spend a few hours on any given encounter. Maps are also almost mandatory here.

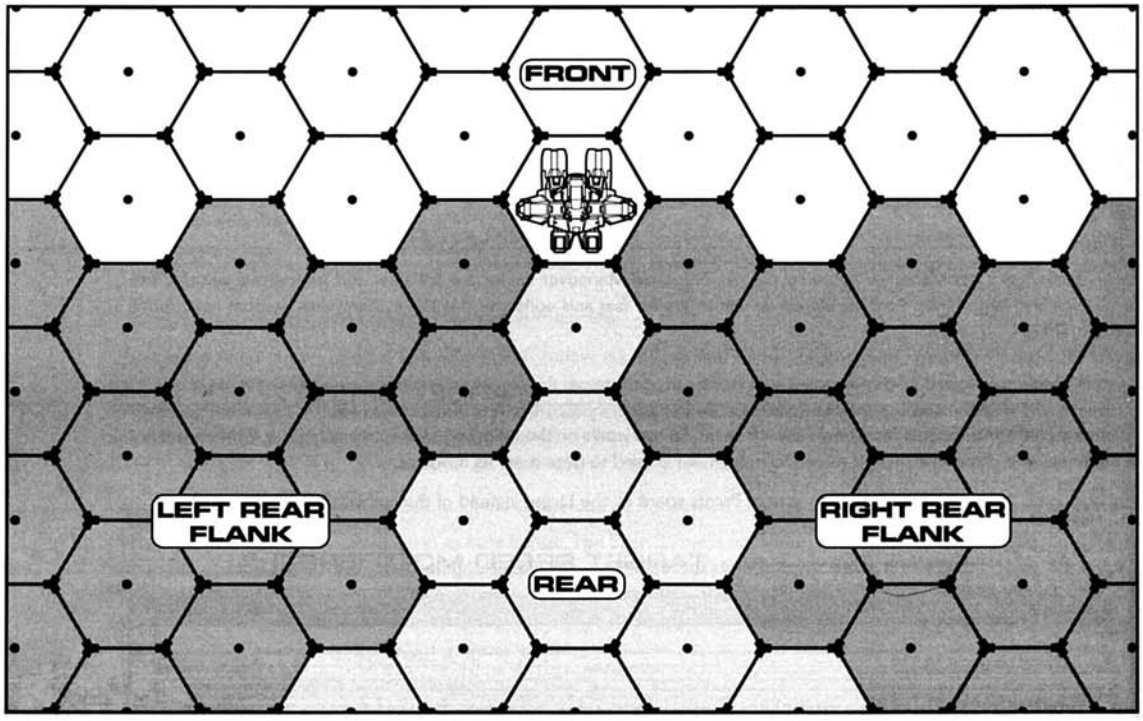
◇ DEFENSE ARC

The arc from which the attack comes from can reduce the defender's chances of success, either because of inattention or thinner armor. Most combat vehicles carry less armor on their back than on the front, and pilots obviously don't have eyes on the back of their head! The modifiers for the Defense Arcs also apply to Active Sensor checks (see page 150).

◫ DEFENSE ARC MODIFIERS

If attack is in the defender's Front	0
If attack is from defender's Rear Flank	-1
If attack is from defender's Rear	-2

◑ DEFENSE ARCS DIAGRAM



▼ PHYSICAL ATTACKS

There are few vehicles that can make effective physical attacks. Ground vehicles are capable of ramming, but few commanders exercise the option. With humanoid exos, old-fashioned close-in attacks have become common. Ramming, punching, kicking, stomping and all manners of melee weapons are used on the battlefield when ammo runs out. All physical attacks use the attacker's Piloting Skill instead of his Gunnery Skill.

◇ RAMMING

Impact at high speeds can be devastating. Frontal collisions are almost always deadly, while impacts from either side or from the rear are slightly less dangerous. Ramming is a standard Opposed Skill roll. In air and space combat, both vehicles must be at the same altitude level (or on intersecting vectors) for a ram to occur. Unlike other attack forms, ramming inflicts damage on both the attacker and the defender.

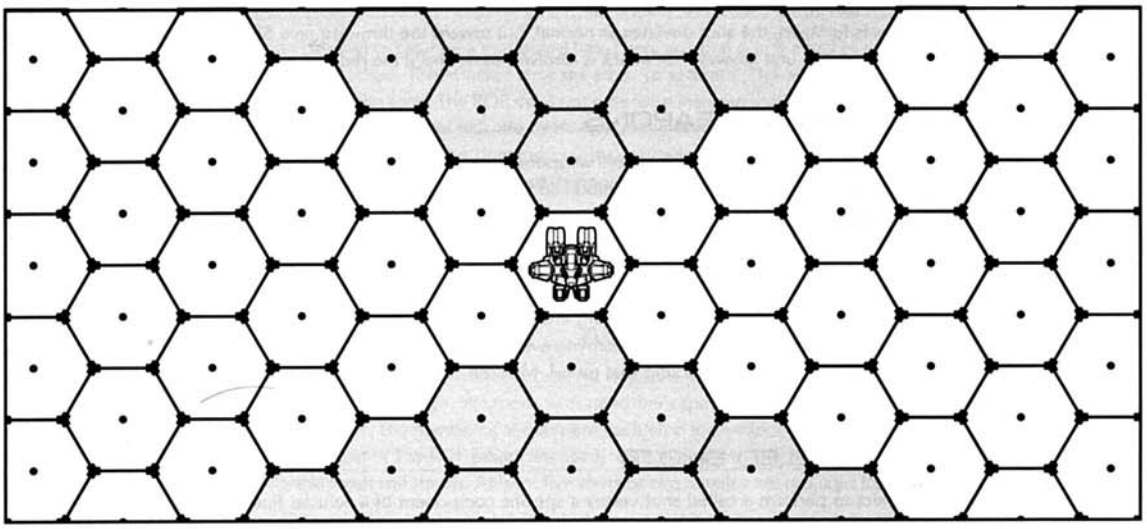
When determining ramming damage, first determine impact speed based upon the direction of the attack. Head on collisions add the speeds (or velocities, in space) of the attacker and defender. Side impacts take the attacker speed, and rear collisions take the difference between the two speeds.

Once the impact speed has been established, a damage modifier is determined using the Impact Speed Modifiers table. This damage modifier is added to the Size of each vehicle to determine the Damage Multiplier used against the other vehicle. Each vehicle will take an amount of damage equal to the Margin of Success of the attack multiplied by its opponent's impact Damage Multiplier (see *Damage*, page 158).

RAMMING

Ramming Direction	Impact Speed
Head On	Attacker Speed + Defender Speed
Side	Attacker Speed
Rear	Attacker Speed - Defender Speed

RAMMING ARCS DIAGRAM



IMPACT SPEED MODIFIERS

Impact Speed (MPs)	Ground Damage Modifier	Air/Space Damage Modifier
1-2	-2	0
3-4	-1	+1
5-6	+0	+2
7-9	+1	+3
10-19	+2	+4
20-99	+3	+5
100-999	+4	+6

PUNCHING

A Manipulator Arm or an equivalent appendage (Tool or Battle Arm) is required to punch. Walker vehicles are the most common type of punching vehicle, but construction vehicles with hydraulic arms can achieve a similar effect. The Damage Multiplier of a vehicle's punch is equal to the Rating of the punching arm.

KICKING AND STOMPING

Kicking vehicles and stomping infantry are both valid attacks for walker vehicles. Kicking or stomping requires a Piloting roll vs the defender's Piloting, (or infantry's Skill) to attack, and the Damage Multiplier is equal to the Size of the vehicle.

THROWING

Throwing is used to hurl items, such as rocks or grenades. At least one arm is required for throwing. Battle and Tool Arms may not be used to throw objects, unless they have been specifically designed to do so. If so, they may not be used for another function, and a Battle Arm cannot pick up the projectile by itself.

The base throwing range (in meters) of the arm is equal to twice its rating. This total is reduced by the Size of the object being thrown, which is substracted from the throwing arm's rating before doubling it. If the object being thrown is larger than half the Size of the throwing vehicle, half the rating of another arm can be added to the effort. Weapons' Sizes are equal to their Min. Size requirement minus one.

▷ THROWING CONTINUED

The Base Range calculated above is doubled for each additional range band, as for any other weapon. When playing on a hex board, both the attacker and defender are considered to be in the middle of their respective hexes when determining the throwing range.

When an object is thrown, a Gunnery Skill roll, modified as normal for range and movement, is made. If the modified roll is equal to or higher than the defense roll, the thrown object lands right on target. If the dice roll is failed, the shot will deviate from its intended destination by a number of meters equal to twice the Margin of Failure. One die is rolled for the direction of the deviation. When using hexes, the deviated projectile is placed in the nearest possible hex, considering the target point as the center of the target hex. In space, the object will move the same distance every round, until it exits the map.

If the attack roll was fumbled, the shot deviates as normal, but toward the throwing unit. Sometimes, a fumble will land a projectile right on top of a unit anyway. The attack is resolved as normal if the defense roll of the new target is failed.

◇ MELEE WEAPONS

Much like punching, attacks with various hand-held weapons are an exo-vehicle's battle signature. To effectively use such a weapon, the pilot attacks using his Piloting Skill, modified by the vehicle's Fire Control. A melee weapon's Damage Multiplier is listed on the vehicle record sheet.

▼ EVASIVE MANEUVERS

7.8.4

Evasive maneuvers allow the pilot to avoid incoming attacks. An evasive maneuver counts as an action and must be declared at the beginning of the combat round. Performing evasive actions adds a +3 bonus to all defense rolls for the combat round, but forbids the vehicle from attacking that round. Multiple "evasive actions" cannot be performed to accumulate defensive bonuses.

▼ CALLED SHOTS

7.8.5

A gunner may elect to perform a called shot versus a specific component of a vehicle. Possible targets are Fire Control, Structure, Crew Compartments, Movement Systems, and Auxiliary Systems. These locations are represented by 1 to 5 on the *Systems Damage* table (see *Damage*, page 158). Called shots take a -1 modifier on their attack. If the called shot hits, the odds of hitting the specific component are increased (see *Damage*).

High precision shots versus tiny targets (headlights, for example) are also possible. The shot must be aimed and a Margin of Success of at least 3 is required to hit. If the MoS is lower then 3 but above 0, the attack hits the targeted location but not the tiny target.

▼ INDIRECT FIRE

7.8.6

Indirect fire is used by artillery batteries and other vehicles that have weapons capable of indirect fire. Indirect fire is primarily used for fire support. Only weapons that are specifically designated as indirect firing weapons may use this form of attack. Indirect fire may not be used in micro-gravity environments (0.2 gee or less), and suffers an additional -1 penalty in environments of 0.5 gees or less.

To fire indirectly, a friendly unit must be designated as the forward observer. The forward observer must have a LOS to the target, counting Obscurement at full value. Being a forward observer requires one action. A single forward observer, however, can relay firing coordinates to multiple indirect fire units.

Indirect attacks can be launched over obstacles, including interfering elevation levels, because the attacks are angled over the obstructions. The attacker may ignore the Obscurement modifier to attack except for the hex where the target stands.

▼ BURST FIRE

7.8.7

Any weapon with an Rate of Fire (ROF) bonus of 1 or greater is capable of burst fire. The rate of fire bonus acts as a bonus to a weapon's Damage Multiplier when the weapon is used against vehicles. A successful burst fire attack versus infantry adds the ROF bonus to the Margin of Success instead of the damage rating. For every point of ROF bonus used, five rounds of ammunition are expended. Note that to conserve ammo, a player may elect not to use the weapon's entire ROF bonus. Burst fire has the effect, however, of lowering the weapon's effective damage because many rounds will simply not connect. If the effective ROF bonus is zero, only one round of ammunition is expended.

◇ MISSILE ROF

Unlike other weapons, weapons with the Missile characteristic do not expend five rounds of ammunition per point of ROF bonus used. Instead, the number of missiles or rockets used doubles for every point of ROF used. Thus, ROF +1 = 2 missiles, ROF +2 = 4 missiles, ROF +3 = 8 missiles, ROF +4 = 16 missiles, and so on.

WALKING FIRE ◇

Weapons capable of burst fire can be used to attack multiple targets in a single action by walking the burst across the targets. A player must declare that he is walking fire before any attacks are made. The player then chooses the targets of his attack. A number of targets equal to the weapon's ROF plus one may be attacked. For each extra target, the weapon's ROF is reduced by one for damage purposes (but not for ammo expenditure). All targets must be within the weapon's firing arc and in adjacent hexes (empty hexes count as additional targets). Each attack is rolled separately. Each individual target may not be attacked more than once per round by the same weapon (no extra attacks against one target).

SATURATION FIRE ◇

A burst fire weapon (ROF ≥ +1) can be used to saturate a mapboard hex. Every unit that is in the hex or enters the hex later in the combat round is automatically attacked. The attacker chooses a hex to saturate. The attack roll is made normally, except that the weapon's ROF is added to the total. The ROF does not otherwise increase the Damage Multiplier or Margin of Success of the attack. After rolling, the attacker records the total. Any unit in the hex (or that enters the hex later in the combat round) must defend against this number or be damaged by the saturation fire. The Margin of Failure of the defender is treated as the Margin of Success of the attack (i.e. total damage = MoF x Damage Multiplier of weapon).

The saturation zone cannot be further than the medium range of the weapon, and the weapon uses 10 shots (or 4 missiles) per ROF point used. If the weapon does not have this much ammo left, the result still stands (although the ammo magazine is emptied). A least 10 rounds of ammunition (or 4 rockets) are required to saturate a hex.

ANTI-MISSILE FIRE ▼

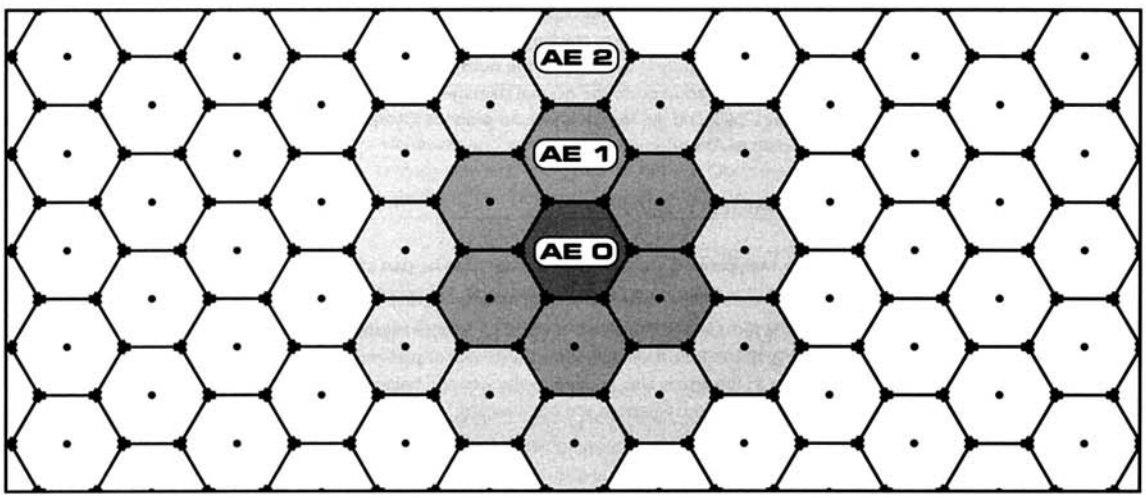
Any ranged weapon can be used to defend against a missile attack. All weapons (except Anti-Missile weapons) suffer a -6 modifier to hit when used in Anti-Missile (AM) mode. Weapons with rapid-fire capacity can use ROF points to reduce or eliminate this penalty on a one-to-one basis. The number of shots spent each time the weapon is fired in AM mode is equal to five minus the MoS, with a minimum cost of 1. If ROF points are used, multiply the previous result by five (2 for missiles). If there isn't sufficient ammunition, the result still stands. At least five shots or two missiles are required for Anti-Missile fire.

The weapon completely destroys the missile when successfully used versus a single shot attack. When used to defend versus a missile cluster (ROF attack), burst fire *must* be used. Each point of MoS reduces the incoming cluster's ROF bonus by one. If the ROF bonus drops to zero, all of the incoming missile flight has been effectively destroyed. Because it is a wild attack, anti-missile fire does not use up actions and may be rolled versus every incoming missile cluster. The Player can also make several anti-missile attacks against a single incoming missile (or salvo) at the cost of 1 Action per extra attack.

AREA EFFECT WEAPONS ◇

Area effect weapons damage everything in their radius, indiscriminant of friend or foe. These weapons are rated in Area Effect (AE), followed by the radius of hexes of their blast area (radius 0 means only one hex is affected). A single attack roll is made, with each and every vehicle and troopers (allies included) in the area affected rolling a defense against this value separately. Even if the blast is completely defended against (MoS equals to 0 or lower), any unit in the blast zone still takes part of the explosion's Damage Multiplier in concussion damage (DM in atmosphere, 1/2 DM in space).

AREA EFFECT DIAGRAM ◑



▶ DAMAGE

7.9

A weapon's damage increases with the Margin of Success of its attack. Weapon damage is rated as a multiplier to the Margin of Success. Thus the better the marksman, the more damage is inflicted.

- **Total Damage = Margin of Success x Damage Multiplier**

This final damage is compared to the general armor of the target. The following are the possible outcomes. Only the most severe effect applies. For example, if a vehicle suffers Heavy Damage because it took damage exceeding twice its base Armor value, it does not suffer Light Damage even though it obviously took damage in excess of its base Armor rating.

◫ DAMAGE VS ARMOR TABLE

Damage to Armor	Outcome	What to Do
Damage smaller than 🛡	No Effect	Nothing; Damage bounces off
Damage larger or equal to 🛡 but smaller than 2 x 🛡	Light Damage	Roll on Systems Damage Table, Light
Damage larger or equal to 2 x 🛡 but smaller than 3 x 🛡	Heavy Damage	Roll on Systems Damage Table, Heavy
Damage larger or equal to 3 x 🛡	Overkill	Vehicle Destroyed; remove counter
Vehicle Base Armor = 🛡		

▼ SYSTEMS DAMAGE

7.9.1

The attacker rolls one six-faced die to find the location of the hit on the Systems Damage Table, next page. When multiple possibilities exist for exactly which vehicle component is damaged, such as when weapons or auxiliary systems are hit, another single die is rolled. If the result is an odd number, the defender chooses which system is damaged. If the result is an even number, the attacker chooses which system is damaged. For example, a defender might receive a "-1 to Single Weapon" damage effect. If this defender has more than one weapon, a die is rolled. If the number is odd, the defender will probably choose to penalize his most feeble weapon. If the number is even, the attacker will most likely opt to damage the defender's main weapon.

Auxiliary systems include Sensors, Communications and any Perks which are labeled as auxiliary systems (e.g. life support, ejection systems). If any turreted weapon is present, its turret is counted as an Auxiliary system and may be disabled like the rest. A destroyed turret is frozen in place and any weapon mounted in it becomes fixed in the arc where it last fired. Many Perks are not auxiliary systems (e.g. Arms, Reinforced Crew Compartment).

Crewmembers that become casualties are automatically useless for the remainder of the combat. They are not necessarily dead, but they are unconscious, pinned, wounded or otherwise unable to fight. After the combat, roll one die for each casualty. If the result is 3 or less, the crewmember is dead. If the result is 4 or more, the crewmember was only wounded and may be used in later scenarios of a campaign. For vehicles with large crews (e.g. warships), simply assume that half of the casualties were fatalities and that half were wounded.

If a vehicle's Sensors or Fire Control are utterly destroyed, the vehicle may still perform actions that require these systems, but suffers a -5 modifier. If a vehicle's Communications system is destroyed, the vehicle may not be used as a forward observer for indirect fire and may not use Command Points.

▼ DAMAGE TO ARMOR

7.9.2

Armor loses its effectiveness when damaged due to cracking and structural fatigue. When a vehicle receives Light Damage, it loses 1 point of base Armor permanently in addition to the normal damage. Heavy Damage causes a vehicle to lose 2 points of base Armor permanently in addition to the normal damage. Each lost point of base Armor reduces the amount needed to inflict Heavy Damage by 2 and the number need to produce Overkill by 3. Some weapon characteristics, Perks or Flaws will change the amount of Armor points lost.

▼ DAMAGE TO ARMS

7.9.3

Arms (whether Battle, Tool or Manipulator) are normally considered to be part of the vehicle's basic chassis and do not have an entry on the Damage Table. It is sometimes necessary, however, to know if an arm has suffered damage.

Arms are considered weapons for damage purposes. If no other weapon systems are carried by the machine, the arm is automatically affected by "Weapon" hits. If other weapon systems are present, the damage is randomized following the usual procedure. Any damage to the arm is also applied to the weapon being carried in that arm. Hand-held weapons are usually specified in the design; if not, the weapons are not affected.

Penalties caused by damage are applied to all functions of the arm: hand-held weapons fire, punching, manipulation, etc. If an arm's cumulative penalties reach -5, the arm is destroyed.

SYSTEMS DAMAGE TABLE

Die Roll	Damaged System	Light Damage	Heavy Damage
1	Fire Control	Roll on SubTable A	Roll on SubTable A and add +1
2	Structure	Roll on SubTable B	Roll on SubTable B and add +1
3	Crew	Crew stunned (-1 action for 1 round)	10% casualties, min. 1
4	Movement	-1 MP (one movement type)	1/2 remaining MP (round down) & -2 Maneuver
5	Auxiliary Systems	-1 to 1d6 Auxiliary systems	1d6 Auxiliary system destroyed
6		Roll twice on this table*	Roll twice on this table*

* If the attack was a called shot, the attacker hits his target location instead (as effects 1 to 5 on table, depending on target).

SUBTABLE A: FIRE CONTROL DAMAGE

Die Roll	Effect
1	-1 to a single Weapon
2	-2 to a single Weapon
3	-1 to all Weapons
4	Single Weapon destroyed
5	Fire Control destroyed (-5 to all attacks)
6	Roll Twice on this table
7	Ammunition/Fuel Hit (roll 1 die)
1-3	Ammo Storage and Fuel Tank Ruptured (vehicle cannot move or fire weapons)
4-6	Chain Reaction! Ammo and Fuel Explodes! (Vehicle Destroyed and Crew Killed)

SUBTABLE B: STRUCTURAL DAMAGE

Die Roll	Effect
1	-1 MP (one movement type)
2	1/2 remaining MP (round down)
3	-1 to Maneuver
4	-2 to Maneuver
5	Power transfer failure; No movement/thrust
6	Catastrophic crew compartment failure, 75% casualties, min. 1
7	Complete structural failure; vehicle is destroyed; crew survives.

REACTION MASS LEAKS ▼

7.9.4

Damage to a spacecraft may rupture its reaction mass tanks. When a Movement or Maneuver damage result is rolled on the System Damage Table, either player has the option of asking to check for leaks. One die is rolled to decide who gets to apply the actual damage (odd results for the defender, even results for the attacker). The winner decides if the damage is to the movement system or to the Reaction Mass. If the latter option is chosen, each -1 damage result removes 10% of the remaining Burn Points; half and no movement damage transfer to an equivalent loss of tankage. If at least 250 points of Reaction Mass are lost in a single round, the current hex of the vehicle will become a Dust cloud (see page 150).

SINKING ▼

7.9.5

Any aquatic vehicle that suffers a Heavy Damage result while submerged must roll one die. On a roll of 2 or less, the vehicle begins to sink. It immediately suffers -1 to its Maneuver and will be flooded and sunk (i.e. be destroyed) in a number of rounds equal to the roll of another die. Even "bottom-crawlers" must test for sinking. Obviously, they do not actually sink, but flood instead. A vehicle which suffers an Overkill result automatically floods.

EJECTION ▼

7.9.6

When a platform suffers an Overkill result, there is a slim chance that the crewman will escape unharmed (roll 6 on one die). The chance of escape improves on vehicle designs that have an ejection mechanism built into the cockpit. A player can also voluntarily eject a crewmember from a vehicle with an ejection system. This requires one action and always succeeds.

If the vehicle has an ejection system and suffers an Overkill, crewmembers rolls a single die. On a 1 or 2, the ejection system did not respond in time and they die. On a 3 or more, they eject, landing four hexes behind the vehicle. They have a velocity and vector equal to their vehicle, minus 4 for velocity. In a roleplaying environment, the Gamemaster may opt to disregard this rule for PCs, letting them eject successfully at all times.

▶ SCIENCE & TECHNOLOGY

Scientific progress was somewhat slowed in its relentless advance by the tumultuous course of human history between the end of the twentieth century and the present day. The hard times on Earth and the much more urgent problem of survival in the colonies restricted research to areas with immediate practical applications, such as warfare and recycling. Thus, while leaps were made in emergency medicine, weaponry and spaceship design, little or nothing else received much attention.

The horrors of the Fall made it clear to humanity that unrestricted research into the basic nature of life was a formula for certain disaster. The result was the Edicts, a series of covenants written into the codes and laws of every place of learning in every nation in the Solar System. The Edicts prohibit all access to high-level information pertaining to bioengineering and nanotechnology, and likewise forbids research into these areas without specific government approval and constant public scrutiny. Offenders receive the most severe punishment possible in their nation. The penalties are intentionally harsh — a single accident has the potential to kill billions.

The Edicts also apply to research into artificial intelligence. Creating new sentient life would be potentially devastating to Human society, considering the vast number of computers used in the twenty-third century.

While painful for scientists to enforce, the Edicts have kept the misuse of genetic engineering and nanotechnology to a minimum. Although every nation maintains several "illegal" research facilities, these are always heavily safeguarded. Even so, one of the Solar Police's major occupations is keeping an eye on such installations.

The technology of the twenty-third century is thus somewhat less advanced than most people in the twentieth century would have expected. There are no teleporters, no faster-than-light drives and most common technological items used would be recognized by a twentieth century human. The text below offers a quick survey of the major technologies that have shaped the world of the **Jovian Chronicles**.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▶ BASIC SCIENCES OF THE CHRONICLES

8.1

Scientific realism is always a toss up in a roleplaying and tactical game. What one gains in credibility is often lost in ease of play. Few players will want, for example, to calculate the precise orbital position of every object along their ship's trajectory — what they really want to do is get to Mars and find the scumbag who kidnapped their friends. **Jovian Chronicles** allows for hard-science roleplaying but always strives to keep things straightforward for the player; Reality Distortion Levels (see p. 223) also allow Gamemasters to easily alter the "realism" of their campaigns.

The following pages go over the basics of the technology (and related scientific issues) that have shaped the world of **Jovian Chronicles**. Although some related game-system issues are mentioned in passing, this section mostly deals in real-world terminology. Scientific and technological issues will be dealt with in greater detail in future products, but the following should give Gamemasters a basic understanding of how technology works in **Jovian Chronicles**. Those with a background in theoretical science or engineering may notice that a few corners have been cut. This has been done consciously to keep the game at a level of complexity that will not alienate Players and GMs alike.

▼ BASIC ENGINEERING

8.1.1

The twenty-first century was the first to see the advent of new kinds of materials made possible by the zero-g conditions of space stations. Metals that would not normally mix well suddenly became more cooperative, creating components with high strength and precise characteristics. Crystals grew straight and true, while perfect ceramics could be poured into magnetic molds. New techniques, using combinations of heat treatments, magnetic field generators and particle beams, allowed the creation of very complex molecular structures.

The development of workable molecular-scale engineering technology, or nanotechnology, came about in the middle of the twenty-first century. Nanotech allowed the design and construction of molecule-sized machines, capable of manipulating very small clumps of atoms. Though the technique was perfected early in the 2000s, research in the field was limited belatedly because of the fear of the possible consequences of runaway nanotech, which can be used as a very destructive weapon (accidents such as the Kansas City Scare originated the discussions that later lead to the Edicts). The difficulties of working on a smaller and smaller scale, which caused problems due to slow building speed and high waste heat, further compounded the problems facing nanotech researchers.

The few types of nanomachines presently in existence are severely restricted and regulated. Nano- and micromachines are used in sealed vacuum tanks to grow material of very high strength for low weight. They are also used to build advanced computer circuitry, complex chemical products and medical microrobots (see *Medicine*, p. 169).

◇ ARMOR

Space is not an empty void: micro-meteors, dust and solar radiation cause a slow degradation of all space constructs. This problem was lessened by the development of the magnetic screen (see below), but small vehicles and spaceships must still be protected from the elements.

Armor is generally made from a special polymer-ceramite composite with good heat conduction and limited flexibility. Sometimes, a special mesh of artificial diamond fibers is added for extra strenght and durability, although this substantially increases the cost of the material. Engineers have taken great care to include foamed radiation-absorbing elements within the material, thus ensuring it would reduce the odds of a catastrophic radiation cascade should the armor be hit by high energy cosmic rays.

▼ POWER GENERATION

8.1.2

November 9th, 2007 will long be remembered as one of the most important dates in human history. On that day, a prototype fusion engine managed to sustain a fusion reaction and generate power for six hours. Although the new fusion reactor was bulky, fragile and temperamental, it would be perfected over the years to become one of the principal sources of energy production on Earth along with the orbiting solar power satellites.

Most twenty-third century space vehicles are powered by a compact reactor using a high-energy magnetic "bottle" to hold a micro-fusion reaction. These powerplants come in a variety of sizes, from the small engine of scout exo-armors (large humanoid vehicles; see page 166) to the huge fusion cores of the largest ships. Jovian designs are considered to be among the most advanced and efficient in existence.

Man-portable powered armors (refered to as exo-suits) and other small vehicles use a superconductive battery instead of a fusion powerplant because of size limitations. Many ground vehicles feature internal combustion engines that use alcohol or synthetic oil as fuel because petroleum has become too rare. Other vehicles use extremely efficient, low-maintenance turbines instead. Although they can gulp down any type of fuel, they unfortunately require large quantities of it.

Solar energy is freely supplied by the Sun — one needs only collect the rays and convert them to a more useable form of energy. Although solar-powered ground vehicles are relatively uncommon, many houses and industries use solar panels for non-critical, low-power applications.

PROPULSION SYSTEMS ▼

8.1.3

The most common type of space propulsion system in use is the fusion-driven PCC (Plasma Combustion Chamber) drive. Using almost any gas or liquid as reaction mass (most often hydrogen or water), the PCC enables ships and other space vehicles to achieve great acceleration for extended periods, reducing the travel time between planets to mere weeks and sometimes even days. Vehicles with fusion powerplants often use plasma thrusters as maneuvering verniers, in which an intense electrical arc ionizes and expels reaction mass at high velocity to produce acceleration. Smaller vehicles, such as repair pods or exo-suits, also use the more conventional chemical engines.

In atmosphere, the flight systems of exo-armors are generally sufficient to lift them and enable them to fly for short periods of time. Unfortunately, this places great strain on the thruster array and gobbles down reaction mass at an alarming rate, so most pilots only use their thrusters as "jump jets" to allow them to cool down periodically.

ELECTRONIC ▼

8.1.4

As advanced manufacturing techniques reduced the size and increased the power of electronic circuitry, more and more items started to feature them. In space, electronics are pervasive — there is a computer in each helmet, each suit and each ship, all monitoring the machinery that keeps their human crew alive. By the twenty-third century, computers and automated workers are an accepted part of the everyday world. Other types of electronic systems, such as the radiation screens (see below) are equally vital to humanity's survival and work in space.

COMMUNICATION ◇

Even though signals travel at near light speed, space communication always suffers from delays due to the large distances involved. In addition, many factors can cause interference with radio waves (strong magnetic fields, solar flares, planets on opposite sides of the sun, etc.). The lag time can be determined by dividing the listed distances (page 168) by 300 if in thousands of km (for the delay in seconds), or by 18 if in millions of km (for the delay in minutes).

A conversation between the Moon and Earth is almost in real time (average distance of 384 thousand kilometers, divided by 300, gives a 1.3 second delay). A call sent from the Inner Belt to Mars, however, would take at least 5.6 minutes to reach its destination (closest distance of 101.2 million km, divided by 18). Any reply from Mars would take the same time to get back.

COMPUTERS ◇

Data-processing machines have evolved the most of all electronic technologies. Once simple calculators, they are now capable of limited intelligence and problem solving. Modern computers can often sound very human on the comm system (although they don't have much imagination and have no sense of humor whatsoever). The Edicts have placed limits on artificial intelligence developments, so there are no known self-aware computers in existence.

All space vehicles have an advanced computer to figure out trajectories and burn time, freeing the pilot to perform more important tasks (like fighting). Relying extensively on superconductive neural nets and complex expert system programs, they are used as virtual crewmembers on spaceships and as copilots in fightercraft (see page 180 for computer rules).

ELECTRONIC WARFARE ◇

Up until the twentieth century, human warfare had an up-close-and-personal outlook. The development of radar and the improvement of existing weapons increased effective ranges expodentially, and soon soldiers did not even have to see their opponents to utterly destroy them. Unfortunately, armor refinement did not follow the same curve as weapon efficiency. It was hard to create an armor plating strong enough yet light enough to be carried by a fighting vehicle. A new approach was needed, and soon the stealth principle was the norm: one cannot hurt what one cannot see.

Each modern fighting vehicle carries a host of defensive electronic modules. Some break up their radar signature, while others interfere with the opponent's targeting equipment. These modules are built-in, and no combat vehicle would be designed without them. As a result, they have a *much* smaller sensor signature that what would be expected due to their large size, and combat is once again short-ranged; weapons that could hit an unprotected target thousands of kilometers ahead have to be used almost at visual range.

RADIATION SCREENS ◇

Early space vessels relied on sensors and heavily shielded "storm rooms" to protect the crew against solar flares and other cosmic radiations. The problem became more acute while setting up the mining colonies in Jupiter's orbit: the intense radiation belts forced the construction of specially armored stations, very costly and not all that safe.

With the space emigration boom, a solution was found: to equip each station and vessel with a shield generator similar in effect to the magnetic field surrounding Earth. Power is plentiful, and the equipment stops almost all harmful radiations. It even has a side bonus; it also stops smaller space debris, which can damage a spacecraft.

▼WEAPONS TECHNOLOGIES

8.1.5

Space is a very special environment for weaponry due to the absence of atmosphere and gravity. Specific weapon types have evolved to answer the peculiar requirements of space combat, such as increased range and lack of an atmospheric medium. Unlike their ground-side cousins, space weapons are also capable of more than destruction. Lasers can be used for secure communication over very long distance; kinetic weapons use the same basic technology as a massdriver reaction engine; a modified missile can be used as a kind of message torpedo.

▼LASERS

8.1.6

An acronym for Light Amplification by Stimulated Emission of Radiation, the laser has been widely used since its development, both as a tool and as a weapon. Many space vehicles are equipped with at least one type of laser cannon because of its practically unlimited shot supply (if hooked up to the ship's main fusion reactor) and great accuracy.

Lasers can also be used to send messages over very long distances (see table below). In general, this is practical only for large installations or in emergency situations, since both the emitter and receiver must remain at near constant velocity during the transfer (the space equivalent of standing still). Lag time rules (p. 163) apply.

▥LASER COMMUNICATOR RANGES

Total Modifiers	Base Range Multiplier
+5	700
+4	120
+3	24
+2	6
+1	2
0	1
-1	0.5
-2	0.333
-3	0.25
-4	0.2
-5	0.167

Total Modifiers = Fire Control + any applicable modifiers

Base Range = 100,000 km per point of Damage Multiplier

◇KINETIC KILL WEAPONS

These weapons are based on magnetic acceleration technology and cause damage by kinetic energy (i.e., impact). They are divided in two general classes: railguns and massdrivers. A railgun uses a single projectile and accelerates it via twin rails supplying the necessary current along the length of the barrel. Massdrivers use a similar principle, but employ a series of magnetic rings instead of the rails' current to accelerate a hail of smaller shells. Each impact causes less damage, but the attack is generally spread over the whole of the target instead of just a spot. It also allows a greater rate of fire.

◇PARTICLE ACCELERATORS

Particle accelerators (also sometimes known as particle cannons or beam cannons) are magnetic acceleration devices designed to shoot high energy ions instead of a solid projectile. Particle cannons cause damage through a combination of kinetic impact energy, heat and electrical induction. Often more powerful than lasers, they cause a lot of collateral damage by shorting electronic circuitry in the target.

◇MISSILES

Missiles are self-propelled projectiles. Using sophisticated guidance computers and laser targeting technology, the missile is one of the most deadly weapons available to an exo-armor. Various types of warheads are used, from the simple shaped explosive to the low-yield tactical nuclear charge (although the latter is rather rare and expensive). There are no set standards; some designs call for a few accurate and powerful missiles, while others use hundreds of small unguided rockets.

Several spaceships are equiped with missile bays. These launch spreads of computer-guided missiles thatuse sheer numbers to overwhelm the enemy's defenses. They are somewhat inaccurate since most of their mass is taken up by fuel, leaving little room for a sophisticated targeting computer. Another type of ship-borne missile also exists: the "hunter-killer." Relying on stealth and intelligence, these autonomous weapons are more costly, restricting them to a few ship classes. They pack a much larger warhead, however, and are often able to cripple an enemy ship in one deadly strike. They also have greater accuracy and range due to their sophisticated targeting computer and extended fuel supply.

PLASMA LANCE ◇

The plasma lance is a recent development in the military arms race. The resurgence of hand-to-hand combat due to improved spacecraft ECM systems prompted Jovian designers to upgrade the melee capabilities of the JAF's exo-armors by developping this weapon. The lance is a compressed-gas cylinder with an ionizing ejector nozzle at one end. When held by a specially designed manipulator, a direct current from the exo-armor's main fusion reactor is transmitted to the ejector and turns the ejected gas into a giant plasma flame. The overall device looks like a sword made of light and is very effective against armored opponents — it is essentially a giant plasma cutting torch. Unfortunately, the small gas supply limits the usefulness of the weapon and the exo-armor must often carry several spare lances.

SPACE ENGINEERING ▼

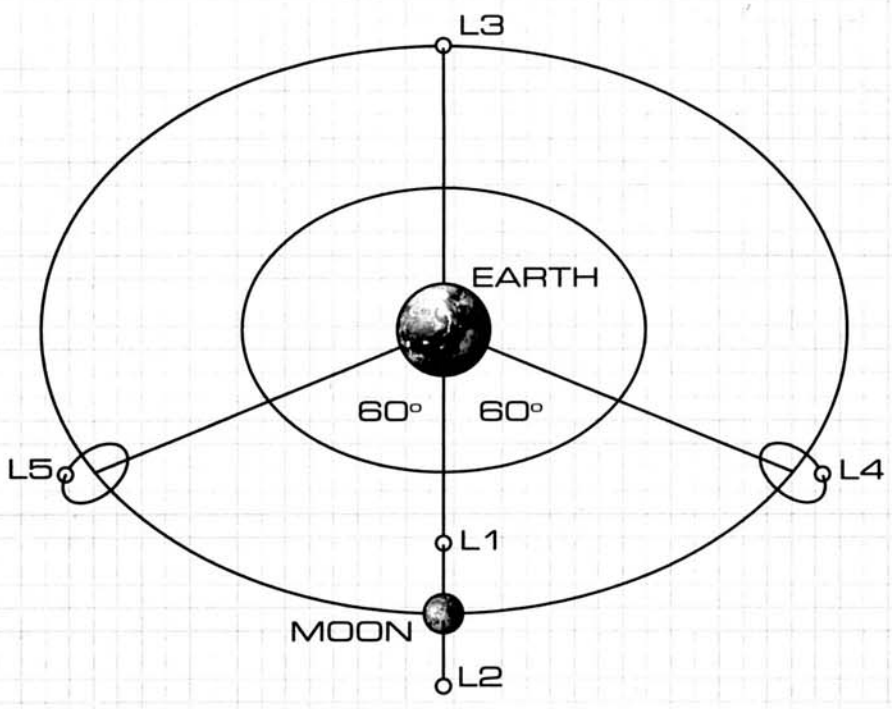
In the late eighteenth century, French physicist Joseph Louis Lagrange was studying three-body systems, calculating the gravitational influence of two masses, like the Earth and the Moon, on a third body in their vicinity. He found that at certain points, the gravitational forces of the two bodies were equal (but did not necessarily cancel each other out), creating "stable" points in space. In reality, these points actually orbit their calculated positions because of the influence of the Sun and the other bodies in the solar system.

The first three Lagrange points are located on the axis linking the two main bodies. All three points are relatively unstable: any perturbation of the satellite along the axis would cause it to gradually fall towards one of the bodies. The other two points, L4 and L5, are on the orbit of the smaller body at 60 degrees on either side of the axis. These are extremely stable points, as demonstrated by the clusters of asteroids found there. These so-called Trojan Asteroids were used as on-site material for the construction of the Earth system's colonies. The supplies from the Moon, added to these asteroids, were used to first build wheel-type stations, then, later, the larger O'Neill islands and cylinder colonies.

By 2210, most of the colonies in existence are O'Neill-type cylinders, except for the Jovian ones, which had to be built on the closed Vivarium model because of the increased radiation levels of the Jovian environment. Both designs are huge cylinders varying between 25 and 40 km in length, usually with thrusters and zero-gee docking bays at both ends. Each is home to up to 15 million people, though smaller ones are not uncommon.

Gravity is simulated by rotation along the axis of the cylinder. O'Neill colonies alternate ground panels with clear panels to let the sunlight inside, and use giant reflectors to direct it; Vivariums use a special "sunline" running the axis of the cylinder for light, since the whole station is thickly covered by rocks for protection against radiation and meteors.

THE EARTH SYSTEM ◮



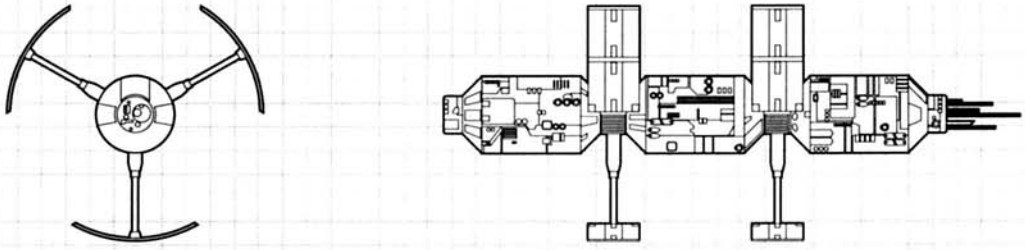
◇ COLONY CYLINDERS IN SILHOUETTE

The cylinders are mainly locations in which (or around which) the game will take place. They are much too big to be destroyed by the players, although they can be damaged. Each 50 x 50 meter section of cylinder wall has 200 points of ablative Structure (150 for O'Neill-type colonies' walls, 100 for their glass panels). One point of damage removes one point of Structure. For collision purposes, each section is considered to be a vehicle of Size equal to its current Structure.

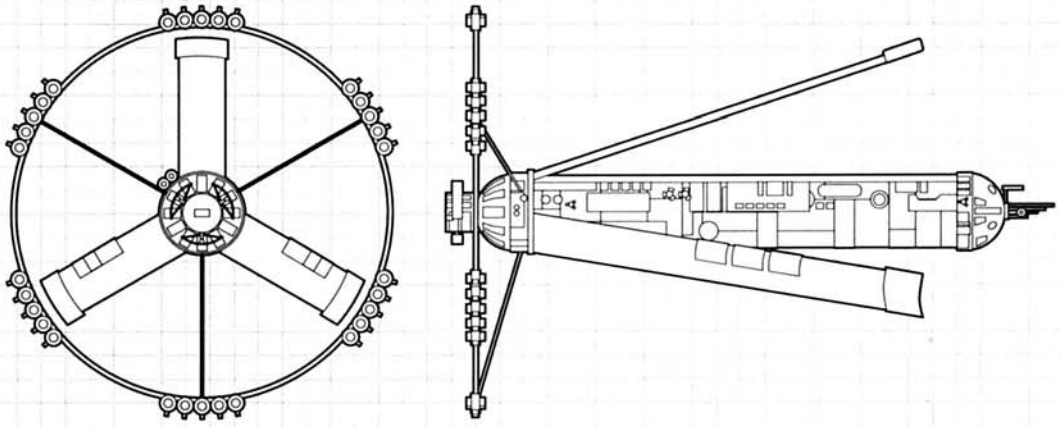
Depleting half the point total of a given section will result in a hull breach and slow loss of interior atmosphere (see p. 119 for indications on the effects of breaches). Special "goop balls" (Structure value = 5) will appear in 1d6 roleplaying turns (30 seconds to 3 minutes) to start blocking the hole until a repair crew arrives. Completely depleting the Structure points of a wall section in one turn cause an explosive decompression that will propel schrapnel all around (x50 damage to anything within 100 meters, dropping off by 5 for every 100 meters of additional radius).

▲ SPACE COLONIES

VIVARIUM STATION



O'NEILL STATION



The upper station in this schema is built along the Vivarium principle. It has no windows and relies on external power sources; the large curved panels are heat-dissipating fins. The other station is a standard O'Neill Island. The small modules on the large ring are dedicated to agriculture.

▼ EXO-ARMORS

Exo-armors (short form for armored exo-skeleton) are the ultimate evolution of the personal combat space suit of the early twenty-first century. Originally no larger than a man, they increased in size until some of the biggest were nothing less than small ships. This was necessary in order to carry the enormous amount of fuel, armament, and electronics necessary to accomplish their assigned mission. Spacefighters remain in use, but their lack of maneuverability and endurance (compared to exo-armors) confines them to strike and fire-support roles.

A vehicle is called an exo-armor when its control system is a linear frame (see below). Exo-armors are usually classified in five categories: exo-suit, light, medium, heavy, and exo-ship. This classification system originated in the Jovian forces, who first fielded exo-armors. CEGA does not have an official classification because they tend to reserve the use of exo-armors to officers. Since the other nations of the solar system have only recently begun to use these vehicles, they normally adopt the Jovian classification.

LINEAR FRAME AND COCKPIT ◇

A linear frame is the main control element of an exo-armor. It looks like an strength-enhancing industrial exo-skeleton and wraps around the pilot, reproducing his every movement. The exo-armor's onboard drive computer then interprets these motions and moves the armor's limbs accordingly, firing apogee motors as needed to compensate. The linear frame control system gives the exo-armor an uncanny maneuverability as well as a strangely human grace. Additionally, a trained pilot can actually use his body motion to shift the exo-armor's center of mass around and change the exo's position without expending propellant. Veteran pilots are thus often able to stay in battle much longer than spacefighter pilots who must fire verniers (and spend fuel) whenever altering course.

The frame also protects the pilot from shock and strong gee forces, reorienting itself in the cockpit if needed. Space flight is controlled via special joysticks located near the hand controls. A minimum of training is necessary to fully control the armor, even if the computer can provide verbal and visual assistance. The cockpit's internal walls are covered with layered monitors linked to various sensors and cameras in the outer hull of the exo and display an unobstructed view of the world around the vehicle. All relevant operational information (IFF, targeting, velocity, etc) is displayed either in the flight helmet worn by the pilot or directly on the screen. The machine's "head" and main sensors are slaved to the motions of the helmet, adding to the "humanity" of the exo-armor.

CHASSIS AND ACTUATORS ◇

Since an exo-armor is designed to emulate and reproduce the movements of the human body, it is built around a composite skeleton to which the various components and actuators are attached. This frame, although serving the same purpose as its human counterpart, looks very different. The "bones" are made of composite material specifically designed to optimize the transfer of loads passing through them. Limited flexibility enables the frame to absorb casual kinetic stress without any damage, just like natural bones.

Exo-armors rely on several different types of actuators to move about, from conventional hydraulic systems or high-strength myomar fibers to highly specialized linear electric motors. The smaller exo-suits almost never use hydraulics, as myomars are easier to adapt to the human form. The fibers are wrapped around an inner shell which contains the wearer and various motion-sensitive sensor arrays.

SPACESHIPS ▼

8.1.9

Space ships are a common sight in the 23rd century. They are used by all settlements, who usually maintain orbital shipyards and a small fleet for commercial and defense purposes. The most often encountered ships are cargo and ore mining ships, followed by gas tankers. It is much cheaper to "mine" metal and gas and transport them to the space stations than prepare them from planet-side resources.

Modern ships sport a thick ablative skin and a massive architecture designed to withstand particle erosion and lengthy acceleration. Other vessels, designed at a lower cost or for shorter trips, are just a support frame for habitat modules, fuel tanks and engines. The skin of a vessel is a ceramic/alloy composite, glazed in alternating layers to resist micro-meteor abrasions and minor surface collisions. Large plates are mounted on a honeycomb structure filled with radiation-absorbing gel, which is also used to quickly close any small hull breach.

Most long-range ships are equipped with a deflector shield. The shield is composed of two parts: an ionizing laser or magnetic field, and the magnetic shield proper. When the ship is moving at high velocity, the particles in its path are first ionized and then swept out of the way. This only works with small particles, however, and larger ones must be either destroyed by the point defense lasers or completely avoided.

Each ship relies on powerful fusion thrusters (Plasma Combustion Chamber drives, see page 163) to accelerate at rates of up to 1 gee. When possible, they accelerate for half the voyage, then turn around and decelerate at the same rate for the rest of the trip. Except for short weightlessness periods midway through the trip, the passengers feel gravity during the trip. When the ship is in acceleration, "up" is toward the nose and "down" toward the engines. The internal organization of a ship is thus very similar to a skyscraper, with decks stacked on top of each other. Because of the occasional periods of zero-gee, the furniture has small Velcro straps to tie down free-floating objects. Large ships are often equipped with one or more rotating decks to provide simulated gravity to the crew. Many living quarters are located on these gravity decks.

A specific category of cargo ships uses a magnetic sail instead of a PCC to slowly but economically propel the ship to its destination. The sail itself consists of a large loop of superconductive material that generates a magnetic field that "catches" the solar wind and the magnetic fields of planets (when close enough) and uses them to propel the vessel forward; when going against the "wind," the vessel tacks just like a sailboat. The magnetic field is far enough not to affect the ship or its crew. Currently, the Mercurian Merchant Guild has the most magsail barges, which are colloquially called clippers.

Ships are generally not equipped to descend on the surface of a planet. Aside from being non-aerodynamic, they are much too heavy to land on anything bigger than an asteroid. The exceptions to this is the Moon, were small ships routinely land to transport cargo.

▼ SPACE TRAVEL

Due to the economy of scale, space travel is a common reality for the societies of the solar system. There are three levels of comfort, Economy, Business and First Class. The basic ticket price in credits is based on the distance covered: the square root of the distance (in kilometers) is the Economy price. For higher comfort, the basic distance is doubled (for Business) or tripled (for First Class) before the square root. Some transport lines adjust the price of the ticket according to weight (add Build to 100, multiply the price with this percentage). These prices include only lodging and basic food — anything else is extra. Each person is allowed a quarter of his weight in luggage, anything more cost (per weight) the same as a person.

Getting on and off-planet by skyhooks cost between 200 and 300 Cr. There are ships leaving twice weekly for frequent close destinations (orbital stations and moons); for example, a one-way trip to the Moon costs about 620 Cr. Interplanetary trips are closer to cruises with their multi-days travel time, so prices are comparatively higher: between 25,075 Cr and 30,460 Cr for a one-way Economy trip from Earth to Jupiter, depending on the position of the planets. A direct flight can be booked weekly for frequent destinations, but only monthly flights to remote settlements are usually available.

Travel times in space are a function of the distance travelled and the velocity of the vehicle used. For simplicity, the orbital path will be abstracted into a linear acceleration and distance equation. This assumes a constant acceleration rate.

TRAVEL TIME

1d6 x square root (half Distance ÷ Acceleration) = Time to midpoint
Distance is in meters, Acceleration in m/s, Time in seconds. Divide the result by 1800 to get total transfert time in hours.

INTERPLANETARY DISTANCES

Closest						
	Mercury	**Venus**	**Earth**	**Mars**	**Jupiter**	**Saturn**
Mercury	—	50.3	91.7	170.0	720.4	1,363.8
Venus	50.3	—	41.4	119.7	670.1	1,313.7
Earth	91.7	41.4	—	78.3	628.7	1,272.5
Mars	170.0	199.7	78.3	—	550.4	1,194.4
Inner Belt	271.2	220.9	179.5	101.2	449.2	1,092.6
Main Belt	353.5	303.2	261.8	183.5	366.9	1,010.3
Outer Belt	435.8	385.5	344.1	265.8	284.6	928
Jupiter	720.4	670.1	628.7	550.4	—	646.2
Saturn	1,363.8	1,313.7	1,272.5	1,194.4	646.2	—
Average						
	Mercury	**Venus**	**Earth**	**Mars**	**Jupiter**	**Saturn**
Mercury	—	122.7	160.4	235.1	780.0	1,442.6
Venus	122.7	—	184.6	252.3	785.8	1,425.5
Earth	160.4	184.6	—	272.6	792.5	1,429.2
Mars	235.1	252.3	272.6	—	811.0	1,439.5
Inner Belt	334.2	346.1	361.5	400.3	845.0	1,459.0
Main Belt	415.5	425.4	437.8	470.3	880.3	1,479.7
Outer Belt	497.1	505.4	515.9	543.8	921.7	1,504.7
Jupiter	780.0	785.8	792.5	811.0	—	1,619.1
Saturn	1,442.6	1,425.5	1,429.2	1,439.5	1,619.1	—
Farthest						
	Mercury	**Venus**	**Earth**	**Mars**	**Jupiter**	**Saturn**
Mercury	—	166.1	207.5	285.8	836.2	1,479.1
Venus	166.1	—	257.8	336.1	886.5	1,529.2
Earth	207.5	257.8	—	377.5	927.9	1,570.5
Mars	285.8	336.1	377.5	—	1006.2	1,648.5
Inner Belt	387.0	437.3	418.7	557.0	1107.4	1,750.3
Main Belt	469.3	514.6	561.0	639.3	1189.7	1,832.6
Outer Belt	551.6	601.9	643.3	721.6	1272.0	1,914.9
Jupiter	836.2	886.5	927.9	1006.2	—	2,196.7
Saturn	1,479.1	1,529.2	1,570.5	1,648.5	2,196.7	—

All distances are expressed in millions of kilometers (10^6 km, or 10^9 meters) in straight lines.

Closest, **Average** and **Farthest** refer to the orbital positions of the planets in relation to one another.

SATELLITES AND ASTEROIDS

Name	Planet	Distance	Revolution	Diameter	Gravity	Esc. Velocity
Moon	Earth	384	27.3	3500	0.16	2.4
L4, L5	Earth	384	n/a	n/a	n/a	negligible
Deimos*	Mars	48*	*	13	negligible	negligible
Ceres	n/a	Belt	n/a	940	negligible	negligible
Pallas	n/a	Belt	n/a	540	negligible	negligible
Vesta	n/a	Belt	n/a	510	negligible	negligible
Hygeia	n/a	Belt	n/a	410	negligible	negligible
Io	Jupiter	422	1.7	3650	0.18	2.6
Europa	Jupiter	671	3.5	3140	0.14	2.0
Ganymeda	Jupiter	1070	7.1	5250	0.15	3.6
Callisto	Jupiter	1880	16.6	4800	0.12	2.4
Titan	Saturn	1222	15.9	5150	0.14	2.7

Distances is expressed in thousands of kilometers (10^3 km) and is measured from the orbitted body; Revolution is expressed in Earth days and Diameters in kilometers. Gravity is given in gee, and Escape Velocity is in km/s.

*Deimos' orbit is being modifed by tugs; Phobos has been dismantled for material and reaction mass.

THE JOYS OF SPACE TRAVEL ★

While some campaigns might be focused entirely on one location (such as an Orbital Colony or a Martian town), most parties will probably want to race around the solar system for one reason or another. Reporters will chase stories, military personnel will go on maneuvers (or missions) and merchants will have to travel to make a living. Travel in space is not a rapid affair. Unless moving within a subsystem — e.g. between Earth and the Moon — travel time will be measured in days and weeks for military vessels, weeks and months for merchant ships.

The simplest solution — one suited to Cinematic campaigns — is to simply gloss over travel time between major events. Unless there is an important event scheduled to occur during the voyage, Gamemasters can follow the example of high-action films and simply "cut" from the PCs getting aboard to them arriving at their destination. A quick summary of events aboard can be gone through if need be. This keeps the scenario moving along at a fast pace, an essential consideration.

Gamemasters who are running a very realistic campaign should pay a great deal of attention to space travel, especially if the PCs are piloting the vessel. Players will need to account for fuel and life support, make the appropriate course corrections, deal with the hazards of space, and make a few Navigation (Space) and Space Pilot Skill rolls. Gamemasters should assume that characters with a Skill level of 2 or more will not make stupid mistakes, but space travel should remain dangerous.

Nevertheless, regardless of campaign styles, there are some interesting story opportunities inherent in lengthy space travel. Travel time is perfect for character interaction and development. It can be fun to roleplay out conversations between the PCs, especially if the Gamemaster introduces new NPCs at the same time (e.g. a ship crewman who has a crush on a PC, or an old nemesis who happens to be aboard). If a session ends with the PCs in transit, a GM can have a little side adventure for one of the Players before the next session, or simply have an exchange of in-character letters or e-mail (say, to a loved one or a secret contact). Of course, whole scenarios can be set during a long journey. The PCs probably have no real way to get off the ship and so must deal with what happens around them. A murder mystery, a hijacking or a diplomatic incident can all make for exciting short-term adventures or set the stage for new scenarios. One interesting option is to use the journey for a short "change of pace" — say a comedic series of misunderstandings during a gritty military campaign.

MEDICINE ▼

Medicine in the twenty-third century uses limited genetic engineering to create custom drugs and viruses designed to specifically treat an illness. It is customary for an individual to be gene-mapped at birth to check for any possible disease. This map is often saved for future references in designing a suitable cure, and is considered copyrighted by the person.

Limited accelerated cellular regeneration is possible and often used to regrow missing limbs and organs. It is not a routine procedure, however, and places severe stress on the body of the patient. Microids (microscopic robots) and various custom-designed viruses are used; the patient is immobilized for the duration of the treatment. Attemps were made to use nanoids (molecular robots) in the body, but they were impeded in their work by the body's immune system. As a result, their use is restricted to vats located outside the body, where they produce specialized drugs and replacement organs.

Cloning attemps were made as early as 1997. Modern genetics, using DNA from one or several donors, allow custom zygotes to be created and placed within an artificial womb. The only "bottled humans" (as they were called by the press of 2027) made were mentally unstable and most committed suicide in their teens. Whatever the actual cause, cloning an entire person is heavily frowned upon and is now an almost forgotten corner of medicine. It is illegal to clone someone without his or her consent, with harsh penalties for offenders.

▶ GAME STATISTICS

8.2

The basic game statistics of each vehicle is fully explained at the beginning of the *Mechanical Action* chapter, page 131. There are, however, a few items that warrant additional explanations or rules, such as the various Perks, Flaws and weapon characteristics. Each has special effects or rules assigned to it that do not fit on the vehicle record sheet. They have been grouped in the following section for ease of reference.

▼ PERKS

8.2.1

Many vehicles have special features, such as ejection systems and cargo bays, that are not covered by the vehicle's tactical and strategic statistics. These features are represented by Perks. Many Perks are primarily intended for background and roleplaying purposes and do not have significant tactical effects.

Perks whose name is followed by **AUX** are defined as Auxiliary Systems for damage purposes. Perks whose name is followed by **R** have a rating.

◇ ADVANCED CONTROLS

The vehicle has very advanced, user-friendly control interfaces. Few vehicles can boast of featuring these, as advanced controls are generally complex to design and costly to build. The great ease of their use allows the vehicle to have one extra action each combat round, regardless of the number of crewmembers aboard.

◇ AMMO/FUEL CONTAINMENT SYSTEM

The vehicle's ammunition and fuel bays are reinforced and equipped with blast-control panels. The system completely absorbs the first hit when an "Ammo/Fuel Hit" result is obtained on the Fire Control Damage Table — there is no further damage beyond the lost Armor points. The Perk is then destroyed.

◇ AUTOPILOT (AUX)

Autopilots are simple devices that can take over the piloting tasks. They can keep the vehicle going in a straight line, avoid large obstacles, and steer the vehicle towards a specified location. An autopilot is very limited: it can be used to keep a vehicle moving in a straight line or performing 60° (one hex-facing) turns. Autopilots are not affected by Crew hits, cannot fire any weapons and dodge attacks as a level 1 pilot. An autopilot is required if the vehicle is to be computer-controlled or remotely operated.

◇ BACKUP COMMUNICATIONS

The vehicle has extra communication circuits and a second radio system. It may ignore one Communication damage effect when the Auxiliary System Hit result is rolled on the Systems Damage Table. All non-communication auxiliary systems take normal damage effects.

◇ BACKUP FIRE CONTROL

The vehicle has extra fire control computer circuits and reinforced weapon mounts. It may ignore one "Fire Control Destroyed" result on the Fire Control Damage Table.

◇ BACKUP LIFE SUPPORT

The vehicle has backup life support systems that allow the vehicle to continue providing life support functions long after the primary system has been disabled. In game terms, the vehicle continues to have life support even if the vehicle has all of its auxiliary systems destroyed.

◇ BACKUP SENSORS

The vehicle has extra sensor circuits, backup cameras and reinforced sensor arrays. It may ignore one Sensor damage effects when the Auxiliary System Hit result is rolled on the Systems Damage Table. All non-sensor auxiliary systems take normal damage effects.

◇ BACKUP SYSTEMS

This is a package deal which contains one of each of the followings: Backup Communications, Backup Fire Control, Backup Life Support and Backup Sensor. The usual rules apply in full.

CARGO BAY ◇

A cargo bay is a large hollow place within the vehicle to put miscellaneous material. Cargo bays can be designed for unusual cargo: some cargo bays are meant to carry only liquids, like the tank of a fuel truck. Others are compressed gas containers. Of course, cargo bays can always be simple hollows intended to store boxes of goods.

Cargo bays are rated in terms of their general volume in cubic meters. Cargo bays are generally enclosed within the vehicle's hull. Open-topped bays are also possible, but material carried in such a bay is counted as an AUX system for damage location purposes. It is important to note that the cargo space bought represents only the actual space dedicated inside or on the hull of the vehicle, not an increase in the power of the engine. Thus, the cargo's weight counts as "towed" material for game purposes.

Transported vehicles are assumed to occupy a volume roughly equal to (Size/2 + 1) cubed, rounded up, including some servicing and access space around it.

CATAPULT (AUX, R) ◇

A catapult is a powerful system designed to give a high initial velocity to an object leaving the vehicle, most often a carried aircraft or exo-armor. The catapult gives an initial acceleration equal to (rating x 150)/mass in tons of the catapulted object, in meters/second. This applies directly for spacecraft, aircraft and other vehicles; refer to *Flying with Thrusters*, page 148 of the rulebook, to convert this into airspeed.

COMPUTER (R) ◇

The vehicle has a built-in, general use computer in addition to the computers used to control the vehicle. While it is primarily a roleplaying tool, players can use the computer in tactical combat, using Modules to assist the crew. The Perk's rating is the Processing Power of the computer. Computers are not affected by "Crew" hits. See *Computers*, page 180, for the complete rules and descriptions of Modules.

DECOY SYSTEM (AUX, R) ◇

A Decoy System allows a vehicle to project phantom images of itself or another object by using a combination of either inflatable decoys, holography or electronic signal imaging technologies. In tactical game terms, the Decoy System can create as many false images as its rating. The attacker must make a Notice Skill test against the rating of the system with a modifier of -3 in order to hit the correct target (in tactical games, use Electronic Warfare).

EASY TO MODIFY ◇

Easy to Modify vehicles feature standardized parts and modular aspects. While this type of design is a joy to service or modify and often lasts longer in the field, it is generally more difficult to design. One (or more) of the vehicle's subassemblies is designed in such a manner as to be easy to repair or replace. +2 is added to all technical skill rolls to modify and repair this particular subassembly of the vehicle.

EJECTION SYSTEM (AUX) ◇

The vehicle is equipped with an ejection system to give the crew a chance to escape if the vehicle suffers an Overkill damage result (or before that, if desired). See *Ejection* (page 159) for more details.

An ejection seat is designed to simply get a crewmember away from the craft; a parachute (in atmospheric operations) or a rescue beacon (in space) allow for a safe rescue. An ejection pod is a self-contained life boat for air and space vehicles which allows for a limited amount of maneuvering and for one atmospheric reentry.

ELECTRONIC COUNTER MEASURES (AUX, R) ◇

Electronic Counter Measures (ECM) are devices that are used to jam sensors and communication systems. ECM is especially useful to prevent forward observing and drone operations. Rules for using ECM systems can be found on page 151. ECM range is identical to the vehicle's Sensor range.

ELECTRONIC COUNTER COUNTER MEASURES (AUX, R) ◇

Electronic Counter Counter Measures (ECCM) are devices that are used to block jamming systems and/or punch through their effects. Using ECCM to prevent jamming requires one action. Rules for using ECCM systems can be found on page 151. ECCM range is identical to the vehicle's Sensor range.

◇ HAYWIRE RESISTANT

The vehicle is specially designed to shrug off massive electrical charges through isolated circuitry and grounded structure. This Perk allows the vehicle to reduce the effects of weapons with the "Haywire" effect (see p. 177). On Light Damage results, the second damage roll produced by Haywire is ignored. On Heavy Damage results, the second damage roll is downgraded to a Light Damage roll.

◇ HEAT RESISTANT ARMOR (AUX)

The vehicle's armor is designed to deflect and dissipate the intense energy delivered by weapons like shaped-charge warheads, particle beams and lasers. The rating is added to the vehicle's base Armor rating when the vehicle is attacked by HEAT-based weapons. This Perk has no effect against weapons that are not HEAT-based (see p. 177).

◇ HOSTILE ENVIRONMENT PROTECTION

The vehicle is specially designed for prolonged exposure to some hostile environmental conditions. This Perk is noted "HEP: <chosen environment>" on the vehicle sheet.

Extreme Heat: the vehicle is designed to withstand exposure to scorching temperatures, often well into the hundreds of degrees Celsius, without taking severe damage.

High Pressure: the vehicle is designed to endure the great pressures of locations like ocean depths and the upper atmospheric layers of gas giant planets.

Vacuum: the vehicle is designed to withstand the lack of pressure found in vacuum environments. This means airlock hatches, pressurized hull, and so on (a life support system is still required separately). This Perk does not, however, grant a vehicle the ability to perform atmospheric re-entry.

Radiation: the vehicle is designed to withstand high radiation levels. Foamed armor, rad-absorbing gel layers and additional shielding protects the vehicle's sensitive systems (especially the crew). The rad protection level, in rads/hour, is equal to ten to the power of the rating (e.g., a system with a rating of 3 would give 10^3 — or 1000 — rads/hour of protection).

◇ IMPROVED OFF-ROAD ABILITY

The vehicle is designed to handle rugged terrain even better than standard military grade ground vehicles. In tactical game terms, the vehicle pays one less MP for any terrain type that requires more than one MP. For instance, a Ground vehicle with Improved Off-Road Ability would pay 3 MP instead of 4 MP when crossing Swamp hexes, but would still pay 1 MP per Clear or Sand hex.

◇ LABORATORIES (AUX, R)

Some vehicles are equipped with "laboratories" — systems that help the crew in specialized tasks. Each laboratory is dedicated towards one particular Skill or Skill specialization. Laboratories are rated upon their quality (minimum of 0). This quality rating is added as a modifier to any test performed using the laboratory's skill. Laboratories eliminate any penalty due to missing tools and proper equipment.

◇ LIFE SUPPORT (AUX)

Life Support systems provide the vehicle's crew with a sealed and controlled environment, protecting them from hostile environments such as poisonous atmosphere, vacuum and underwater. If this system is destroyed with no backups while the vehicle is in a hostile environment, the entire crew immediately becomes casualties.

Limited Life Support includes contingencies for breathing and limited nutritional and excretory needs, and provides support for each crewman for one full Deployment Range cycle, in hours. Full Life Support includes complete air recycling, proper waste disposal, hygienic and nutritional facilities; it lasts indefinitely for game purposes.

◇ MANIPULATOR ARM (R)

The vehicle has an arm-like structure that can pick up and manipulate objects. Manipulator Arms are part of the basic layout of practically all exo-vehicles. The arm can lift an object whose Size is equal to or lower than its rating. No matter the rating of a Manipulator Arm, a vehicle cannot lift an item whose Size is greater than twice its own Size. Half the ratings of the weaker arms are added to the full rating of the strongest arm to determine the lifting strength of multiple arms.

Manipulator Arms can be reinforced to punch or crush opponents. These attacks have a Damage Multiplier equal to the rating of the arm. Manipulator Arms can be used for fine manipulations and tasks which require dexterity. A standard Piloting Skill test is required, the threshold varying according to the task. In addition, a negative modifier equal to the difference between the object's Size and the hand's rating is applied to the roll (see Size to Mass table, page 132).

PASSENGER ACCOMMODATIONS ◇

The vehicle is equipped with proper living and sleeping quarters. This is a necessity for long range vehicles if the crew and passengers are to remain fresh and alert. Military grade accommodations are spartan in design and provide little privacy or comfort. Luxury accommodations include private sleeping quarters, a small private lounge, and personal hygienic facilities. A vehicle with numerous living accommodations of either type also generally includes a few common rooms such as galleys and lounges. When possible, the room partitions of the overall habitable module are indicated.

PASSENGER SEATING ◇

The vehicle has extra seats for passengers. The passengers do not confer any extra actions to the vehicle, nor can they control it. They do, however, count as crew for damage purposes (any damage should be randomized between crew and passengers). A number of passengers equal to the Size of the vehicle may enter or exit each turn at no action cost, provided the vehicle is moving no faster than 12 kph (in space, passengers can exit at any speed, but keep the vehicle's vector).

REENTRY SYSTEM (AUX) ◇

The vehicle has been specially reinforced to withstand the high temperature and stress of atmospheric reentry. Every five turns, the pilot must make a Piloting roll against a Threshold of 2 to keep the craft correctly oriented or suffer one Fire attack as per normal reentry rules. Modifiers due to damage apply in full. See page 143 for more detail.

REINFORCED ARMOR (R) ◇

The vehicle has one or more facings (arcs of defense) with better or thicker armor than the rest of the vehicle. When the vehicle is hit in an arc that is reinforced, the rating of this Perk is added to the base Armor rating of the vehicle.

REINFORCED CHASSIS ◇

The frame of the vehicle is designed to absorb considerable punishment. The vehicle may ignore the first Structure hit on the Systems Damage Table, but then looses this Perk.

REINFORCED CREW COMPARTMENT ◇

The crew compartment is layered with additional armor and fitted with shock-absorbant material. The vehicle may ignore the first Crew hit on the Systems Damage Table, but then loses this Perk.

REINFORCED LOCATION ARMOR (R) ◇

One of the vehicle's locations has stronger armor than the rest of the vehicle. When the vehicle is hit in a reinforced location, the rating of this Perk is added to the base Armor rating of the vehicle before determining damage.

RUGGED MOVEMENT SYSTEMS ◇

The vehicle may ignore the first Movement hit on the Systems Damage Table, but then loses this Perk. This protection is due to the inherent strength of the drive system's design, or a built-in redundancy.

SATELLITE UPLINK (AUX) ◇

The vehicle has a specialized add-on to its communication system that greatly boosts its range. The Communication range of a vehicle equipped with a Satellite Uplink is multiplied by one thousand for direct communications purposes only (flight or space range factors still apply). The Satellite Uplink includes tracking and motion-correction equipment so the system can be used at up to half-Combat speed (or half-Thrust).

SEARCHLIGHT (AUX) ◇

The vehicle has a powerful front-mounted lighting system. When used, treat the vehicle's Fixed Forward firing arc as if it were in daylight. Any fire directed at the vehicle is also treated as if the vehicle were in daylight. Searchlights require no action to operate.

SICK BAY (R) ◇

Some large vehicles, like spaceships, have an infirmary or sick bay. These facilities have no value in the tactical game, but, in the roleplaying game are considered to be constant medical aid for healing purposes. Sick bays are rated by the maximum number of patients that may be operated on at once.

◇ STEALTH (AUX, R)

Stealth systems are features that make a vehicle difficult to detect with sensors: heat baffles, radar-absorbing skin, silent systems, etc. In tactical game terms, Stealth adds its rating to the vehicle's Concealment value when opponents use Sensors to detect it. Stealth systems have no effect upon visual detection. The rules relating to the Stealth systems can be found in *Stealth Effects*, on page 51.

◇ STRATOSPHERIC FLIGHT

An aircraft with this Perk can climb past the habitual ceiling of 12 km (altitude level 48 in Air War scale), in effect going into the stratosphere, up to an altitude of 50 km (altitude level 200 in Air War scale). It would need the Space movement mode and sufficient reaction mass in order to move into orbit, however. Vehicles flying in the stratosphere double their Flight MP at no cost because of the rarefied atmosphere.

◇ TARGET DESIGNATOR (R, AUX)

Target designators are used to lock-on guided weapons (see *Guided Weapons*, page 177). To lock-on a designator, the vehicle simply "attacks" the target, using the designator as the weapon. Its Base Range is equal to its rating. It has +0 Accuracy and does no damage. Any successful attack "paints" the target for incoming guided munitions. The target remains designated until the end of the round.

◇ TOOL ARM (R)

The vehicle has an arm-like structure with a specialized tool attachment, such as an earthmoving scoop or a cargo handling claw. They can lift or hold objects whose Size is equal to or lower than their rating, provided it has been attached to or is contained by the arm. No matter what the rating of a Tool Arm, a vehicle cannot lift an item whose Size is greater than twice its own Size. Half the ratings of weaker arms are added to the full rating of the strongest arm to determine the lifting strength of multiple arms. Optionally, Tool Arms can be reinforced to punch or crush opponents. These attacks have a Damage Multiplier equal to the lifting capacity of the arm.

▼ FLAWS

8.2.2

Flaws are the opposite of Perks. They represent defects or shortcomings in the design of the vehicle. Sometimes these shortcomings are consciously planned into the construct as a cost cutting measure, while at other times the defects are the result of design errors. Regardless of their origin, Flaws hamper the vehicle they are part of.

◇ ANNOYANCE

Annoyances are the tiny little things that make vehicle crew scream in frustration. Any design can have something infuriatingly annoying about it. These type of Flaw are too insignificant to have an effect on the tactical game, but are interesting for roleplaying purposes. Annoyances also serve to individualize the various designs, and they add significant "character" to the vehicle.

◇ DECREASED MANEUVER (R)

When using one type of movement, the vehicle loses some of its natural agility. This Flaw is linked with one Movement Type in particular. When this Movement Type is used, the rating of this Flaw is subtracted from the vehicle's Maneuver value.

◇ EXPOSED AUXILIARY SYSTEMS

Whenever an Auxiliary Systems effect is rolled on the Systems Damage Table, it is treated as if the damage was one stage worse (i.e. Light Damage is treated as Heavy and Heavy Damage as all Auxiliary Systems destroyed).

◇ EXPOSED FIRE CONTROL SYSTEMS

The vehicle's Fire Control mechanisms, either the electronics or the mechanical parts, are inadequately protected. +1 is added to the die when rolling on the Fire Control Damage Table.

◇ EXPOSED MOVEMENT SYSTEM

Whenever a Movement systems effect is rolled on the Systems Damage Table, it is treated as if the damage was one level worse (i.e. Light Damage is treated as Heavy Damage, and Heavy Damage results destroy all of the vehicle's movement systems, regardless of their location).

EXTREME OVERHEATING ◇

The vehicle is prone to overheating in a highly dangerous manner. The vehicle will automatically suffer a Light Damage effect if it does any of the following for two combat rounds in a row: move and fire a weapon, fire three or more weapons, or use Space movement. If it does any of those actions for three combat rounds in a row, the vehicle will suffer a Heavy Damage effect.

FRAGILE CHASSIS ◇

Some vehicles use lighter, less expensive chassis to help cut costs. These chassis perform just fine under everyday, normal usage, but they are more vulnerable to weapons fire and physical damage. +1 is added to the die when rolling on the Structural Damage Table.

HAZARDOUS AMMO/FUEL STORAGE ◇

The vehicle's fuel tanks and/or ammunition bays are poorly designed. They are either placed in a prominent place, lightly armored, or even both. A modifier of +1 is added when rolling a Light Damage result on the Fire Control Damage Table, +2 when rolling Heavy Damage.

HEAT VULNERABLE (R) ◇

The armor of the vehicle cannot withstand high energy attacks such as those from lasers or shaped-charge warheads. It may melt at low temperatures or just lack the thermal conductivity necessary to rapidly disperse the heat of the attack. The rating of this Flaw is subtracted from the Armor rating of the vehicle when submitted to a HEAT attack (see p. 177).

INEFFICIENT CONTROLS ◇

The vehicle's control mechanisms are poorly organized, causing the crew to waste precious time in high-stress situations. The number of crew actions is reduced by one. This Flaw is generally only found on vehicles which normally have a large crew complement.

LARGE SENSOR PROFILE ◇

A design element has made the vehicle more visible to sensors. The Flaw's rating is subtracted from the vehicle's Concealment value. The rating is added to the roll of other units performing an Active Sensors check against the vehicle. A large sensor profile is hazardous when trying to ambush enemies or evade pursuit.

NO ENGINE ◇

The vehicle has simply been designed without an engine and must be towed or catapulted. Movement hit effects are ignored, though Armor points are lost as usual.

OVERHEATING ◇

The vehicle is prone to overheating in a dangerous manner. The vehicle will automatically suffer a Light Damage effect if it does any of the following for three combat rounds in a row: move and fire a weapon, fire three or more weapons, or use Space movement.

SENSOR DEPENDENT ◇

The vehicle's cockpit does not give the pilot a direct, clear visual image of his vehicle's surroundings. In tactical game terms, the vehicle must use its sensors to detect everything. If these are destroyed, the vehicle is completely blind. It cannot attack, nor can it move. Any such attempt is automatically randomized on the board (i.e., direction and target are determined by the dice instead of the controlling player).

TRACKABLE EMISSIONS ◇

The vehicle emits large amount of residual heat, smoke, radiation, etc., and is thus easily tracked down. This is not the same as Large Sensor Profile, which relates to the vehicle itself. Sensor rolls to spot the vehicle have a bonus equal to the Rating of this Flaw. Guided weapons automatically lock-on without need for a designator. Computers (such as autopilots) may be instructed to track these emissions.

▶ OFFENSIVE AND DEFENSIVE SYSTEMS

8.3

The basic game statistics of weapons have already been explained on page 135. Other rules pertinent to weapons and defensive systems are explained here. Most of the following texts give special rules that are indicated by the weapon characteristics — those strange letter codes in the "Special" column of the weapon's data sheet.

▼ AMMUNITION FEED

8.3.1

Weapons with ammunition can be fed in one of two ways: either through an internal magazine (through fixed internal belt-feeding, an auto-loader, etc.) or by "clips" (actual ammunition clips, external belt feed, removable battery packs, energy crystals or whatever).

◇ INTERNAL MAGAZINE

Ammunition stored in magazines is entirely internal to the vehicle and is fed to the weapon through the inside. Multiple ammunition types can be stored within the weapon's bay, but switching between types requires one action. Reloading cannot be done in the field and requires specialized equipment.

◇ CLIPS

Clips are external to the weapon and are noted by a "c" after the Ammo number (multiple clips are indicated by a multiplier). Spares are mounted on the exterior hull of the vehicle. This makes them vulnerable to damage. Each clip counts as an AUX system — Light Damage destroys one clip, Heavy Damage destroys one die's worth. Destroyed clips explode, causing a number of damage points equal to the basic Damage Multiplier of the ammunition directly to the hull.

Clips can also be damaged while in the weapon. When rolling a Fire Control damage result (Sub-table A), it is also possible to read "Clip Destroyed" instead of the first two results of the table. Apply the usual damage resolution procedure (see *Damage*, page 158) to decide which option is applied.

Changing clips requires one action and the presence of either a Manipulator Arm or a dedicated ammo-loading Tool Arm. Any type of ammunition can be stored within a single clip, but the order in which the ammo types are loaded must be noted and then followed.

▼ WEAPON CHARACTERISTICS

8.3.2

Weapon characteristics are what makes a kinetic kill cannon different from a missile launcher or a laser. They serve to make each weapon or system unique, much like Perks and Flaws do for vehicles. The descriptions below explain the effects of each characteristic. Its name is followed by the abbreviation used on vehicle sheets, if appropriate.



◇ ANTI-INFANTRY (AI)

The weapon is specially designed to attack infantry units and other man-sized targets. It can be swung around very fast and its tracking system can register fainter readings than normal. The weapon does not suffer the normal Obscurement modifier when attacking human targets (see *Game Scales*, page 130).



◇ ANTI-MISSILE (AM)

The weapon is specially designed to attack or counter incoming missiles, either by misleading them away from the vehicle or destroying them outright. The weapon does not suffer the usual -6 modifier when used for Anti-Missile fire (see page 157 of this rulebook).



◇ AREA EFFECT (AE#)

The weapon affects a large area around the target point. Area Effect weapons always have a minimum MOS of 1 (or 1/2, in space) versus everything in their radius, indiscriminate of friend or foe, even if the target(s) successfully defended. These weapons are rated in Area Effect (AE), followed by the radius of hexes of their blast area (radius 0 means only the target hex is affected).



◇ ARMOR-PIERCING (AP)

The weapon is highly efficient when penetrating armor, concentrating all its energy on a single point to enhance its force. The target vehicle's base Armor rating is halved before determining damage. If the attack is successful, the target does not lose any Armor points (the entry hole is too small to affect the Armor rating), but takes system damage as usual. Targets may not be Overkilled by Armor-Piercing weapons — any extra damage beyond the Overkill score passes right through the target, possibly affecting something beyond.

ARMOR-CRUSHING (AC) ◇



The weapon is highly efficient when destroying armor plating and structures. If the attack is successful, the target loses twice the usual Armor points (2 for Light Damage and 4 for Heavy Damage) in addition to the usual system damage. If the attack's damage total is equal or greater than half the target's Armor (but still under the basic Armor rating), the target loses one Armor point with no additional effect.

ATTENUATING DAMAGE (AD#) ◇



The weapon loses a significant portion of its damage potential over distance. An AD number is subtracted from the Damage Multiplier for each range band beyond Short. For example, a x12 weapon with AD2 would be x10 at Medium, x8 at Long and x6 at Extreme range.

CONCEALED ◇



The weapon is normally hidden within a concealed bay in the hull of the vehicle and pops out only to attack. Such a weapon may use ammunition clips, but they can only be changed when the weapon is deployed.

The weapon cannot be detected while in its retracted position, and can ignore *one* damage result. Unfolding or retracting a Concealed weapon requires one action for each operation, unless it has been designed to "pop-up" (these require no action and may be deployed instanteanously).

DEFENSIVE (DEF) ◇



The system has been built with a defensive purpose in mind and makes a poor offensive tool. The Damage Multiplier is halved (round down) and a -2 modifier to hit is applied when using the system to attack. Defensive measures such as Parrying, Blocking and Anti-Missile fire do not count as attacks.

ENERGY-HOMING ◇



The weapon uses the target's own electronic emissions to lock-on and destroy it. It is most often used for missiles, but special computer/sensor systems can be adapted for direct fire weapons. If the target made an Active Sensor roll, used communication or has any kind of ECM or ECCM active during the combat round where the Energy-Homing attack takes place, the weapon gains a +2 to hit.

GUIDED (G) ◇



Guided weapons can use targeting information supplied by a friendly unit to improve their accuracy. Guided weapons gain a +2 modifier to their attack roll versus targets that have been "tagged" by an allied target designator within communication range. Guided attacks versus targets marked by a target designators do not need forward observers.

HAYWIRE ◇



The weapon's attack form consists of or causes a massive electrical discharge. In tactical terms, the weapon gets two rolls instead of just one on the Systems Damage Table when it scores Light or Heavy Damage on an opponent. In roleplaying terms (if "Crew" is rolled on the damage table), the weapon's second damage result is treated as an electrical attack with an Intensity equal to its tactical scale Damage Multiplier plus the Margin of Success.

HEAT ◇



Vehicle weapons are divided into two general categories: normal and HEAT (High Energy Anti-Tank, though tank here implies armor more than an actual vehicle). HEAT weapons rely on energy and heat to damage their target and can be counteracted by special armor (see page 172).

HEAVY ◇



The weapon is extremely heavy/cumbersome. It causes a -1 MP penalty to the Top Speed of all movement types (Combat Speeds are recalculated accordingly). This penalty is removed if the weapon is dropped or destroyed.

INDIRECT FIRE (IF) ◇



The weapon can perform indirect fire. It does not need to have a direct line of sight in order to attack or otherwise affect the target, only a forward observer to tell it where to aim. Indirect fire rules are described in *Mechanized Action*, page 156.

◇ INFINITE USE (INF)



Some weapon types do not require ammunition. Others are configured to draw power directly from the vehicle's powerplant or some other inexhaustible energy source instead of relying on capacitors or ammo packs and can operate for a virtually unlimited period of time, provided power and maintenance are adequatly supplied. Infinite use weapons have the letters "Inf." in the ammunition column of their data sheet. They can fire in bursts only if they have a ROF of one or more.

◇ LIMITED USE (LU#)



The weapon can only be used for a short period of time before requiring a complete re-haul. They have no data entry for ammunition since they are entirely self contained. The ammunition column is marked with "LU," followed by a number: this is the number of turns the weapon can operate before burning itself out. Burned out weapons need to be completely rehauled at a well-equipped factory and cannot be refueled in the field.

◇ MISSILE (MIS)



The weapon is an aerodynamic tube containing one (or more) warheads mounted on a rocket motor, with or without a guidance system. Some missiles are stored in a launcher that contains the fire control system, others are wholly self-contained and fired as a single unit. The weapon uses the Missile ROF rules, but can be defended against with Anti-Missile fire.

If the multi-turn Seeking option is also available (see below), range is counted based on the Margin of Failure of the previous attack — in effect, the missile corrects its course at mid-point, improving its chances to hit. A MoF of 1 is equal to Short range, a MoF of 2 is Medium range, and so on. Attacks with Margin of Failure of five or more cannot try again, having veered too far off-target. Seeking missiles always move last, regardless of initiative.

◇ POWER-HUNGRY (PH#)



The weapon requires an inordinate amount of power and/or attention before firing. The vehicle can do nothing else while preparing that single weapon for firing. A number of actions equal to the "PH" number listed must be spent to fire the weapon, with any penalties for multiple actions in a turn being applied cumulatively.

◇ REDUNDANT SYSTEMS



The weapon is sheathed in plates of armor or has multiple redundant components. The weapon ignores the first damage result applied to it. This characteristic may be duplicated for extremely resilient weapon systems.

◇ SCATTER



The weapon fires salvoes of smaller projectiles bound for the same target point rather than one sudden attack. The weapon can spread its salvo over a larger beaten zone if required. The weapon can increase its Area Effect by one, halving its Damage Multiplier in the process (if the weapon does not normally have an area effect, it gains an AE of 0).

◇ SEEKING (SK#/#)



The weapon can try to hit a moving target more than once: missiles which turn and twist to try and collide with an enemy vehicle, or beam weapons that won't fire until locked-on. If the attack fails, the attacker may reroll it. The maximum number of attacks possible per round is indicated with the characteristic. If the target has already spent action(s) to either shoot down, parry, block or dodge the attack, it can defend itself again with the same method at no additional action cost.

Some weapons are designed to attack over multiple turns. Unless the weapon has been destroyed, it may attack again at no action cost, up to its maximum number of turns in use. Multi-turn seeking missiles use special rules for determining range on the second and subsequent attacks — see *Missile*, above. The number of rounds they may attack in, including the one in which they are launched, is indicated after a slash ("/"). Seeking missiles without a slash operate for a single round.

◇ SELF-DESTRUCT (SD)



The type of weapon is entirely self-contained and is destroyed when used. If it misses, it may not be retrieved and reused. Self-destruct weapons do not have ammunition — they are a one-shot tool and are completely destroyed when used, whether the attack was successful or not.

◇ SHIELD



The weapon can be used to block enemy attacks and absorb some or all of the damage. A vehicle with a Shield system may expend one action to block an attack within the shield's arc; the vehicle's pilot rolls a new defense. If the roll is successful, the vehicle is still hit, but the shield subtracts a number of damage points equal to its DM times the shield block's MOS.

SHIELD CONTINUED

If a vehicle suffers Light Damage after having successfully blocked, the shield's Damage Multiplier is automatically halved (rounded up). If a vehicle suffers Heavy Damage after having successfully blocked using its shield, the shield is automatically destroyed. In either case, no further damage is applied to the vehicle. Overkill results still destroy the vehicle. When not used to block, the shield takes damage as a normal weapon; if its total penalties reach -5, the shield is destroyed.

Vehicles may not carry shields whose DM is greater than their Size rating. When not actively blocking, the shield adds one-quarter of its DM (rounded down) to the vehicle's base Armor in the shield's arc.

SHIELD, ENERGY (E-SHIELD) ◇



Protective devices can also be composed of multiple laser beams that intercept the object before it can strike the vehicle. This is how the space ships' Point Defense System works in Shield mode to ward off the minute particles that would otherwise strike the ship while it moves. Many Jovian scientists have theorized that the screen generator concept may one day be pushed further to create something similar to the classic "force field" of science fiction.

A vehicle with an Energy Shield system uses the same basic rules as a physical one (above). Most E-Shields are designed to be used against only one type of attack and cannot affect others (for example, PDS are useless against energy weapons). Energy shields with an Area Effect allow other units within the AE to benefit from its protection. Active energy fields generally prevent weapon fire by the protected unit(s), unless the shield is designed to allow it.

SMART (SMT#) ◇



The weapon is equipped with a tiny computer brain that allows it to operate by itself. The skill level of this virtual gunner is equal to the rating of the Smart characteristic. The Smart gunner has one action per turn. No crew action needs to be expended when using a Smart weapon, but a logical "program" of up to ten words must be given to each ("Fire on all incoming missiles" would be a valid program).

HAND-HELD WEAPONRY ▼

8.3.3

If one or more Manipulator Arms are present, any weapon can be designed as "hand-held" in a rifle-like mount. Rifles are somewhat more fragile, since they depend on the arm carrying them, but they are also more flexible tactically. Most rifles are clip fed for tactical flexibility.

Rifles can be picked up or put away at the cost of one action, as long as the manipulator is still functional. It costs no action to drop a rifle. If the Manipulator Arm is destroyed, or if the rifle is dropped, the rifle can be picked up by another manipulator-equipped unit with a free hand.

MULTI-FUNCTION WEAPONS ▼

8.3.4

Multi-function weapons are systems that can perform more than one function; for example, a space ship's point defense laser system can fire powerful unidirectional shots or switch to a wide-angle anti-missile beam sprayer by readjusting its focal array. These are listed on two or more lines on the vehicle's record sheet, with one function per line; the name of the weapon is written on the first line, while functions are indicated between parenthesis. The advantage of this is versatility with greatly reduced cost and space. On the down side, if the weapon is damaged or destroyed, all functions are equally affected by the damage received. Switching between functions is normally almost instantaneous and costs no action, except when playing within the Roleplaying time frame (6-second turns). One action is then required to switch from one mode to another.

WEAPON LINK ▼

8.3.5

A Weapon Link allows multiple weapons to be linked to a single fire control mechanism. Although not technically a Perk, it is listed with them for ease of reference. One action is required to fire a set of linked weapons. The link's Accuracy and Base Range are equal to the worst of these ratings amongst the link's weapons. Each weapon's attack is rolled separately, but as soon as one weapon misses, the rest miss automatically (they still expend their ammunition). When a link is fired, *all* weapons in it fire (though they can still be fired separately if need be).

NOTES ON WEAPONRY ◪

HOOKS AND TIPS

Don't forget that the Base Range must be doubled repeatedly to get the other range bands — the full range bands are not listed on the sheet in order to save space that is better used for other characteristics. There are spaces for three more weapon-related numbers on the standard record sheet (see page 131), identified by the letters MS, WC and AC. These means, respectively, Minimum Size, Weapon Cost, and Ammunition Cost, and all are related to the design procedure. Though they are not used in regular play, space is given for these for those interested in using the Offensive & Defensive System Design Procedure found in the **Jovian Chronicles Companion.**

end of section 8.3 offensive and defensive systems

▶ COMPUTERS IN THE GAME

8.4

Basic computers are described in Silhouette with the following Attributes: Creativity, Knowledge, Processing Power and a series of programs called Modules, similar in effect to a character's Skills. Creativity and Knowledge represent the computer's abilities to find new solutions (CRE) and to make use of past experience and pre-programmed routines (KNO) to solve problems and accomplish tasks, using the proper Modules (Skills). Those rare computers with artificial intelligence have Willpower and Psyche Attributes as well.

Processing Power gives the number of dice the computer can use to accomplish various tasks at the same time. For example, a computer with a Processing Power of 1 can only do one thing at the time, using one die. A computer with a Processing Power of five, on the other hand, could do five tasks at the same time, giving one die to each, or concentrate on only one task using five dice, do three one-die task and one two-dice task, etc. In the same manner as humans, only the highest die counts, with additional sixes adding one each to the total; the Attribute bonus related to the Module used is added to the final roll.

All active Modules must be allocated at least one die; inactive Modules take one combat round to load, while active Modules can be interrupted instantly. The same Module can be loaded more than once. A computer can never put more than five dice on any particular task. Unused dice can be put into any currently running Module, instantly and at any time. A computer fumbles only if it rolls ones on *all* of its PP dice, even those not assigned to the problem.

It is assumed that the basic functions of the computer, like those related to the maintenance of the vehicle or location in which they are installed, always succeed. All computers are assumed to come with standard communication links, hardware and operating software, as well as advanced encryption systems.

▼ MODULES

8.4.1

Modules are divided into three basic types: Academic, Hardware and Vehicular. Each Module has a certain sophistication, reflected in the maximum number of Processing Power which can be used to run them. For example, a Drive 2 Module may not have more than two dice allocated to it, even if the computer has a higher Processing Power.

Academic Modules are used for tasks which are oriented towards the gathering and analysis of factual information. A computer with an Academic Module can help a human operator by giving him more dice to roll. First, a Module roll is made against a threshold equal to the operator's Skill level plus the related stat bonus (for example, a person with Skill level 2 with an Attribute of +2 would result in a threshold of 4). If successful, the operator gets a number of additional dice equal to the Margin of Success, up to a maximum of 5. An unskilled operator automatically gets a single die to roll from an appropriate Module with three or more dice allocated to it.

Hardware Modules are tied to specific pieces of equipment, such as surveillance systems, sensors, communication equipment, etc. These are mostly automated systems; human operators have no real effect on the computer's performance when it activates these Modules. Most are event-driven, which means that a roll is required only when a particular event happens (i.e. an object coming into the sensors' range, etc.). The cost for hardware Modules includes the appropriate interface but not the hardware itself.

Vehicular Modules are similar to Hardware Modules, insofar as they control hardware components, more specifically as part of vehicular equipment. They are usually not as automatic as hardware Modules, often requiring an operator to correctly function; refer to each specific Module for a more thorough description of the Module's effects. The cost for vehicular Modules includes the appropriate interface but not the vehicle itself.

◇ AUTOPILOT (CRE)

Type:	**Vehicular**
Frequency of roll:	**Event-driven**
Cost:	**2,000 per die**

The Autopilot Module enables the vehicle's computer to take full control of the steering and navigation. The computer makes Skill tests whenever an obstacle or potentially hazardous situation is encountered, and whenever a human pilot is required to do one. The vehicle must be equipped with the Autopilot Perk in order to use this Module.

◇ COMMUNICATIONS (KNO)

Type:	**Academic/Hardware**
Frequency of roll:	**Hourly**
Cost:	**1000 per die**

This simple Module handles communications routing and encryption/decryption. It is mostly used to help a human operator decode or transmit a message. If the computer is used to monitor or transmit messages automatically and fails the roll, 10% of the communications are lost per point of Margin of Failure.

DEFENSE SYSTEMS (CRE) ◇

Type:	**Academic/Vehicular**
Frequency of roll:	**On request or Event-driven**
Cost:	**2,250 per die**

The Defense Systems Module is a specialist Module designed to assist a vehicle's pilot in evading incoming attacks. The Module can either take control of a particular defense system (such as a non-automated anti-missile system), replacing a human operator, or assist a human operator in the same manner as would an Academic program. When assisting the crew, the Module can help operate a specific defense system or help to physically evade attacks (i.e. boost defense rolls) using the relevant Piloting skill.

EARTH SCIENCES (KNO) ◇

Type:	**Academic/Hardware**
Frequency of roll:	**On request or Daily**
Cost:	**1,500 per die**

This Academic Module, which assists in the various sciences which concern the geological world, is mostly used by geologists, miners and prospectors. In addition to boosting the Earth Sciences skill of the computer's operator, it can take care of an entire geological laboratory through automated systems.

ELECTRONICS (KNO) ◇

Type:	**Academic**
Frequency of roll:	**On request**
Cost:	**900 per die**

This technical Module is used by engineers and hobbyists to design and test electronic circuits and devices. Unless the computer is an artificial intelligence, it cannot design circuitry on its own. The Module is used in Academic mode to boost a character's Tinker, Electronics or Electronic Design Skill when reparing, modifying or creating circuitry and other electronic devices.

ELECTRONIC WARFARE (KNO) ◇

Type:	**Academic/Hardware**
Frequency of roll:	**On request or Event-driven**
Cost:	**1,500 per die**

This Module, used mostly by the military and special intervention squads, can either replace a human operator, automatically scanning or jamming transmissions, or assist the operator as a standard Academic Module. If used in an event-driven mode, the computer can be ordered (with simple 10-word orders) to seek and block specific trnsmissions or ECM devices.

FIRE CONTROL (CRE) ◇

Type:	**Academic/Hardware**
Frequency of roll:	**On request or Event-driven**
Cost:	**3,750 per die**

This Module is used either to replace a human gunner (with simple 10-word orders such as: "shoot everything that moves," "cripple all that come within 50 meters" or "do not harm anyone with a white flag") or to assist a human gunner in the same way as would an Academic Module, with a maximum of three additional dice. Regardless of which mode is used, the weapon systems controlled or assisted by the Module are affected by the vehicle's Fire Control rating.

FOREIGN LANGUAGE (KNO) ◇

Type:	**Academic**
Frequency of roll:	**On request or Event-driven**
Cost:	**100 to 4,500 per die, depending on language**

This fairly common Module is used as a handy translator, in which case the computer resolves the task by itself, the threshold of difficulty depending on the level of language used by the person being translated. It can also be used to boost any person's Foreign Language skill in the usual manner, to a maximum of three additional dice.

◇ LIFE SCIENCES (KNO)

Type:	**Academic**
Frequency of roll:	**On request**
Cost:	**1,500 per die**

This Module is mostly used by biologists, physicians and scientists who study living organisms. In addition to boosting the skill of the computer's operator, it can take care of an entire laboratory through automated systems.

◇ MECHANICS (KNO)

Type:	**Academic**
Frequency of roll:	**On request**
Cost:	**1,250 per die**

This purely Academic Module is used by engineers and hobbyists to design, repair and test mechanical systems and devices. Unless the computer is an AI, it cannot design mechanisms on its own.

◇ MEDICINE (KNO)

Type:	**Academic**
Frequency of roll:	**On request**
Cost:	**3,000 per die**

Doctors, physicians and nurses use this particular Module for the diagnosis, treatment and counseling of patients. In addition to boosting the Skill of the computer's operator (First Aid or Medicine), it can take care of an entire hospital through automated systems.

◇ SPACE NAVIGATION (KNO)

Type:	**Academic/Vehicular**
Frequency of roll:	**Once per change of course**
Cost:	**2,500 per die**

All spacecraft require this Module on their vehicle's computer in order to be able to go anywhere outside of an area a few kilometers wide. The computer must have at least one die dedicated to this Module at all times when the vehicle is traveling. To stay on course in normal space, the computer may roll against a threshold set relative to the complexity of the course (Gamemaster's decision) or it can support a ship's navigation officer's Skill.

◇ PHYSICAL SCIENCES (KNO)

Type:	**Academic**
Frequency of roll:	**On request**
Cost:	**1,400 per die**

This Module is often used by researchers in the fields of chemistry and physics. In addition to boosting the skill of the computer's operator, it can take care of an entire laboratory through automated systems.

◇ SENSORS (KNO)

Type:	**Academic/Hardware**
Frequency of roll:	**Event-driven or On request**
Cost:	**2,000 per die**

This Module automatically monitors and analyzes data received from active and passive sensors, warning the vehicle's crew of any anomalous signals. It can also assist a sensor operator.

◇ SURVEILLANCE (KNO)

Type:	**Hardware**
Frequency of roll:	**Event-driven**
Cost:	**1,000 per die**

This common Module is used for routine, automatic surveillance using video, audio, motion and heat sensors — it is the computer equivalent of the Notice Skill. Roll separately for each unwanted intrusion; the threshold of difficulty depends on the total surface monitored; add 1 for each 50 m x 50 m zone. Stealth and electronic countermeasures can be used to further raise this threshold, at the GM's discretion.

SPACE SHIPS AND LARGE VEHICLES ◀

8.5

Space ships and large vehicles (in fact, anything above Size 30) are broken down into smaller parts (called **sections**) to facilitate construction, reduce costs and increase their survivability. As such, they require a few special rules and some clarification as to their use in the game.

In Silhouette terms, this means that the vehicle is composed of a main hull plus a number of superstructures and components that perform certain function and move with the hull. Examples of this include weapon turrets, communication towers, and booster units. For the sake of simplicity, these are all referred to as "sections" in the text.

CREW ▼

8.5.1

Each section has its own crew. Actions are determined separately for each part of the vehicle, including the main hull. Crew casualties are likewise applied to each separate section as damage is received. Crew may be reassigned to other sections as desired. A number of crewmembers equal to the Size of the smallest section involved in the exchange may be transferred each turn. Transferred crewmembers do not count for action purposes in the round during which they are transferring.

MANEUVER ◇

All sections have the same Maneuver rating as the main hull. They use the same movement modifiers in combat (e.g. if the main hull is moving at Combat speed, each section will be treated as moving at Combat Speed). Sections ignore any Maneuver-related damage result, but still lose Armor points as usual (1 for Light Damage, 2 for Heavy Damage). They are affected by any Maneuver damage suffered by the main hull.

MOVEMENT ◇

Motive sections contribute motive power by adding their total mass to define a common "towing capacity"(see page 143 for space towing rules). This is then used to tow the rest of the vehicle (the main hull simply adds its own Thrust, if applicable). If a motive section is Overkilled or can no longer supply *any* motive power, the speed drops according to the regular towing rules (damaged drive sections are often jettisoned on space ships to reduce the ship's mass). Non-motive Sections ignore any Movement-related damage result, but still lose Armor points as usual.

ELECTRONICS ◇

The electronic systems (Sensor, Communication, Fire Control) are distinct for each part of the vehicle. Some sections can dispense with Sensor, but they all have a Communication system to connect with the rest of the vehicle. Communication lines between sections are not affected by ECM as they are hardwired within the vehicle. Should it be destroyed, however, that section is cut off and may no longer receive orders from (or supply them to) the rest of the vehicle. It also cannot benefit from Command points or transfer crew unless a messenger physically fetches them. Fetching crew in other sections or transfering messages takes an entire combat round; that crewmember does not count for action purposes while he is away from his post.

DAMAGE EFFECTS ◇

Each section has its own Armor rating. Sections are targeted as if they were a separate vehicle in the same hex, and takes damage separately from the main hull. Should a section be Overkilled, any remaining damage is applied to the Armor of the main hull to see if additional damage is suffered. For example, a turret section with an Overkill value of 72 takes a glancing blow from an powerful laser beam and suffers 110 points of damage as a result. The Overkill result automatically destroys the turret, while 38 points of damage are transferred to the hull.

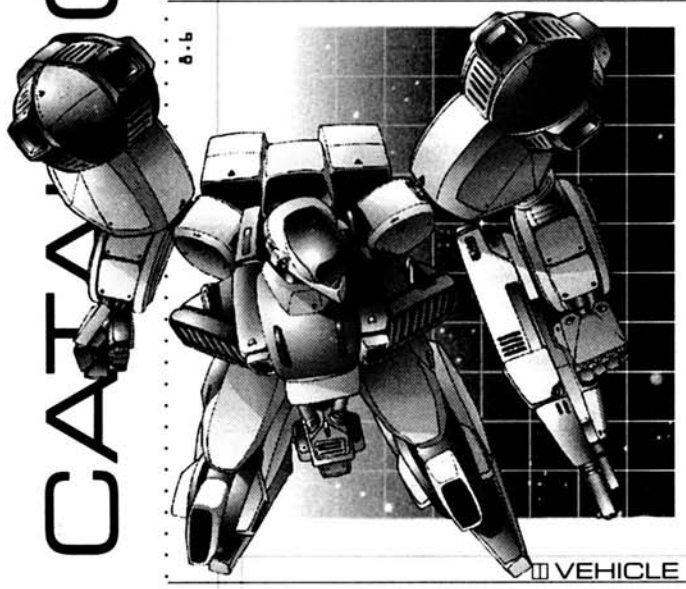
Sections are usually attached permanently to the main hull, but most spacecraft have provision to discard damaged turrets, communication arrays or drive sections with explosive bolts. If this occurs, the damaged section's mass is removed from the ship, and the total thrust is recalculated.

If the main hull is Overkilled, each section still has power for a number of turns equal to its Size, after which they lose all power and become inactive.

WEAPONS ◇

Weapons and ammunition are determined separately for each section. A section is considered fixed in place on the main hull. If the design calls for a turret, any weapon mounted on the turret section will have the appropriate fire arc. The actions required to fire the gun(s) are supplied by the section's crew, though they can use sensor and communication devices from the other sections using the standard Forward Observer procedure (see page 156).

▶HA-101 BRIMSTONE



The Hermes Aerospace *Brimstone* is the newest exo-armor to enter service in the ranks of the Mercurian defense force. It is the first exo-armor entirely produced in Mercurian space and was designed to answer the needs of both the army and the Merchant Guild. The prototype took its first steps in March of 2203, after a long and arduous development period. Most of these growing pains came from Hermes' limited experience in the field of exo-vehicle design, as the company's exo-craft division had only produced one in the past (the HA-600 exo-suit, back in 2190).

The most prominent feature of the *Brimstone* is its large thrust rating. Its eight main engines can propel the craft forward at almost three gees. Unfortunately, this is achieved at the expense of reaction mass reserve. The *Brimstone* has large maneuver thruster arrays located on the shoulder and feet. The Hermes design team heard of JAW's experiment with removable engine pods, and applied a similar principle to the exo.

Hermes incorporated a number of design elements that were specifically requested by the government. The *Brimstone* has large manipulators that are useful when handling material in space docks. It also features numerous cooler units since it often operates under high temperatures.

VEHICLE DATA

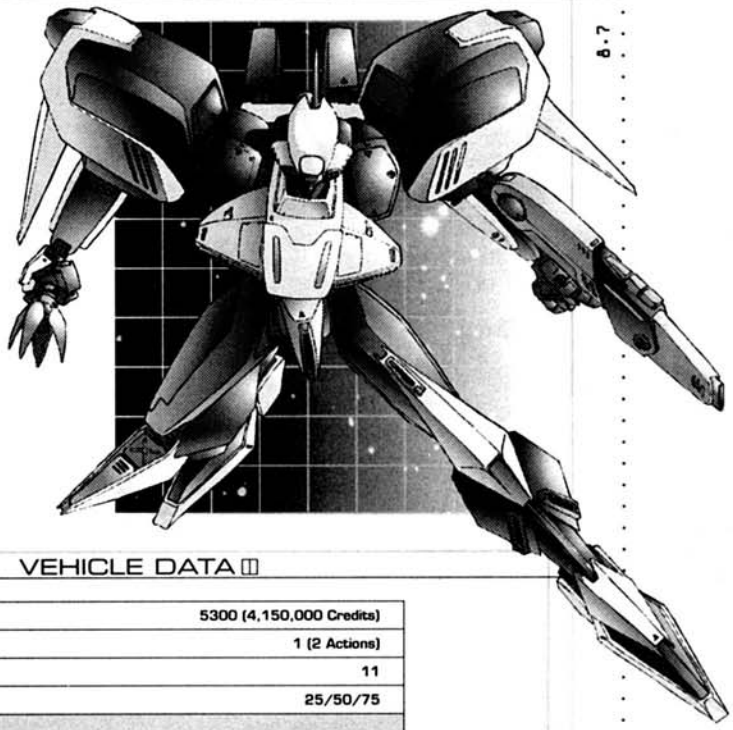
Threat Value:							7500 (6,125,000 Credits)
Crew							1 (2 Actions)
Size							12
Armor							26/52/78
▶ MOVEMENT DATA							
Movement Mode	Combat Speed		Top Speed				Maneuver
Walker	2 (12 kph)		4 (24 kph)				-1
Space	14 (1.4 g)		28 (2.8 g)				+1
Deployment Range:							150 km
Reaction Mass:							200 BP
◆ ELECTRONICS DATA							
Sensors:							0/2 km
Communications:							0/10 km
Fire Control:							0
▶ PERKS & FLAWS DATA							
Name		Rating					Game Effect
Autopilot		-					Acts as Level 1 pilot
Backup Systems		-					Comm, Fire Con, Life Support, Sensors
Computer		2					CRE 0, KNO 0, PP2
Ejection System		-					Escape Pod
HEAT-resistant Armor		2					Add against HEAT attacks
HEP: Extreme Heat		-					Extra heatsinks
HEP: Radiation		3					Screen
HEP: Vacuum		-					Space protection
Life Support		-					Limited
2 x Manipulator Arm		12					Can punch
Reinforced Crew Compartment		-					Absorbs first "Crew" hit
Decreased Maneuver		2					Walker
Large Sensor Profile		3					Too large to hide
▶ OFFENSIVE & DEFENSIVE SYSTEM DATA							
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
1	FESTer-12 Rifle	Forward	x10	4	0	2	60c x 3	-
6	M10 Light Missile	Forward	x15	3	-2	0	n/a	Mis, SD, Sk1, Smt2
2	M30 Heavy Missile	Forward	x30	5	-2	0	n/a	Mis, SD, Sk1, Smt2
2	L6 Plasma Lance	Forward	x12	M	0	0	LU3	AC, Concealed, HEAT

G-1 RYU

The G-1 *Ryu* is a relatively recent development of the Venusian exo-armor industry. It is a state-of-the-art, high performances exo-armor which is intended to become the main Venusian trooper unit in the next decade. The *Ryu* uses both hydraulic and myomar technologies to move its limbs and weapon systems, and is powered by a standard micro-fusion reactor located in the rear section of the body. The standard G-1 configuration has a large thruster backpack, giving it a good reaction mass reserve and good or superior acceleration.

The Venusian exo-armor does not seem to have been intended as a "slugger" combat unit. The legs are very thin, indicating a possible structural weakness. The only built-in ranged weapons are the twin pulse lasers mounted in blisters on either side of the head unit. There are hard points on both shoulders and backpack, probably for missiles or rocket packs, but there are no other apparent weapon-bearing location. Most likely, any other armament will be carried in the manipulator hand units.

The vehicle is far from defenseless in melee combat, however, as it can carry two to four plasma lances in a special compartment located behind mobile armor panels on the upper thighs.

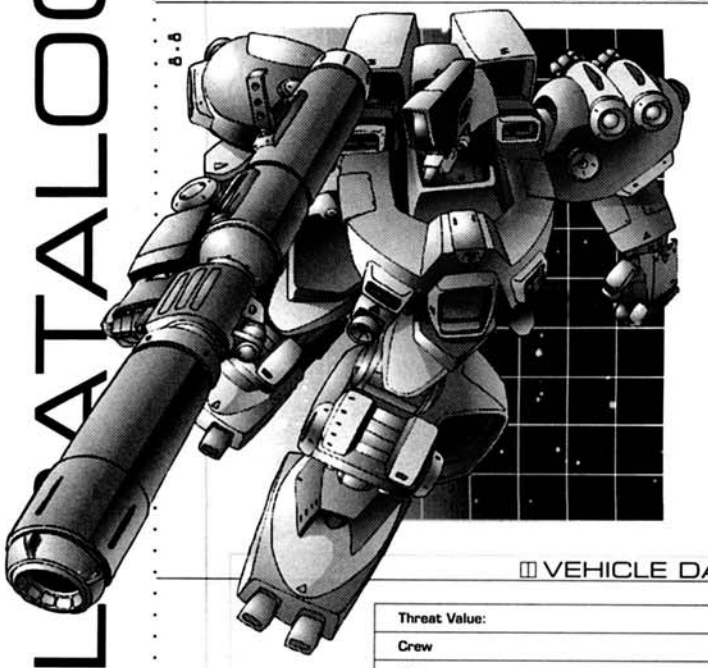


8.7

VEHICLE DATA

Threat Value:							5300 (4,150,000 Credits)
Crew							1 (2 Actions)
Size							11
Armor							25/50/75
▶ MOVEMENT DATA							
Movement Mode	**Combat Speed**			**Top Speed**			**Maneuver**
Walker	6 (36 kph)			11 (66 kph)			+1
Space	11 (1.1 g)			22 (2.2 g)			+1
Deployment Range:							500 km
Reaction Mass:							300 BP
▶ ELECTRONICS DATA							
Sensors:							0/2 km
Communications:							0/20 km
Fire Control:							0
▶ PERKS & FLAWS DATA							
Name			**Rating**				**Game Effect**
Autopilot			-				Acts as Level 1 pilot
Backup Systems			-				Comm, Fire Con, Life Support and Sensors
Computer			3				CRE 0, KNO 0, PP3
Ejection System			-				Escape Pod
HEAT-resistant Armor			2				Add to Armor versus HEAT weapons
HEP: Radiation			3				Screen
HEP: Vacuum			-				Space protection
Life Support			-				Limited
2 x Manipulator Arm			11				Can punch
Reinforced Crew Compartment			-				Absorbs first "Crew" hit
Weapon Link			-				Link pulse lasers
Large Sensor Profile			1				Too large to hide
▶ OFFENSIVE & DEFENSIVE SYSTEM DATA							
Qty	**Name**	**Fire Arc**	**DM**	**BR**	**Acc**	**ROF**	**Ammo**	**Special**
2	Najima P8 Head Pulse Laser	Forward	x6	1	0	3	Inf.	AM, AI, HEAT
1	Krauss K-675R Massdriver Rifle	Forward	x12	3	0	2	200	-
4	ALM-16 Medium Missile	Forward	x16	3	-1	0	n/a	Mis, SD, Sk1, Smt2
2	Xidar-4 Plasma Lance	Forward	x16	Melee	0	0	LU5	AC, Concealed, HEAT

▶ CEA-05 WYVERN



As new exos were introduced in the JAF's front line units, the CEGA Navy decided they needed a new exo-armor design to face them. Although efficient, the most recent updates of the *Syreen* were hopelessly outclassed, so research was oriented in a new direction. Arrangements were made with the Martian Federation to buy two *Defenders*. These were moved with great secrecy to the LAC base in the Tycho Crater to be disassembled and studied. Using the basic frame as a guide, the engineers set out to create an exo-armor comparable to current Jovian designs: the *Wyvern*.

The head unit was completely redesigned, scrapping the front and lateral sensor arrays of the *Defender* and replacing them with a single large plate. Although this somewhat limited the field of vision of the pilot, it was easier to maintain and made room for a laser anti-missile system as well as two rapid-fire massdrivers for close combat.

It was decided that a large hypergolic bazooka would provide the main firepower. Hip missiles, once considered, had to be dropped to save some tonnage. The leg-mounted missile launchers were retained but the light rockets were replaced by more powerful ones. A pair of medium missiles complete the *Wyvern*'s usual offensive payload.

VEHICLE DATA

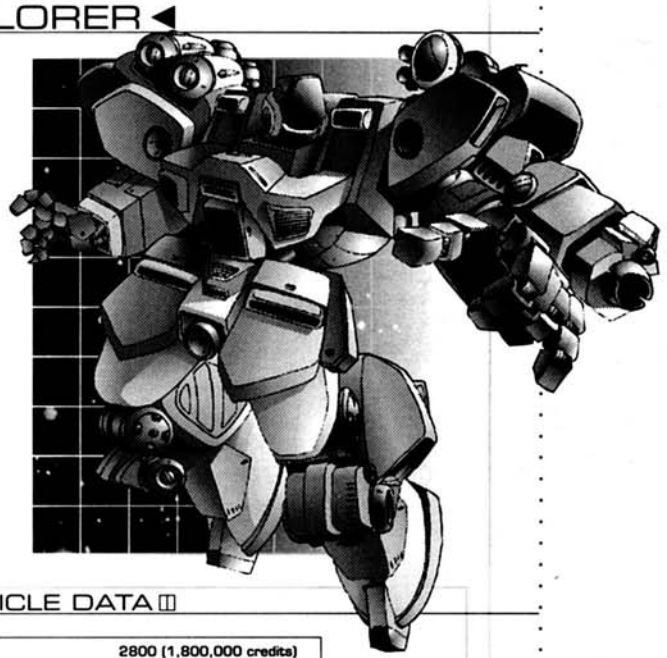
Threat Value:								5100 (3,700,000 Credits)
Crew								1 (2 Actions)
Size								13
Armor								32/64/96
▶ MOVEMENT DATA								
Movement Mode	Combat Speed			Top Speed				Maneuver
Walker	3 (18 kph)			6 (36 kph)				-1
Space	12 (1.2 g)			24 (2.4 g)				-1
Deployment Range:								500 km
Reaction Mass:								450 BP
▶ ELECTRONICS DATA								
Sensors:								-1/3 km
Communications:								0/10 km
Fire Control:								0
▶ PERKS & FLAWS DATA								
Name		Rating						Game Effect
Autopilot		-						Acts as Level 1 pilot
Backup Systems		-						Comm, Fire Con, Life Support, Sensors
Computer		2						CRE 0, KNO 0, PP2
Ejection System		-						Escape Pod
HEP: Radiation		4						Screen
HEP: Vacuum		-						Space protection
Life Support		-						Limited
2 x Manipulator Arm		13						Can punch
Reinforced Crew Compartment		-						Absorbs first "Crew" hit
Large Sensor Profile		2						Too large to hide
Weapons Link (Head Guns)		-						Link LACW-1M massdrivers
▶ OFFENSIVE & DEFENSIVE SYSTEM DATA								
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
1	Zapper Mk2 AMS	Forward	x3	1	+1	6	Inf.	AM, Def, HEAT
2	LACW-1M Massdriver	Forward	x5	1	0	4	240	AI
1	LACW-8 Hypergolic Bazooka	Forward	x15	5	0	0	6c	Mis, Seek1
2	3M-3 Heavy Missile	Forward	x30	5	-2	0	n/a	Mis, SD, Seek1, Smart2
2	3MC-2 Rocket Canister	Forward	x6	1	-1	5	20	Mis, IF

MEAL-02 EXPLORER

The *Explorer* was originally a Jovian Armor Works design which the JAF sold to the Martian governments in the late 2180s. It is representative of the first true exo-armors and as such is not very sophisticated.

The *Explorer*, was used by the JAF from its introduction in 2175 to its gradual replacement by the more advanced *Pathfinder*. The machines still in service were gradually sold to the Martian Free Republic Rangers, although a few ended up as the first exo-armors of the Martian Federation (the Nomads responsible for delivering them simply sold their cargo to the Federation for a higher price). Eventually, Martian Metals, a mining and heavy equipment company, began producing a home-grown copy which was almost identical to the original Jovian design. The name was retained, but the identification code was changed to MEAL-02.

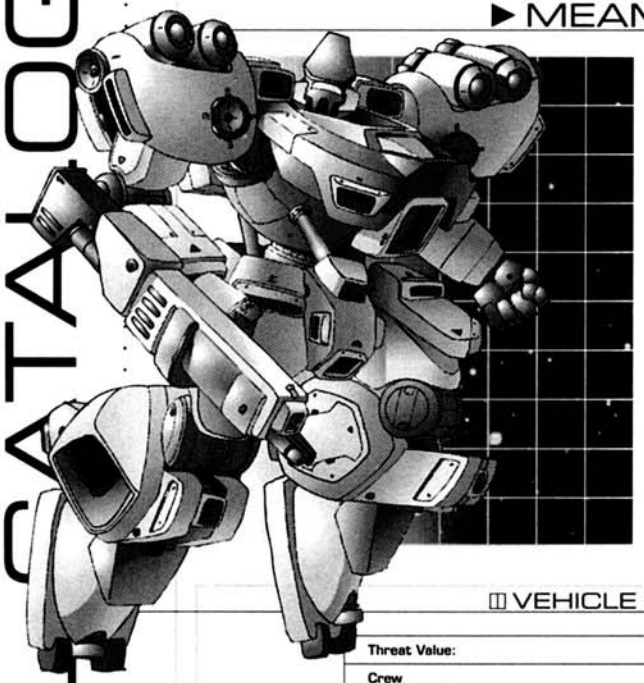
The machine has not changed much over the years. Except for the Martian-built computers and communication systems, everything is pretty much the same as it was when the *Explorer* served with the JAF. The armament is still of Jovian manufacture, although many units sport home-grown designs instead of the JAW railgun (such as the Ares RJ-3 railgun — a pale copy of the original weapon).



VEHICLE DATA

Threat Value:							2800 (1,800,000 credits)
Crew							1 (2 Actions)
Size							11
Armor							23/46/69
▶ MOVEMENT DATA							
Movement Mode	Combat Speed		Top Speed				Maneuver
Walker	2 (12 kph)		4 (24 kph)				-1
Space	6 (0.6 g)		12 (1.2 g)				-1
Deployment Range:							300 km
Reaction Mass:							400 BP
▶ ELECTRONICS DATA							
Sensors:							+1/2 km
Communications:							-1/10 km
Fire Control:							0
▶ PERKS & FLAWS DATA							
Name		Rating					Game Effect
Autopilot		-					Acts as Level 1 pilot
Backup Systems		-					Comm, Fire Con, Life Support and Sensors
Computer		2					CRE -1, KNO 0, PP2
Ejection System		-					Escape Pod
HEP: Radiation		3					Screen
HEP: Vacuum		-					Space protection
Life Support		-					Limited
2 x Manipulator Arm		12					Can punch
Reinforced Crew Compartment		-					Absorbs first "Crew" hit
Large Sensor Profile		3					Too large to hide
▶ OFFENSIVE & DEFENSIVE SYSTEM DATA							
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
1	Ares RJ-3 Railgun	Forward	x15	3	0	0	50	-
2	GPM-1 Missile	Forward	x20	5	-2	0	-	Mis, SD, Seek1, Smart2
2	MCJ-1 Missile Canister	Forward	x10	3	-1	4	10	Mis, G, IF

▶ MEAM-01 DEFENDER



Like the *Explorer*, the *Defender* was originally a Jovian Armor Works design sold to the Martian governments. The initial project was started at the same time as the *Explorer* project, which may account for the visual similarities of the two machines.

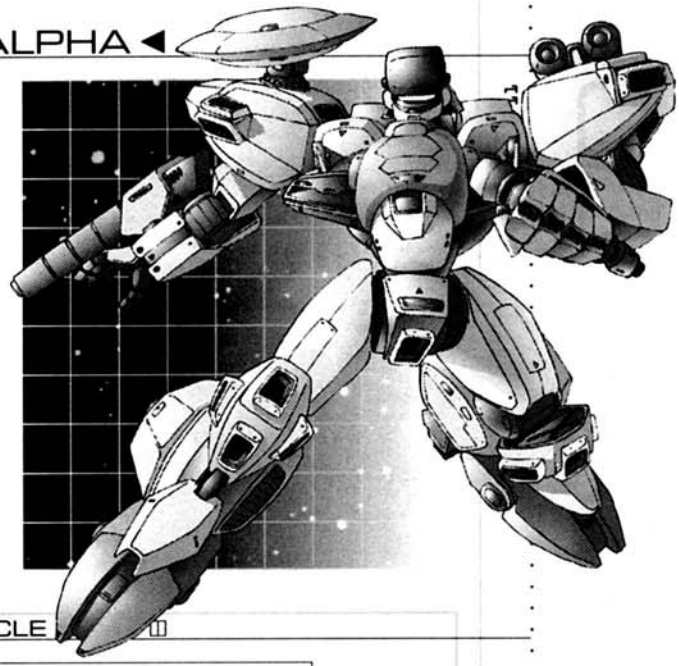
The *Defender*'s early flights proved the overall soundness of the design. It served in the JAF for the same period of time as the smaller *Explorer*, and was also sold to the Free Republic after its tour of duty in the Jovian forces. At first, the Federation couldn't get their hands on the new unit, much to their despair, until a commando team successfully stole the plans and some test data from the Martian Metals plant in Republic territory in 2191. Soon after, Ares Corporation became the second manufacturer of the MEAM-01.

The *Defender* is a well-rounded machine. It was designed as a soldier unit, capable of fullfilling many types of missions in a variety of environments. Though its internal systems lack sophistication, they are easy to repair and maintain. Tech crews are particularly grateful for the well-designed electronic bays, because the panel linings do an exceptional job keeping the red Martian dust out of the circuitry.

VEHICLE DATA

Threat Value:							5700 (4,300,000 Credits)
Crew							1 (2 Actions)
Size							12
Armor							25/50/75
▶ MOVEMENT DATA							
Movement Mode	**Combat Speed**			**Top Speed**			**Maneuver**
Walker	2 (12 kph)			4 (24 kph)			-1
Space	7 (0.7 g)			14 (1.4 g)			-1
Deployment Range:							250 km
Reaction Mass:							400 RP
▶ ELECTRONICS DATA							
Sensors:							-1/2 km
Communications:							-1/10 km
Fire Control:							0
▶ PERKS & FLAWS DATA							
Name			**Rating**				**Game Effect**
Autopilot			-				Acts as Level 1 pilot
Backup Systems			-				Comm, Fire Con, Life Support and Sensors
Computer			2				CRE -1, KNO 0, PP2
Easy to Modify: Aux. Systems			-				+2 to repair and modify
Ejection System			-				Escape Pod
HEAT-resistant Armor			2				Add to Armor vs. HEAT weapons
HEP: Radiation			3				Screen
HEP: Vacuum			-				Space protection
Life Support			-				Limited
2 x Manipulator Arm			12				Can punch
Reinforced Crew Compartment			-				Absorbs first "Crew" hit
Large Sensor Profile			2				Too large to hide
▶ OFFENSIVE & DEFENSIVE SYSTEM DATA							
Qty	**Name**	**Fire Arc**	**DM**	**BR**	**Acc**	**ROF**	**Ammo**	**Special**
1	MM-324 Beam Cannon	Forward	x15	3	+1	0	Inf.	AD2, Haywire, HEAT
4	GPM-1 Missile	Forward	x20	5	-2	0	n/a	Mis, SD, Seek1, Smart2
2	MCJ-1 Missile Canister	Forward	x10	3	-2	4	10	Mis, G, IF

EAL-04A PATHFINDER ALPHA



The original *Pathfinder* was one of the oldest exo-armors in the Jovian military arsenal. About half of the JAF's exo-armor squadrons were composed of *Pathfinder* at the time of the Battle of Elysée, and although somewhat fragile by exo-armor standards, they performed admirably despite heavy losses.

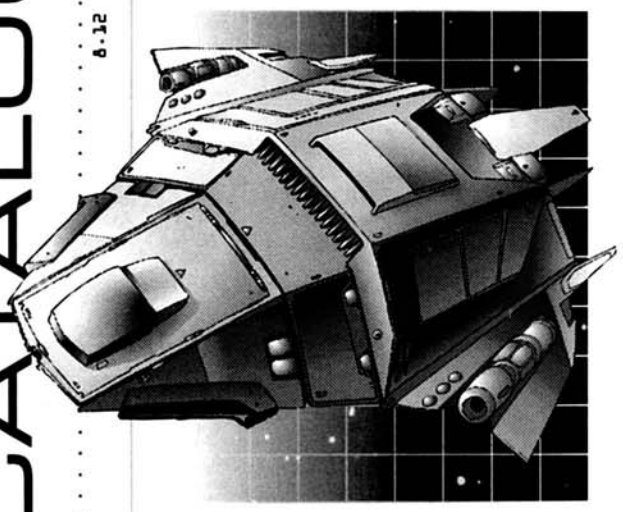
Even before the Battle of Elysée, an upgrade program was started to rebuild the forces of the JAF. The objective was to rapidly increase the defenses of the Confederation, so exo-armors had to be turned out at faster rate. The engineers at JAW reworked the design, reshaping the *Pathfinder*'s complex rounded skin into something that was easier to mass-produce. The resulting machine was given the identification code *Pathfinder Alpha*, to distinguish from its predecessor.

The standard armament carried by the *Pathfinder* is light because front-line combat is not a primary design requirement. Long range sensors are standard issue on all *Pathfinder* variants. A medium-range radar and EWAC system is mounted on the right shoulder hardpoint to enable the *Pathfinder* to find any intruder using either standard radio communication or a search radar near its patrol trajectory.

VEHICLE

Threat Value:								5000 (3,900,000 Credits)
Crew:								1 (2 Actions)
Size:								11
Armor:								22/44/66
▶ MOUVEMENT DATA								
Movement Mode	Combat Speed			Top Speed				Maneuver
Walker	6 (36 kph)			12 (72 kph)				0
Space	14 (1.4 g)			28 (2.8 g)				0
Deployment Range:								700 km
Reaction Mass:								500 BP
▶ ELECTRONICS DATA								
Sensors:								+2/5 km
Communications:								0/15 km
Fire Control:								0
▶ PERKS & FLAWS DATA								
Name			Rating					Game Effect
Autopilot			-					Acts as Level 1 pilot
Backup Systems			-					Comm, Fire Con, Life Support, Sensors
Computer			2					CRE 0, KNO 0, PP2
ECCM			4					Defensive Electronic Warfare Equipment
Ejection System			-					Escape Pod
HEAT-Resistant Armor			4					Add to Armor vs. HEAT weapons
HEP: Radiation			4					Screen
HEP: Vacuum			-					Space protection
Life Support			-					Limited
2 x Manipulator Arm			11					Can punch
Reinforced Crew Compartment			-					Absorbs first "Crew" hit
Satellite Uplink			-					1000 x Comm Range
Searchlights			-					Front, 200 meters
Exposed Aux Systems			-					"AUX" Hits are one step worse
Large Sensor Profile			2					Too large to hide
▶ OFFENSIVE & DEFENSIVE SYSTEM DATA								
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
1	652A Particle Cannon	Forward	x15	3	+1	0	Inf.	AD1, Haywire, HEAT
2	MMJ-4 Missile	Forward	x20	5	-2	0	-	Mis, SD, Seek1, Smart2
2	PL3 Plasma Lance	Forward	x12	Melee	0	0	LU5	AC, Concealed, HEAT

▶ CF-03 WRAITH



The *Wraith* is one of the better known interceptor designs in the Solar System. Though it is starting to show its age, it is still a reliable and versatile workhorse, capable of handling a large variety of missions both in atmosphere and in low orbit. Its two modular wing weapon hardpoints allow it to carry a large variety of offensive systems, which can be supplemented by the ordinance loaded in the shielded ventral bay.

The *Wraith* was designed as a multi-role vehicle, capable of handling threats both nearby, on the other side of the globe and in the depths of space. Though it lacks a transatmospheric capability of its own, it can be mated to a fully resuseable flyback booster unit to put it into low orbit, allowing it to be anywhere over Earth within an hour of launch.

The *Wraith* fighter had its finest hours during the various conflicts of the late twenty-first century. It was designed and fielded by forces of the European Union (before its incorporation into what would become CEGA) under the name *Spectre*, flying against other well-known fighters such as the CFB-10D *Gnome*. After the ratification of the CEGA Treaty of Union in 2184, all existing *Spectres* were renamed *Wraith* and incorporated in the armies of the newly-formed world government.

◫ VEHICLE DATA

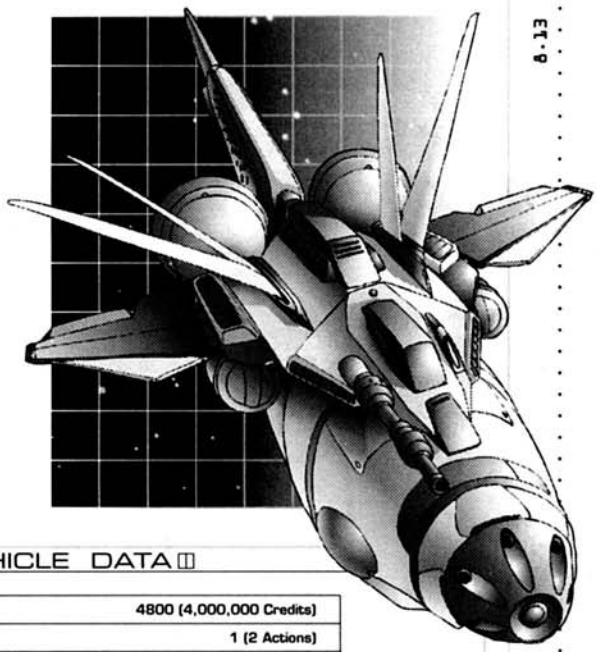
Threat Value:								2800 (1,650,000 Credits)
Crew								2 (3 Actions)
Size								12
Armor								30/60/90
▶ MOVEMENT DATA								
Movement Mode	**Stall Speed**		**Combat Speed**		**Top Speed**			**Maneuver**
Space	-		13 (1.3 g)		25 (2.5 g)			-2
Flight	3 (90 kph)		20 (600 kph)		40 (1200 kph)			-2
Ground	-		0 (0 kph)		0 (0 kph)			-2
Deployment Range:								2000 km
Reaction Mass:								250 BP
▶ ELECTRONICS DATA								
Sensors:								0/2 km
Communications:								+1/10 km
Fire Control:								0
▶ PERKS & FLAWS DATA								
Name			**Rating**					**Game Effect**
Autopilot			-					Acts as Level 1 pilot
Backup Systems			-					Comm, Fire Con, Life Support and Sensors
Computer			2					CRE -1, KNO -1, PP2
Ejection System			-					Escape Pod
HEP: Radiation			3					Screen
HEP: Vacuum			-					Space protection
Life Support			-					Limited
Reentry System			-					Permanent feature
Reinforced Crew Compartment			-					Absorbs first "Crew" hit
Stratospheric Flight			-					Double Flight above 12 km
Weapon Link			-					Link particle accelerators
▶ OFFENSIVE & DEFENSIVE SYSTEM DATA								
Qty	**Name**	**Fire Arc**	**DM**	**BR**	**Acc**	**ROF**	**Ammo**	**Special**
2	Xander X10 Particle Accelerator	F. Forward	x10	4	0	0	Inf.	AD1, Haywire, HEAT
3	MH-3 Heavy Missile	F. Forward	x30	5	-2	0	-	Concealed, Mis, SD, Sk1, Smt2

IM-09 LANCER ◄

Interceptors remain an important part of most modern space navies. They are simpler to maintain than exo-armors and are generally capable of higher acceleration at a cost of endurance and maneuverability. The *Lancer* is the most common Jovian Armed Force interceptor as of 2210, where it constitutes about half the total number of interceptors in service.

The *Lancer* was designed around paired fusion drives, and the reliable Nakasu engines provide the craft with good acceleration. Due to its limited on-board reaction mass reserve, however, the *Lancer* suffers from poor range. The most obvious feature of the *Lancer* is the large payload module attached to its belly. The Advanced Tactical Mission Pod (ATMP) is a modular pod system designed to increase the versatility of the vehicle and can be exchanged for a new one in minutes by a trained crew.

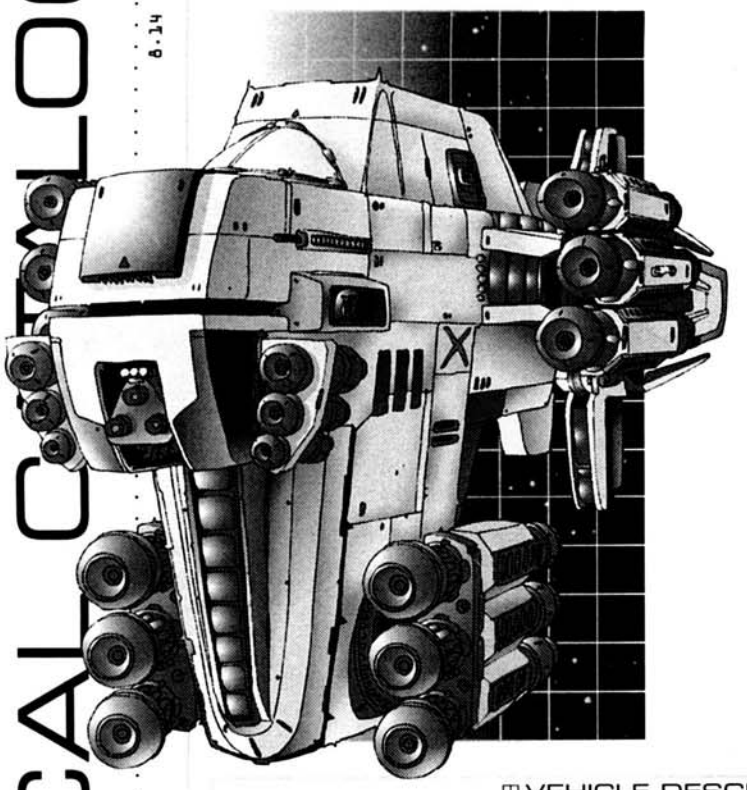
The hull sports several protusions, all of which have a specific function. The large blades along the top are an antennae array which the craft uses for both sensor and communication purposes. The rear section features twin reaction mass tanks, which are armored separately to reduce the chance of a fatal leak in combat. Finally, the long dorsal boom mounts an array of heatsinks and the missle countermeasures launcher.



VEHICLE DATA

Threat Value:								**4800 (4,000,000 Credits)**
Crew								**1 (2 Actions)**
Size								**10**
Armor								**20/40/60**
► MOVEMENT DATA								
Movement Mode	**Combat Speed**			**Top Speed**				**Maneuver**
Space	**16 (1.6 g)**			**32 (3.2 g)**				**-2**
Ground	**0 (0 kph)**			**0 (0 kph)**				**-2**
Deployment Range:								**100 km**
Reaction Mass:								**200 BP**
► ELECTRONICS DATA								
Sensors:								**0/2 km**
Communications:								**0/10 km**
Fire Control:								**0**
► PERKS & FLAWS DATA								
Name			**Rating**					**Game Effect**
Autopilot			-					**Acts as Level 1 pilot**
Backup Systems			-					**Comm, Fire Con, Life Support, Sensors**
Computer			**2**					**CRE 0, KNO 0, PP2**
Easy to Modify: Fire Control			-					**ATMP system, +2 to repair and modify**
Ejection System			-					**Escape Pod**
HEP: Radiation			**4**					**Screen**
HEP: Vacuum			-					**Space protection**
Life Support			-					**Limited**
Reinforced Crew Compartment			-					**Absorbs first "Crew" hit**
Exposed Fire Control			-					**"Fire Control" hits are one step worse**
Weapon Link			-					**Link all MMJ-2LR missiles**
► OFFENSIVE & DEFENSIVE SYSTEM DATA								
Qty	**Name**	**Fire Arc**	**DM**	**BR**	**Acc**	**ROF**	**Ammo**	**Special**
1	**ACMS**	**Turret**	**x6**	**1**	**+2**	**4**	**120**	**AM, Defensive, Smart1**
2	**MMJ6D Wing-Launched Missile**	**FF**	**x15**	**3**	**-1**	**0**	**5**	**Mis, G**
12	**MMJ-2LR Missile**	**FF**	**x10**	**6**	**-2**	**0**	**-**	**Mis, SD, Seek1**
4	**HMJ-6 Missile**	**FF**	**x30**	**5**	**-2**	**0**	**-**	**Mis, SD, Seek1**

▶ BRICRIU-CLASS CORVETTE



The many ships of the Bricriu-class actually predate the formation of CEGA. The *Bricriu*, first vessel to bear the name, was launched from Dock 3A at the L5 point in 2134. It was the first patrol ship commissioned by the Orbital Colonies to defend the cylinders in case conflicts "spilled out" of the Earth's atmosphere.

The ships proved to be exceptionally sturdy and rugged, and so the design was not retired in 2160 as originally planned, but merely refitted and updated with modern equipment. The original scatter missile launchers were replaced by the now familiar kinetic kill cannon batteries when the CEGA Navy took over in 2184, lowering firepower in favor of greater range.

The modern Bricriu boasts impressive firepower for a vessel of such small size. It carries double batteries of kinetic kill cannons and particle accelerators, as well as an extensive network of point defense laser guns. There are minor variations on this within the multitude of ships in the class: some Bricrius have only two particle accelerators on their rear turrets, while other exchange them for multi-missile launchers.

Living accommodations aboard the Bricriu vessels are best described as cramped. Each crewman is only given a few cubic meters of space, and quarters are little more than one-man bunks with opaque curtains for privacy. In many ways, the Bricriu design philosophy is similar to that of the German WWII U-Boat submarines, both in term of striking power and living conditions.

Bricriu-class vessels are expected to be replaced by a new, more advanced design within the next decade. The existing ships will be slowly transferred to second line units or coast guard groups, while the most ancient will be recycled or stripped down and sold as private vessels.

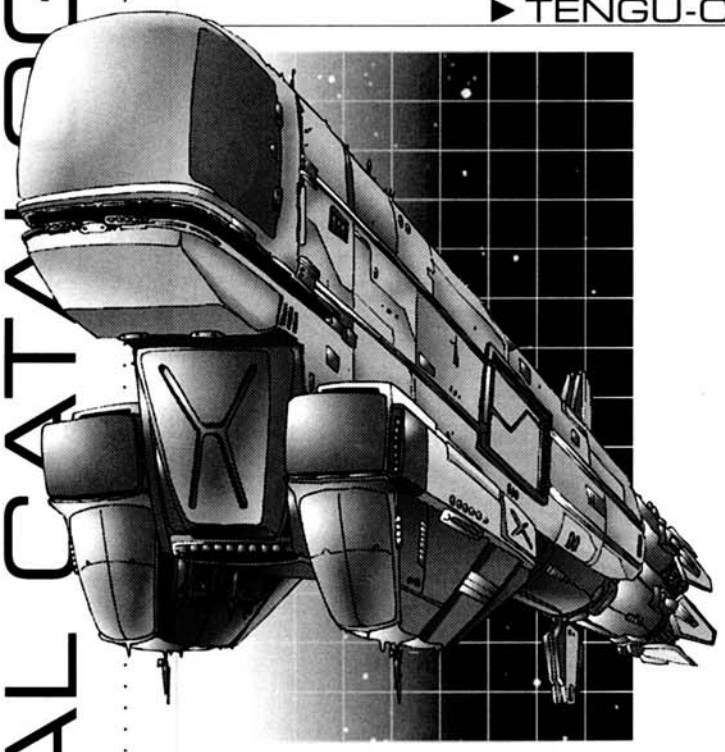
◫ VEHICLE DESCRIPTION

Total Threat Value:							47,000 (81,000,000 credits)
Movement Mode	Combat Speed				Top Speed		Maneuver
Space	3 (0.3 g)				5 (0.5 g)		-3
▶ MAIN HULL							**Cost: 8,500,000 credits**
Crew:							18 (5 Actions)
Size:							34
Armor:							50/100/150
Sensors:							0/2 km
Communications:							0/10 km
Fire Control:							0
◆ Perks & Flaws Data							
Name		Rating					Game Effect
Autopilot		-					Acts as Level 1 pilot
Backup Systems		-					Comm, Fire Con, Life Support and Sensors
Cargo Bay		-					100 m³
Computer		3					CRE 0, KNO 0, PP3
Ejection System		-					Escape Pods (40 places)
HEP: Radiation		4					Screen
HEP: Vacuum		-					Space protection
Life Support		-					Full
Passenger Accomodations		-					3500 m³
2 x Reinforced Crew Compartment		-					Absorbs first two "Crew" hits
Large Sensor Profile		3					Too large to hide
◆ Offensive & Defensive Systems Data							
Qty Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
1 PDS (ranged)	Turret	x8	1	+1	6	Inf.	AM, HEAT
(shield)	FF	x20	M	+1	4	Inf.	Def, E-Shield, HEAT

▷ VEHICLE DESCRIPTION CONTINUED

▶ DRIVE SECTION								Cost: 9,300,000 credits
Crew:								6 (4 Actions)
Size:								30
Armor:								50/100/150
Movement Mode	Combat Speed			Top Speed				Maneuver
Space	7 (0.7 g)			1.4 (1.4 g)				-3
Deployment Range:								3000 km
Reaction Mass:								15,000 BP
Sensors:								-3/2 km
Communications:								-3/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Life Support			1					Redundent systems
Ejection System			-					Escape Pods (10 places)
HEP: Radiation			4					Screen
HEP: Vacuum			-					Space protection
Life Support			-					Full
Reinforced Crew Compartment			-					Absorbs first "Crew" hit
▶ KKC TURRET (X2)								Cost: 21,000,000 credits
Crew:								3 (3 Actions)
Size:								10
Armor:								20/40/60
Sensors:								-3/2 km
Communications:								-3/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Fire Control			1					Absorbs first "Fire Con" hit
HEP: Radiation			3					Screen
HEP: Vacuum			-					Space protection
Life Support			-					Full
Reinforced Crew Compartment			-					Absorbs first "Crew" hit
Weapon Link			-					All cannons
◆ Offensive & Defensive Systems Data								
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
3	Kinetic Kill Cannon	R/L Side	x25	6	-2	3	300ea	AP
▶ BEAM TURRET (X2)								Cost: 10,700,000 credits
Crew:								3 (3 Actions)
Size:								7
Armor:								10/20/30
Sensors:								-3/2 km
Communications:								-3/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Fire Control			1					Absorbs first "Fire Con" hit
HEP: Radiation			3					Screen
HEP: Vacuum			-					Space protection
Life Support			-					Full
Reinforced Crew Compartment			-					Absorbs first "Crew" hit
Weapon Link			-					All beam cannons
◆ Offensive & Defensive Systems Data								
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
3	Beam Cannon	R/L Side	x20	5	-1	0	Inf.	AD1, Haywire, HEAT

▶ TENGU-CLASS ESCORT CARRIER



As CEGA began to realize the tactical usefulness of exo-armors — mostly by observing the Jovian Confederation's efforts in the field — the Navy's lack of adequate vessels to carry these new weapons into combat became evident. The Tengu-class escort carrier was thus commissioned in 2198 and put into production as early as 2201.

The primary concerns of the ship's designers were speed and range. A large twin drive assembly was mounted on the hull along with big reaction mass tanks. For simplicity and improved resource management, the drive units are the same model as the ones used on the smaller Bricriu-class corvette. Extra reaction mass tanks are sandwiched between the drive mounts and the main vehicle bay for additional range.

The position of the drive units and the external missile launchers leave a lot of room inside the hull, making the Tengu-class one of the most spacious in the CEGA fleet in term of living accommodations. The mid-body vehicle bay is large, but it is normally filled with extensive stores of spare parts, fuel and additional ammunition. This leave little space for the exo-armors themselves, only two of which are carried and handled in standard, routine deployment.

The ship can carry vehicles in an emergency by jettisoning most of these extra stores, as proved by the CSS Pinta during the Belt Trial Accident of 2202. The Pinta's crew had to fit no less than seven Syreens (or part of) in her bay and on her hull when the exo-armors' own carriers were destroyed in a catastrophic docking accident, leaving the pilots stranded in space. Since then, many Tengus have been modified to carry two additional vehicle bays, one above and one below the main body of the ship.

◫ VEHICLE DESCRIPTION

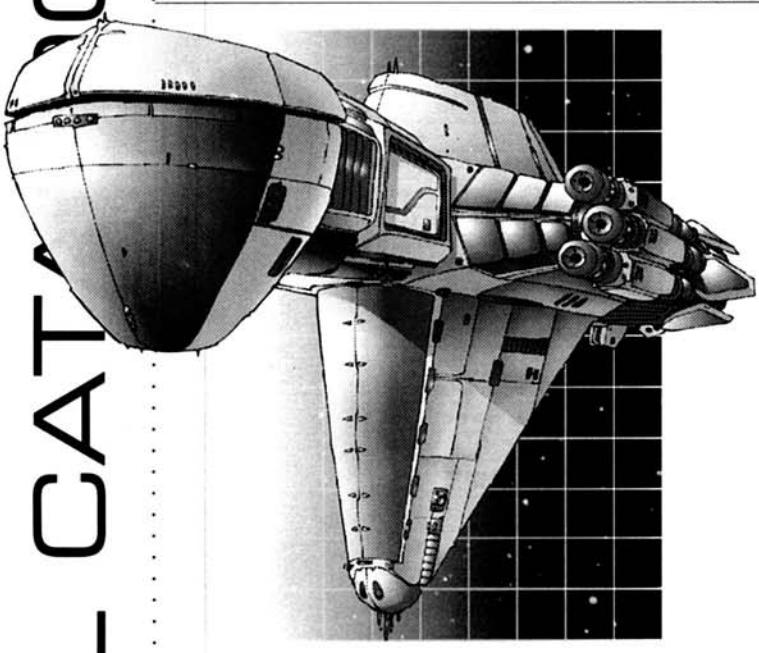
Total Threat Value:							36,000 (35,000,000 credits)
Movement Mode	Combat Speed			Top Speed			Maneuver
Space	3 (0.3 g)			5 (0.5 g)			-4
▶ MAIN HULL							Cost: 12,000,000 credits
Crew							78 (8 Actions)
Size							37
Armor							50/100/150
Sensors:							0/2 km
Communications:							0/10 km
Fire Control:							0
◆ Perks & Flaws Data							
Name		Rating					Game Effect
Autopilot		-					Acts as Level 1 pilot
Backup Systems		1					Comm, Fire Con, Life Support and Sensors
Cargo Bay		-					24,000 m³ (60x20x20 m)
2 x Catapult		4					(600/mass) m/s² acceleration
Computer		3					CRE 0, KNO 0, PP3
Ejection System		-					Escape Pods (80 places)
HEP: Radiation		4					Screen
HEP: Vacuum		-					Space protection
Life Support		-					Full
Passenger Accomodations		-					24,000 m³ total
2 x Reinforced Crew Compartment		-					Absorbs first two "Crew" hits
Satellite Uplink		-					1000 x Communication Range
Large Sensor Profile		4					Too large to hide
◆ Offensive & Defensive Systems Data							
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
1	PDS (ranged)	Turret	x6	1	+1	6	Inf.	AM, HEAT
-	(shield)	FF	x20	M	+1	4	Inf.	Def, E-Shield HEAT

▷ VEHICLE DESCRIPTION CONTINUED

▶ DRIVE SECTION (X 2)								Cost: 9,300,000 credits
Crew								6 (4 Actions)
Size								30
Armor								50/100/150
Movement Mode	Combat Speed			Top Speed				Maneuver
Space	7 (0.7 g)			5 (1.4 g)				-4
Deployment Range:								3000 km
Reaction Mass:								15,000 BPs
Sensors:								-3/2 km
Communications:								-3/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Life Support			-					Redundent systems
Ejection System			-					Escape Pods (10 places)
HEP: Radiation			4					Screen
HEP: Vacuum			-					Space protection
Life Support			-					Full
Reinforced Crew Compartment			-					Absorbs first "Crew" hit
▶ MISSILE LAUNCHER SECTION (X 2)								Cost: 2,500,000 credits
Crew								10 (5 Actions)
Size								12
Armor								25/50/75
Movement								Towed by Drive Sections
Sensors:								-3/2 km
Communications:								-3/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Fire Control			-					Absorbs first "Fire Con" hit
HEP: Radiation			4					Screen
HEP: Vacuum			-					Space protection
Life Support			-					Full
2 x Reinforced Crew Compartment			-					Absorbs first two "Crew" hits
◆ Offensive & Defensive System Data								
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
1	Missile Bay	Forward	x30	5	-2	5	60	Mis, G, Concealed
MODULAR VEHICLE BAY SECTION (X 2)*								Cost: 940,000 Credits
Crew								3 (3 Actions)
Size								10
Armor								20
Sensors:								n/a
Communications:								-3/10 km
Fire Control:								-5
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Life Support			-					Redundent System
Cargo Bay			-					8000 m^3
2 x Catapult			4					(600/mass) m/s^2 acceleration
HEP: Radiation			4					Screen
HEP: Vacuum			-					Space protection
Life Support			-					Full
Reinforced Crew Compartment			-					Absorbs first "Crew" hit
No Sensors			-					Cannot perform active sensor checks

*Overthrust drops to 0.4 g when these sections are used.

▶ JAVELIN-CLASS MISSILE CRUISER



The Javelin-class missile cruiser evolved out of a need for a long distance support ship that could still inflict heavy damage at all engagement ranges. Starting from a hull design similar to the one used for the successful Thunderbolt-class cruiser, Olympus Shipyards designed a relatively inexpensive space ship capable of carrying the deadly *Space Dart* long range autonomous missile.

The ship carries its missile complement in a large "keel" mount on the underside of the main hull. Although each hardpoint can only hold three missiles (for a total of six *Space Darts* per ships), the heavy damage they can inflict on targets of virtually any size improves the odds of any battles in favor of the Javelin.

Assignment to these ships is popular because of the comparatively large living accommodations. These were made possible by mounting the Space Darts in the keel, thus saving internal space in the main hull, and by reducing the crew of the vessel. The Javelin is served by a comparatively small crew, and most of the systems are entirely automated. The ship's main computer has slightly more processing power than the computers found aboard other military of the same size in order to cope.

The twelve existing Javelin-class vessels have been divided equally between the three JAF divisions. Once the 2210 field testing period is over, more ships of the same design will be produced, probably in an upgraded form carrying more missiles or an upgraded weapon complement.

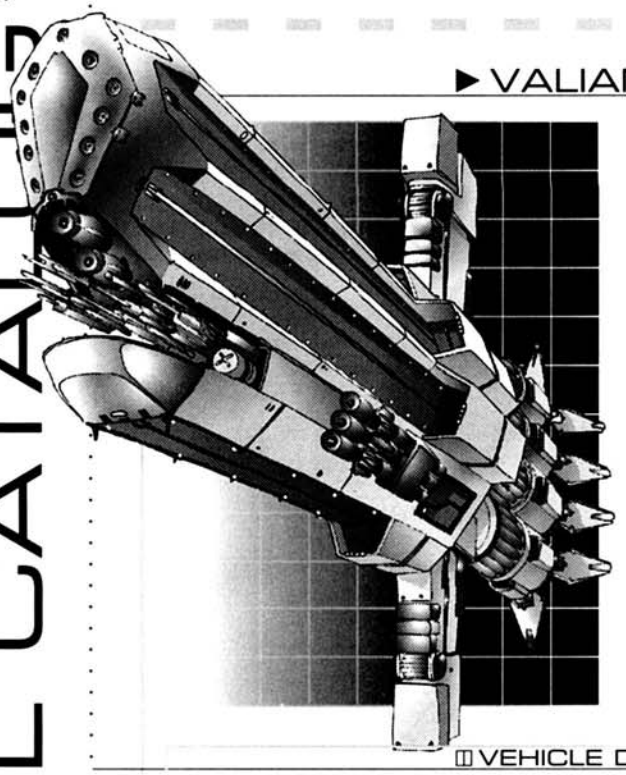
VEHICLE DESCRIPTION

Total Threat Value:								42,000 (63,000,000 credits)
Movement Mode	Combat Speed				Top Speed			Maneuver
Space	3 (0.3 g)				5 (0.5 g)			-3
▶ MAIN HULL								Cost: 11,000,000 credits
Crew								24 (6 Actions)
Size								32
Armor								50/100/150
Sensors:								0/2 km
Communications:								0/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name		Rating						Game Effect
Autopilot		-						Acts as Level 1 pilot
Backup Systems		-						Comm, Fire Con, Life Support, Sensors
Cargo Bay		-						200 m³
Cargo Bay		-						Missile housings, 3000 m³
Computer		4						CRE 0, KNO 0, PP4
Ejection System		-						Escape Pods (40 places)
HEP: Radiation		4						Screen
HEP: Vacuum		-						Space protection
Laboratory: Cooking		-						Galley
Life Support		-						Full
Passenger Accomodations		-						6000 m³ total
2 x Reinforced Crew Compartment		-						Absorbs first two "Crew" hits
Satellite Uplink		-						1000 x Communication Range
Sick Bay		1						Operating theater
Large Sensor Profile		4						Too large to hide
◆ Offensive & Defensive Systems Data								
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
1	PDS (ranged)	Turret	x8	1	+1	6	Inf.	AM, HEAT
	(shield)	F. Forward	x20	M	+1	4	Inf.	Def, E-Shield, HEAT
1	Missile Bay	Forward	x30	5	-2	5	30	Mis, G, Concealed

▷ VEHICLE DESCRIPTION CONTINUED

▶ DRIVE SECTION								Cost: 8,400,000 credits
Crew								6 (4 Actions)
Size								26
Armor								50/100/150
Movement Mode	Combat Speed			Top Speed				Maneuver
Space	7 (0.7 g)			14 (1.4 g)				-3
Deployment Range:								1000 km
Reaction Mass:								15,000 BP
Sensors:								-3/2 km
Communications:								-3/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Systems			-					Comm, Fire Con, Life Support, Sensors
Ejection System			-					Escape Pods (10 places)
HEP: Radiation			4					Screen
HEP: Vacuum			-					Space protection
Life Support			-					Full
2 x Reinforced Crew Compartment			-					Absorbs first two "Crew" hits
▶ KKC TURRET (X2)								Cost: 18,000,000 credits
Crew:								3 (3 Actions)
Size:								10
Armor:								25/50/75
Sensors:								-3/2 km
Communications:								-3/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Fire Control			-					Absorbs first "Fire Con" hit
HEP: Vacuum			-					Space protection
HEP: Radiation			4					Screen
Life Support			-					Full
Reinforced Crew Compartment			-					Absorbs first "Crew" hit
Weapon Link			-					All kinetic kill cannons
◆ Offensive & Defensive Systems Data								
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
3	Kinetic Kill Cannon	R/L Side	x30	7	-2	3	3000ea	AP
▶ SPACE DART MISSILES (x 6)								TV 750, Cost: 1,300,000 credits
Crew								0 (0 Actions)
Size								5
Armor								10/20/30
Movement Mode	Combat Speed			Top Speed				Maneuver
Space	30 (3 g)			60 (6 g)				-2
Deployment Range:								10 hrs
Reaction Mass:								300 BP
Sensors:								0/2 km
Communications:								-2/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Autopilot			-					Acts as Level 1 pilot
Computer			2					CRE 0, KNO 0, PP2
HEP: Vacuum			-					Space protection
Exposed Aux. Systems			-					"AUX" Hits are one step worse
Sensor Dependent			-					Require Sensor to function
◆ Offensive & Defensive System Data								
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
1	Warhead	F. Forward	x50	M	-1	0	-	AE0, SD

▶ VALIANT-CLASS STRIKE CARRIER



The Valiant-class Strike Carrier was already on the drawing board when the Battle of Elysée took place. If anything, the conflict accelerated the progress of an advanced program dedicated to supplying the Jovian Confederation with a line of vessels that could serve as roving defense outposts, accomplish long patrols on the fringes of Jovian space but still pulling their weight as dedicated front-line battle units.

Once in the testing phase, the three Valiant-class vessels proved to be unusually sturdy and resilient, routinely escaping damage and facing tough situations that would have rendered any other ship inoperable. Their quadruple engine pods supply them with high thrust, though it is seldom used to save reaction mass. The ships are heavily armed and armored, and feature deployable habitat sections that are always oriented correctly for gravity purposes, increasing crew comfort on long patrols.

Though much of the internal space of the ship is taken up by consumables, additional stores and machinery, the crew quarters are relatively spacious and comfortable. Each crewman is assigned to a two-man cabin, each with two private bunks, lavatory and desk with personal computer. Commons and a galley are available in all three main crew habitat areas.

Once the initial shake-down period is over and the crew have settled in to their new ships, the Valiant class is expected to become the pride of the Jovian fleet. Three more space ships are in the planning stage.

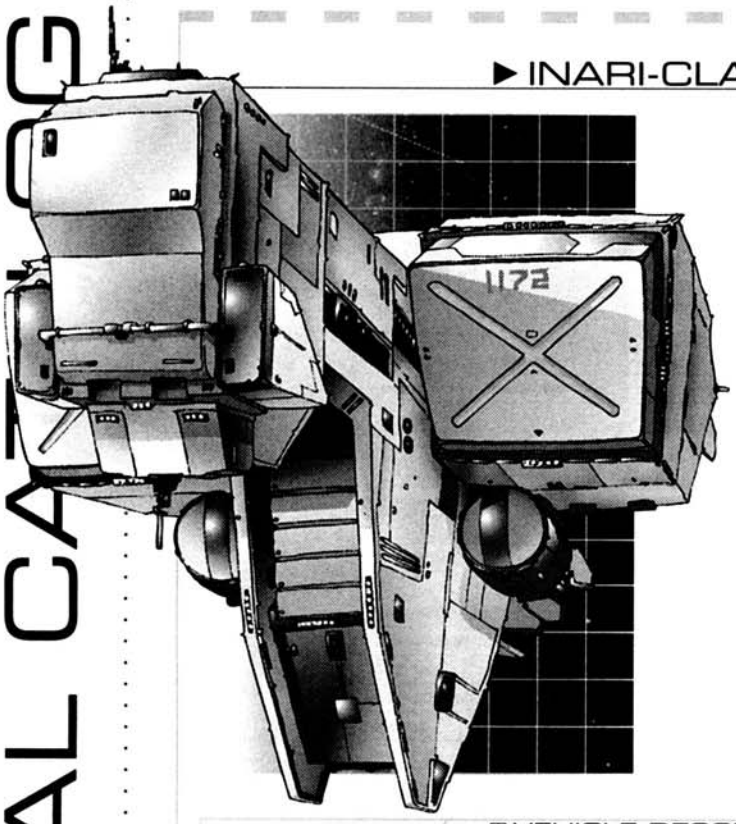
◫ VEHICLE DESCRIPTION

Threat Value:							**270,000 (1,420,000,000 Credits)**
Movement Mode	**Combat Speed**				**Top Speed**		**Maneuver**
Space	4 (0.4 g)				8 (0.8 g)		-5
▶ MAIN HULL							**Cost: 985,000,000 credits**
Crew:							260 (10 Actions)
Size:							90
Armor:							100/200/300
Reaction Mass:							70,000 BPs
Sensors:							+1/5 km
Communications:							0/15 km
Fire Control:							0
◆ Perks & Flaws Data							
Name		**Rating**					**Game Effect**
Autopilot		-					Acts as Level one pilot
Backup Systems		3					Comm, Fire Con, Life Support and Sensor
Cargo Bay		-					80,000 m³
6 x Catapult		3					(450/mass) m/s² acceleration
Computer		4					CRE 0, KNO 2, PP4
Ejection System		-					Escape Pods (300 places)
HEP: All		-					Multi-environment protection
HEP: Radiation		4					Screen
Life Support		-					Full
Passenger Accomodations		-					15,000 m³ total
3 x Reinforced Crew Compartment		-					Absorbs first three "Crew" hits
Satellite Uplink		-					1000 x Communication Range
Sick Bay		2					Two surgical theaters
Large Sensor Profile		5					Too large to hide
◆ Offensive & Defensive Systems Data							
Qty	**Name**	**Fire Arc**	**DM**	**BR**	**Acc**	**ROF**	**Ammo**	**Special**
1	PDS (ranged)	Turret	x10	1	+1	6	Inf.	AM, HEAT
	(shield)	F. Forward	x25	M	+1	4	Inf.	Def, E-Shield, HEAT
1	Missile Bay	Forward	x40	5	-2	5	90	Mis, G
1	Spinal Laser	F. Forward	x80	3	-2	0	3	HEAT, PH9

▷ VEHICLE DESCRIPTION CONTINUED

▶ KKC TURRET (X2)								Cost: 20,000,000 credits
Crew:								3 (3 Actions)
Size:								10
Armor:								25/50/75
Sensors:								-3/2 km
Communications:								-3/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Fire Control			-					Absorbs first "Fire Con" hit
HEP: All			-					Multi-environment protection
HEP: Radiation			4					Screen
Life Support			-					Full
Reinforced Crew Compartment			2					Absorbs first two "Crew" hits
Weapon Link			-					Link all kinetic kill cannons
◆ Offensive & Defensive Systems Data								
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
3	Kinetic Kill Cannon	R/L Side	x30	7	-2	3	300 ea	AP
▶ HABITAT SECTION (X2)								Cost: 27,500,000 credits
Crew:								12 (5 Actions)
Size:								20
Armor:								50/100/150
Sensors:								-3/2 km
Communications:								-3/10 km
Fire Control:								-2
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Life Support			-					Life Support
Cargo Bay			-					800 m³
Ejection System			-					Escape Pods (10 x 20 places)
HEP: All			-					Multi-environment protection
HEP: Radiation			6					Screen & shielding
Laboratory: Cooking			-					Galley
Life Support			-					Full
Passenger Accomodations			-					20,000 m³ total
3 x Reinforced Crew Compartment			-					Absorbs first three "Crew" hits
▶ DRIVE SECTION (X4)								Cost: 65,000,000 credits
Crew:								16 (6 Actions)
Size:								42
Armor:								50/100/150
Movement Mode		Combat Speed			Top Speed			Maneuver
Space		14 (1.4 g)			28 (2,8 g)			-5
Deployment Range:								3000 hrs
Reaction Mass:								17,500 BPs
Sensors:								-3/2 km
Communications:								-3/10 km
Fire Control:								0
◆ Perks & Flaws Data								
Name			Rating					Game Effect
Backup Systems			-					Comm, Fire Con, Life Support and Sensors
Ejection System			-					Escape Pods (20 places)
HEP: All			-					Multi-environment protection
HEP: Radiation			5					Screen
Life Support			-					Full
2 x Reinforced Crew Compartment			-					Absorbs first two "Crew" hits
2 x Rugged Movement System			-					Absorbs first two "Movement" hits

▶ INARI-CLASS PASSENGER LINER



Inari-class liners have a long history of reliability and endurance, having plied their trade in the solar system for more than fifty years. They have been touted as "the most efficient commercial ship in existence." Indeed, their double role as cargo and passenger liner rarely lets them leave a spaceport at less than full capacity. Their twin drive units can propel them at a significant fraction of a gee, though cargo and reaction mass reserve generally drop the ship's acceleration rate to 0.3 gee on average.

The spacious passenger lounges and cabins take up the whole center portion of the ship, just above engineering and the crew section. Most of the internal partitions are modular and can be quickly rearranged to fit the requirements of the passengers. The ship can have spacious rooms but few passengers on one flight, while having only a few common bunkhouses filled with people for the return trip.

Cargo is carried in two huge bays located on either side of the main hull, each having a separate life support system from the rest of the ship. This allows the economical transport of goods which do not necessitate an atmosphere. The cargo bays can be detached with the help of the proper facilities and replaced by other types of bay, the most common of these being large tanks capable of holding many tons of liquefied gasses.

A few Inaris have been sold to private interests and ply the solar system as free traders, luxury cruise ships or mobile stations. Like most of these venerable transport ships, they are generally extensively modified and seldom look much like the original design. Only a close examination of the lines of the hull will allow one to recognize the ship as an Inari.

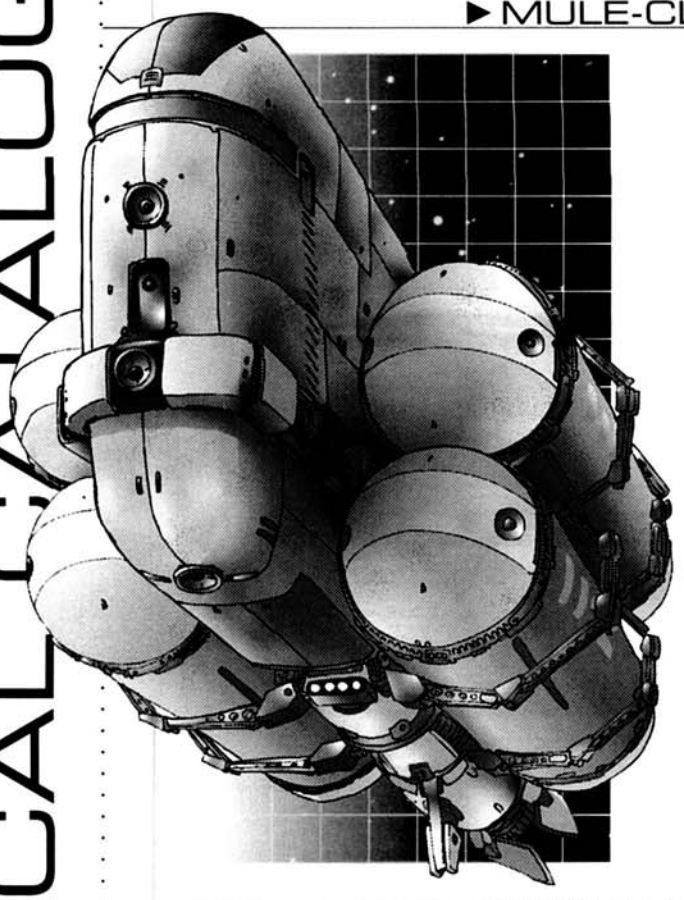
◫ VEHICLE DESCRIPTION

Total Threat Value:							**19,000 (19,200,000 credits)**
Movement Mode	**Combat Speed**				**Top Speed**		**Maneuver**
Space	3 (0.3 g)				5 (0.5 g)		-5
▶ MAIN HULL							**Cost: 8,200,000 credits**
Crew:							24 (6 actions)
Size:							60
Armor:							80/160/240
Sensors:							-2/2 km
Communications:							-2/10 km
Fire Control:							-2
◆ Perks & Flaws Data							
Name		**Rating**					**Game Effect**
Autopilot		-					Acts as Level 1 pilot
Backup Systems		-					Comm, Fire Con, Life Support and Sensors
Cargo Bay		-					20,000 m³
Computer		4					CRE -2, KNO 0, PP4
Ejection System		-					Escape Pods (400 places)
HEP: Radiation		5					Screen
HEP: Vacuum		-					Space protection
Laboratory: Cooking		-					Full Galley
Life Support		-					Full
Passenger Accomodation		-					Luxury, 25,000 m³ total
2 x Reinforced Crew Compartment		-					Absorbs first two "Crew" hits
Satellite Uplink		-					1000 x Comm Range
Brittle Armor		-					Loses twice as much Armor per hit
Large Sensor Profile		5					Too large to hide
◆ Offensive & Defensive System Data							
Qty	**Name**	**Fire Arc**	**DM**	**BR**	**Acc**	**ROF**	**Ammo**	**Special**
1	PDS (ranged)	Turret	x6	1	0	4	Inf.	AM, HEAT
1	(shield)	FF	x20	M	+1	2	Inf.	Def, E-Shield (matter), HEAT

▷ VEHICLE DESCRIPTION CONTINUED

▶ DRIVE SECTION (X 2)			Cost: 2,200,000 credits
Crew:			6 (4 actions)
Size:			20
Armor:			50/100/150
Movement Mode	Combat Speed	Top Speed	Maneuver
Space	1.5 (0.15 g)	3.0 (0.3 g)	-5
Deployment Range:			3000 km
Reaction Mass:			3250 BP
Sensors:			-3/2 km
Communications:			-3/10 km
Fire Control:			0
◆ Perks & Flaws Data			
Name		Rating	Game Effect
Backup Life Support		-	Comm, Fire Con, Life Support, Sensors
Ejection System		-	Escape Pods (10 places)
HEP: Radiation		4	Screen
HEP: Vacuum		-	Space protection
Life Support		-	Full
Reinforced Crew Compartment		-	Absorbs first "Crew" hit
▶ CARGO SECTION (X 2)			Cost: 3,300,000 credits
Crew:			0 (0 actions)
Size:			30
Armor:			50/100/150
Movement Mode	Combat Speed	Top Speed	Maneuver
Space	0.3 (0.03 g)	0,6 (0.06 g)	-5
Deployment Range:			1000 km
Reaction Mass:			3250 BP
Sensors:			-3/2 km
Communications:			-3/10 km
Fire Control:			0
◆ Perks & Flaws Data			
Name		Rating	Game Effect
Backup Life Support		-	Redundent systems
Cargo Bay		-	30,000 m³
HEP: Radiation		4	Screen
HEP: Vacuum		-	Space protection
Life Support		-	Full
▶ ALTERNATE CARGO SECTION (X 2)			Cost: 590,000 credits
Crew			0
Size			16
Armor			50/100/150
Sensors:			n/a
Communications:			n/a
Fire Control:			-5
◆ Perks & Flaws Data			
Name		Rating	Game Effect
Cargo Bay		-	Liquefied Gasses, 40,000 m³
HEP: Vacuum		-	Space protection
No Communication		-	Cannot communicate
No Engine		-	No powerplant
No Sensor		-	Cannot perform active sensor checks

▶ MULE-CLASS BULK FREIGHTER



Ships of the Mule-class are a common sight to the citizens of the solar system. Like its slightly larger sibling, the Aquarius, the original design of the Mule was based on the space cargoes of the early twenty-first century, and it has changed very little since then.

The ship is composed of a box of sturdy composite spars to which armor plates and a living module are attached. This give the entire vessel a boxy but rugged appearance. A pair of fusion-driven PCC engine modules are attached to the stern, each capable of high thrust to move the heavy cargo pods lashed to the side of the vessel. A limited reaction mass capacity makes the Mule useful for short to medium range transport only.

The Mule is designed to be used as a modular cargo ship, with special hardpoints mounted on either side of the hull to attach cargo pods. These are usually tanks to carry the liquefied gasses or water used as reaction mass in modern ships. A spacious pressurized bay located between the crew section and the engines is used to house additional cargo, though it most often contains one or two Maneuver pods that help the ship to its moorings and move the cargo tanks about.

Life aboard a Mule is confined and somewhat boring. The cabins are small and the few commons generally have multiple purposes, such as galleys, recreation rooms and meeting offices. They are often crowded when the entire crew is present, so multiple shifts are required.

Private individuals or organizations, such as prospectors and Nomad settlers, often buy Mules because they are relatively inexpensive to produce. The ship's sturdy structure provides a strong backbone to which a large variety of assorted equipment can be attached. Additionally, its reliability is a godsend for groups of settlers moving to the Belt in the tiny, chemically propelled home-build spacecraft that are colloquially referred to as "O'Neill Bubbles." Settlers will often buy a single Mule to serve as the "flying city hall" of their community.

◫ VEHICLE DESCRIPTION

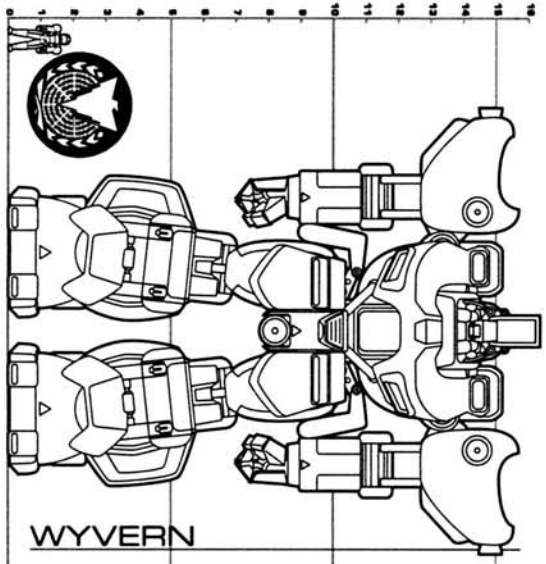
Total Threat Value:							**5100 (5,100,000 credits)**
Movement Mode	**Combat Speed**				**Top Speed**		**Maneuver**
Space	4 (0.4 g)				8 (0.8 g)		-4
▶ MAIN HULL							**Cost: 2,200,000 credits**
Crew:							10 (5 actions)
Size:							26
Armor:							50/100/150
Sensors:							-2/2 km
Communications:							-2/10 km
Fire Control:							-2
◆ Perks & Flaws Data							
Name		**Rating**					**Game Effect**
Autopilot		-					Acts as Level 1 pilot
Backup Systems		-					Comm, Fire Con, Life Support and Sensors
Computer		3					CRE -2, KNO -2, PP3
Ejection System		-					Escape Pods (16 places)
HEP: Radiation		4					Screen
HEP: Vacuum		-					Space protection
Life Support		-					Full
Passenger Accomodation		-					500 m³ total
Reinforced Crew Compartment		-					Absorbs first "Crew" hit
◆ Offensive & Defensive System Data							
Qty	**Name**	**Fire Arc**	**DM**	**BR**	**Acc**	**ROF**	**Ammo**	**Special**
1	PDS (ranged)	Turret	x5	1	0	2	Inf.	AM, HEAT
-	(shield)	F. Forward	x15	M	+1	0	Inf.	Def, E-Shield (matter), HEAT

▷ VEHICLE DESCRIPTION CONTINUED

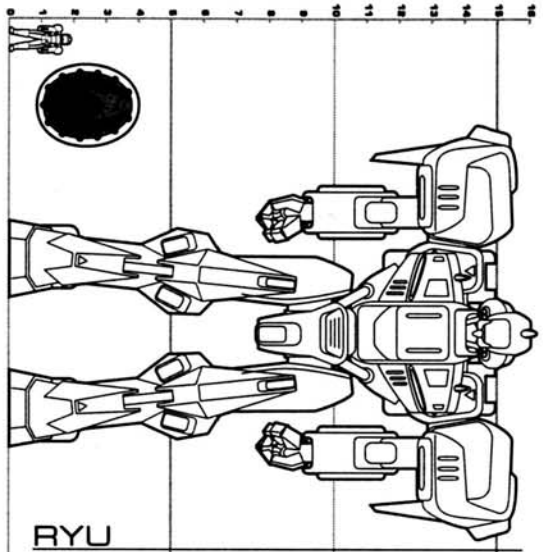
▶ DRIVE SECTION (X 2)			Cost: 790,000 credits
Crew:			3 (3 actions)
Size:			15
Armor:			20/40/60
Movement Mode	Combat Speed	Top Speed	Maneuver
Space	2 (0.2 g)	4 (0.4 g)	-4
Deployment Range:			1000 km
Reaction Mass:			3000 BP
Sensors:			-3/2 km
Communications:			-3/10 km
Fire Control:			0
◆ Perks & Flaws Data			
Name	Rating		Game Effect
Backup Life Support	-		Redundent systems
HEP: Radiation	4		Screen
HEP: Vacuum	-		Space protection
Life Support	-		Full
Reinforced Crew Compartment	-		Absorbs first "Crew" hit
Large Sensor Profile	5		Unshielded drive
▶ CARGO SECTION (X 4)			Cost: 330,000 credits
Crew:			0 (0 actions)
Size:			14
Armor:			30/60/90
Sensors:			n/a
Communications:			n/a
Fire Control:			-5
◆ Perks & Flaws Data			
Name	Rating		Game Effect
Cargo Bay	-		4000 m³
HEP: Radiation	4		Screen
HEP: Vacuum	-		Space protection
No Communication	-		Cannot communicate
No Engine	-		No powerplant
No Sensor	-		Cannot perform active sensor checks
▶ ALTERNATE CARGO SECTION (x 4)*			Cost: 1,100,000 credits
Crew			0 (0 Actions)
Size			20
Armor			50/100/150
Sensors:			-3/2 km
Communications:			-3/10 km
Fire Control:			0
◆ Perks & Flaws Data			
Name	Rating		Game Effect
Backup Life Support	-		Absorbs first Life Support hit
Cargo Bay	-		4,000 m³
HEP: Radiation	5		Screen
HEP: Vacuum	-		Space protection
Life Support	-		Full
Passenger Accommodations	-		1000 m³
No Engine	-		No powerplant

*When this type of cargo section is used, the Overthrust drops to 0.5 gee.

MECHANICAL CATALOG



WYVERN



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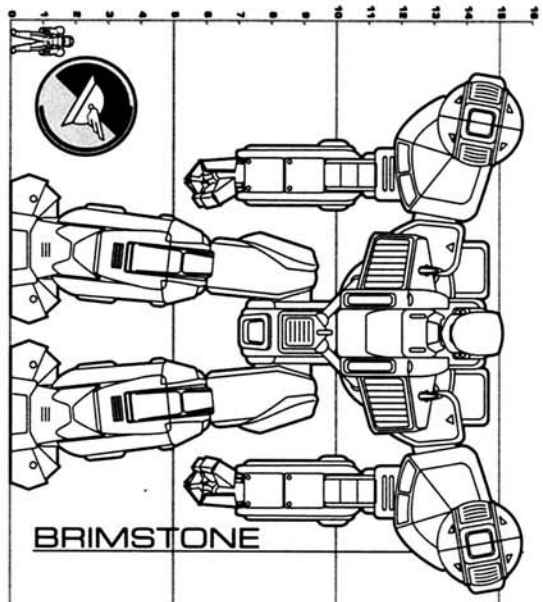
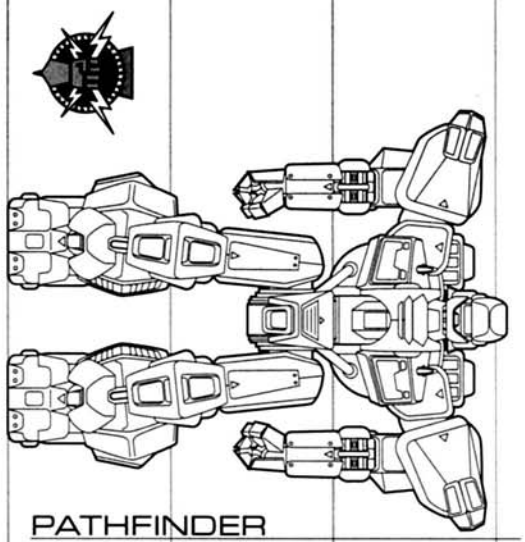
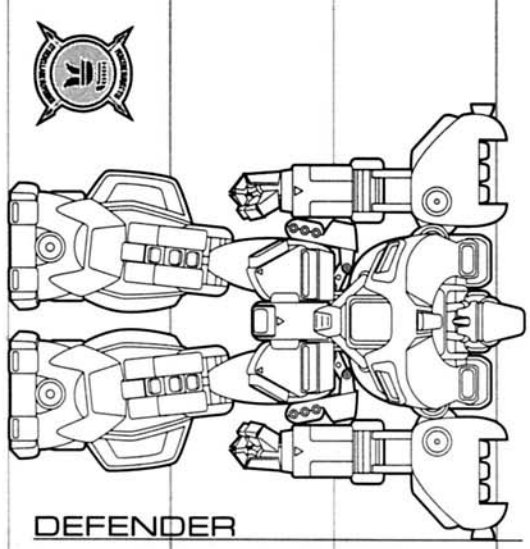


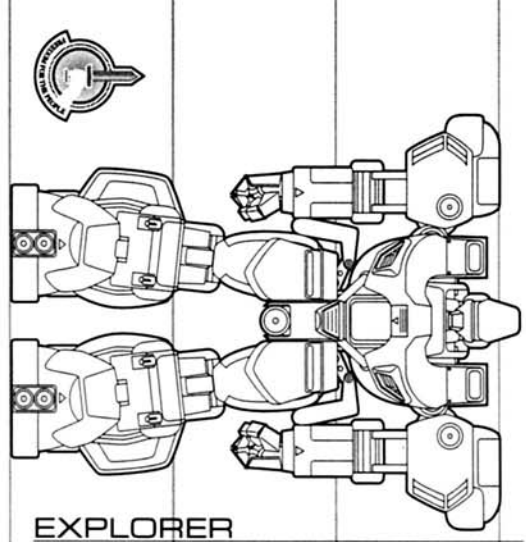
BRIMSTONE



PATHFINDER



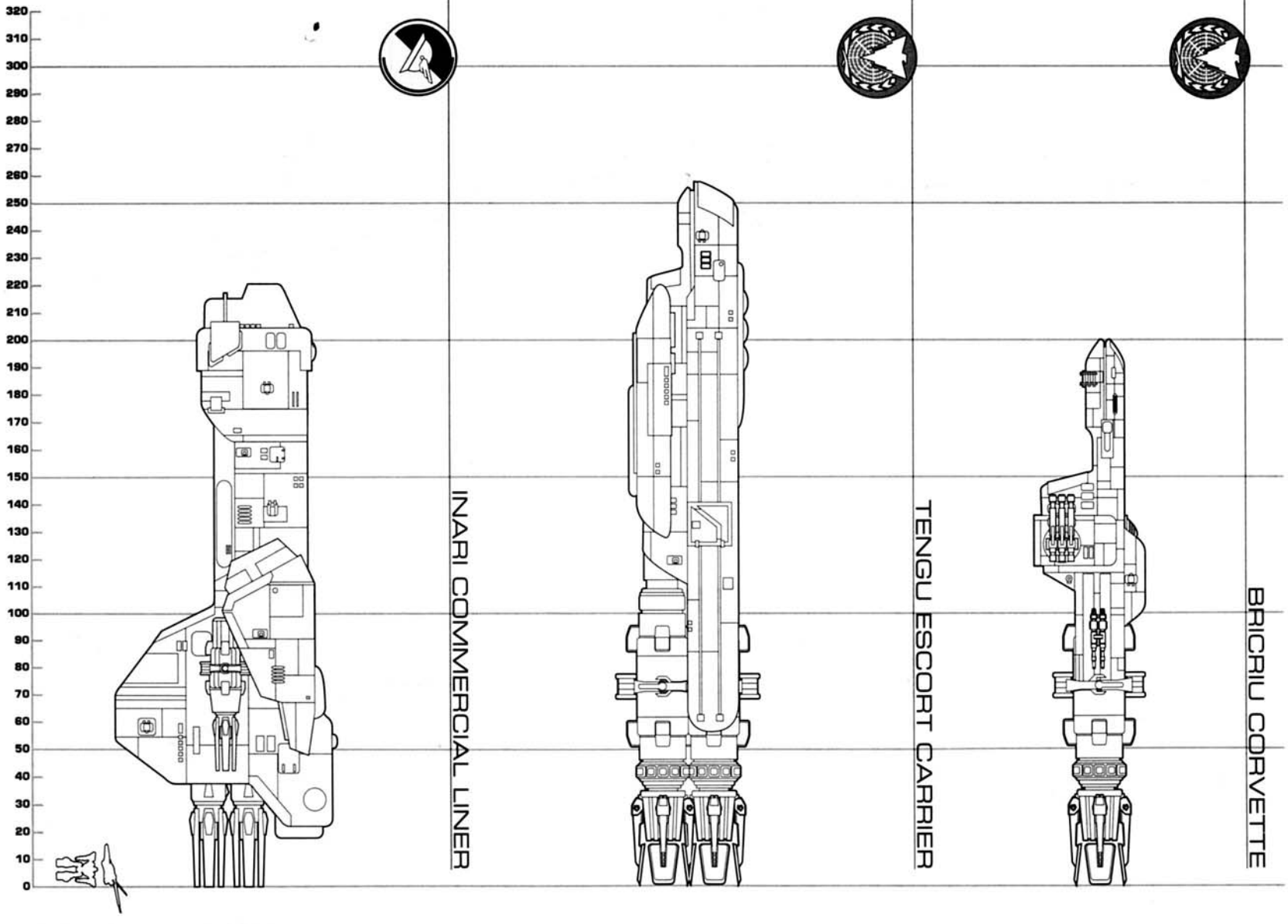
DEFENDER



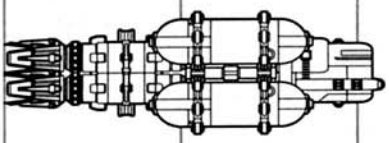
EXPLORER

WRAITH
M-POD
LANCER

MECHANICAL CATALOG

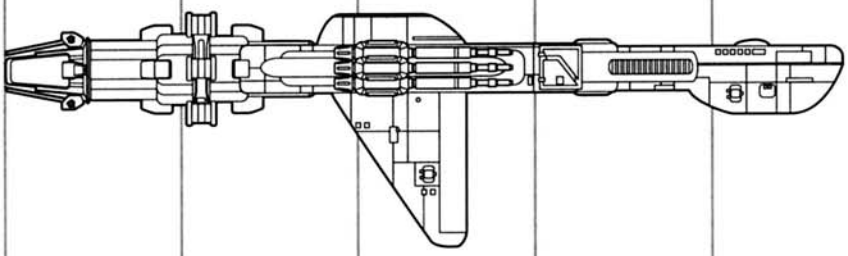


MULE SHORT-RANGE FREIGHTER



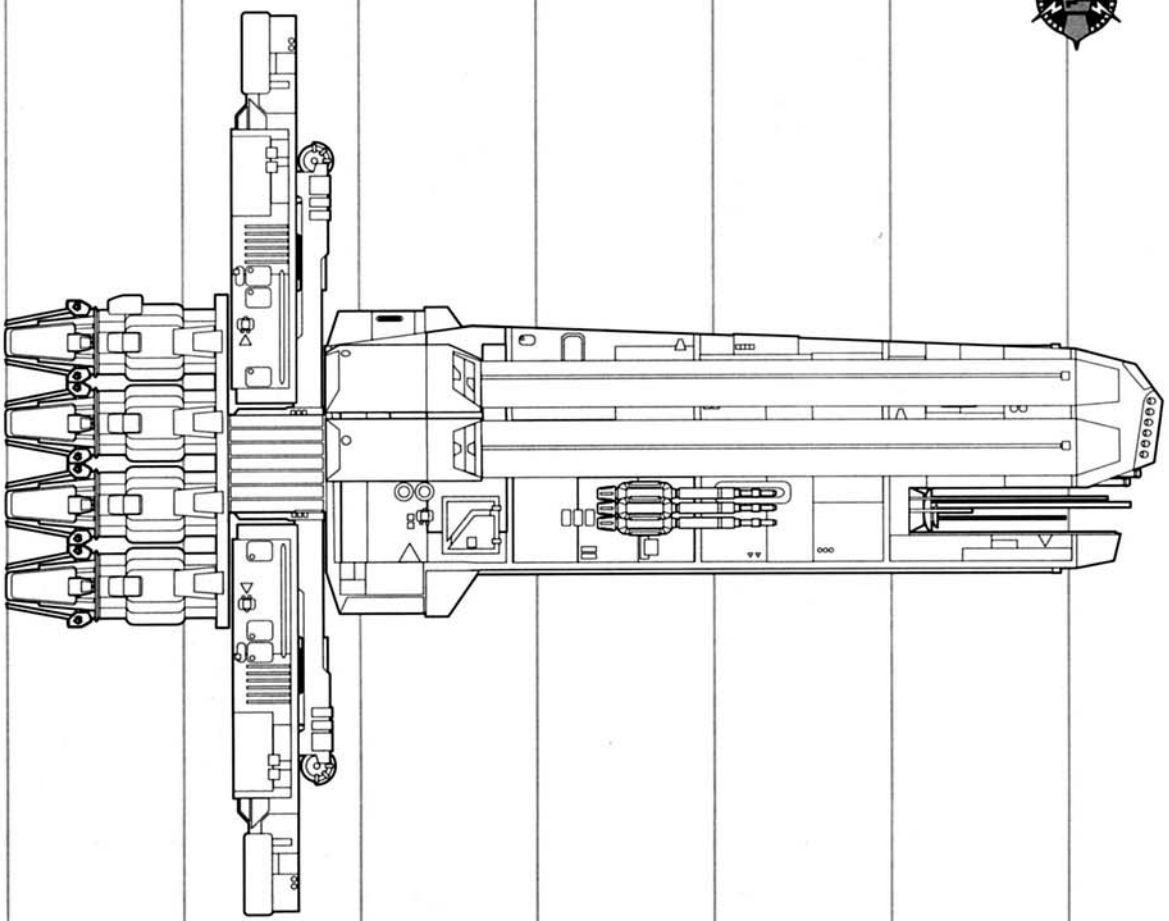


JAVELIN MISSILE CRUISER





VALIANT STRIKE CARRIER





▶ WELCOME ABOARD

9.1

This ten-page section gives **Jovian Chronicles** Gamemasters and Players a place to start their campaigns. The pride of the Jovian Armed Forces' Gamma Division, the newly commissioned *JSS Valiant* is ready to enter service. The maiden journey will be a critical one indeed. The Jovian Confederation is determined to bolster its new ally, the Martian Free Republic, and show both the militaristic Martian Federation and CEGA that Mars cannot be considered theirs (see *Chapter 2: World Cyclopedia* for more details). To do this they have called their current ambassador back to Olympus and are sending Anton Priam III to replace him. Priam is a very high-profile diplomat who is thought to carry the full authority of the Confederation with him. It is the *Valiant*'s job to deliver Priam to Mars and then to make for Jupiter where it will take its place in Gamma Division. Of course, many people would love to see the ship fail.

▼ CHAOS UNLEASHED

All the ill will directed at the *Valiant* has been channeled by an ambitious Venusian named Devon Malachai. Malachai was once a rising star in the Venusian Bank, but lost most of his prestige in 2208 when the illegal Project Lancelot was uncovered. Luther Columbus, then the head of the JAF's third destroyer group and now the *Valiant*'s captain, and several other members of the crew were involved in the debacle. Malachai now seeks retribution. He also wishes to shatter the status quo in the solar system so he can rise in the hierarchy of the Bank.

Malachai, who still has many allies on Venus, is a master manipulator and has convinced the Black Cross Pirates that the *Valiant* will be used to "pacify" the Belt, a lie that may well be made true once the pirates attack the carrier. He has also manipulated Samuel Hectors, the *Valiant*'s chief NCO, into believing that the *Valiant* will be used to wage a war of aggression and should be delivered into the hands of CEGA. He has leaked information to CEGA that the *Valiant* will be used to launch an attack on their installations and a special wing of fighters and exo-armors has been dispatched to destroy the "invaders." Venusian forces personally loyal to Malachai will kidnap the ambassador at that time. The Martian Federation will be made to appear as the kidnappers, leading to a civil war on Mars. By the end of the *Valiant*'s flight, war should be raging from Earth to Jupiter; only by saving their ship, rescuing Priam and exposing Malachai can the crew avert disaster.

▼ LIFE ON THE JSS VALIANT

9.1.1

The command staff of the *Valiant* is highly experienced and has been hand picked by Captain Luther Columbus, a well-respected veteran of Gamma Division. Many of the soldiers, pilots and crewmen, however, are fresh recruits. Security Chief Katherine Leo must spend a lot of time reigning in the youthful enthusiasm of these newbies. The presence of a high-profile diplomatic team aboard for the maiden journey adds more tension. Civilian aids often do not understand the requirements of life aboard a military vessel and some minor scuffles have broken out even before the journey's beginning. Reporter Lea Nomaru is also aboard to cover the maiden flight and is very anxious to get dramatic footage, regardless of the price. Captain Columbus has already warned her to stay out of trouble, but she is not known for following orders.

▼ THE PLAYER CHARACTERS

9.1.2

We assume that Players in *Madman's Gambit* will take on the role of fighter or exo-armor pilots aboard the *JSS Valiant*, but other characters are possible. The ship usually deploys with 3 *Lancer* fighters and 3 *Pathfinder* exos. Each flight of three fighters or exos includes one leader of slightly elevated rank and experience and two wingmen. Helena Juno commands both flights and is equally comfortable in an exo or a fighter.

◫ NON-PLAYER CHARACTER GAME STATISTICS

Name	Archetype	Modifications to Archetype
Luther Columbus	Shipmate, p. 106	INF 1, Leadership 3/1, Navigation 2/2, Tactics 3/1
Samuel Hectors	Merchant, p. 104	PSY -2, Leadership 2/1, Small Arms 2/0
Helena Juno	Veteran Pilot, p. 104	CRE 1, Exo & Space Pilot/Gunnery 3/1, Leadership 2/0
Cassandra Pallis	Medic, p. 103	Life Sciences (human biology) 3/1, Medicine 3/1
Rosie Mora	Technician, p. 108	Exo Pilot 1/0, Space Pilot 1/2, Tinker 3/2
Kat Leo	Soldier/Security Officer, p. 107	Investigation 3/1, Z-G Move & Combat 2/0
Anton Priam	Official, p. 105	Etiquette 2/1, For. Language (German, Japanese) 2/1
Marcus Royal	Official, p. 105	none
Lea Nomaru	Freelance Reporter, P. 103	none
Devon Malachai	Official, p. 105	AGI 1, INF 2, Exo Gunnery & Pilot 3/1
Marlon Karribdys	Shipmate, p. 106	INF 1, Leadership 2/1, Tactics 2/1
Adrian Fredricks	Veteran Pilot, p. 109	Space Pilot 3/0, Gunnery 3/1, Leadership 2/0, Tactics 2/0

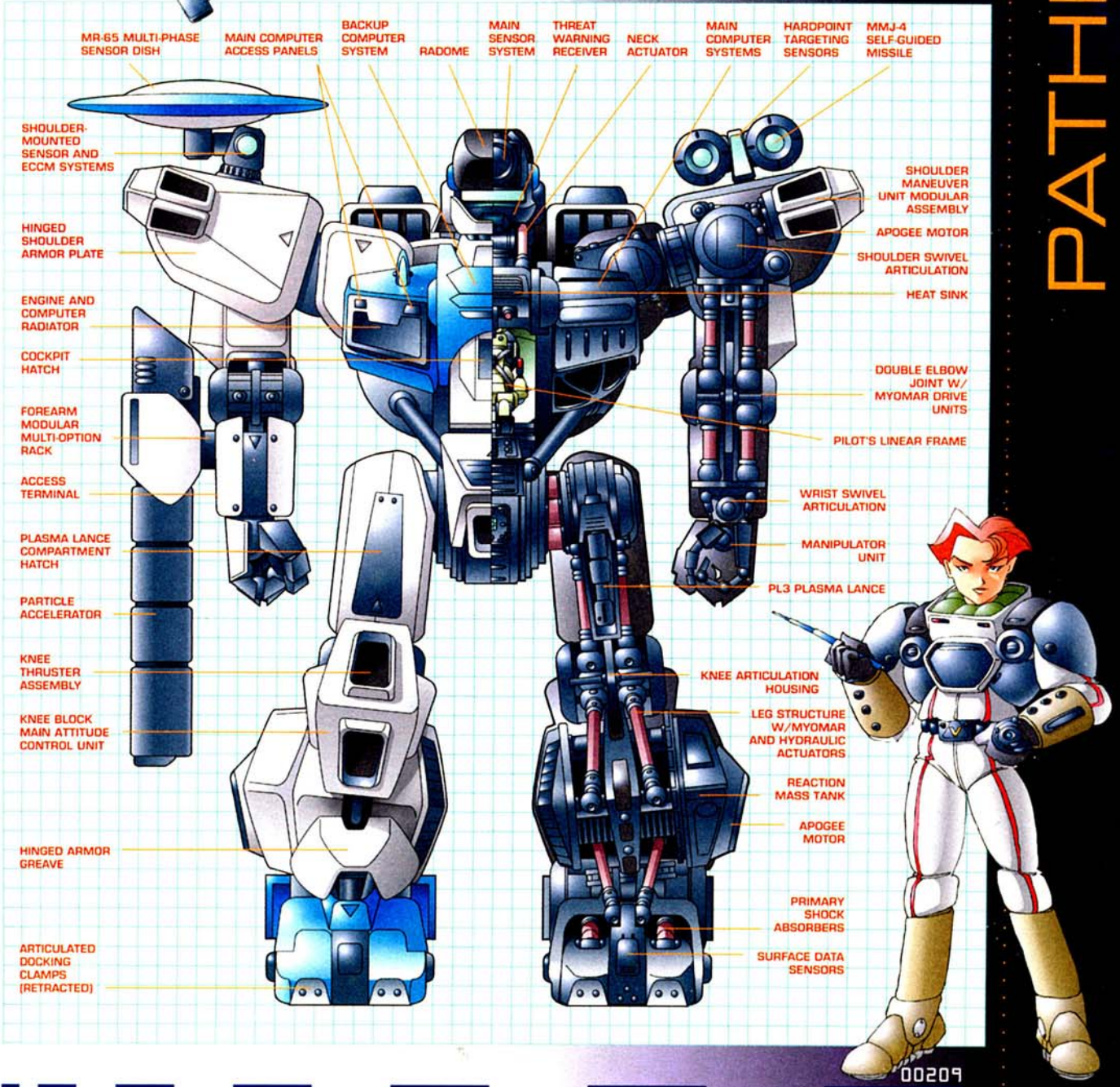
00208



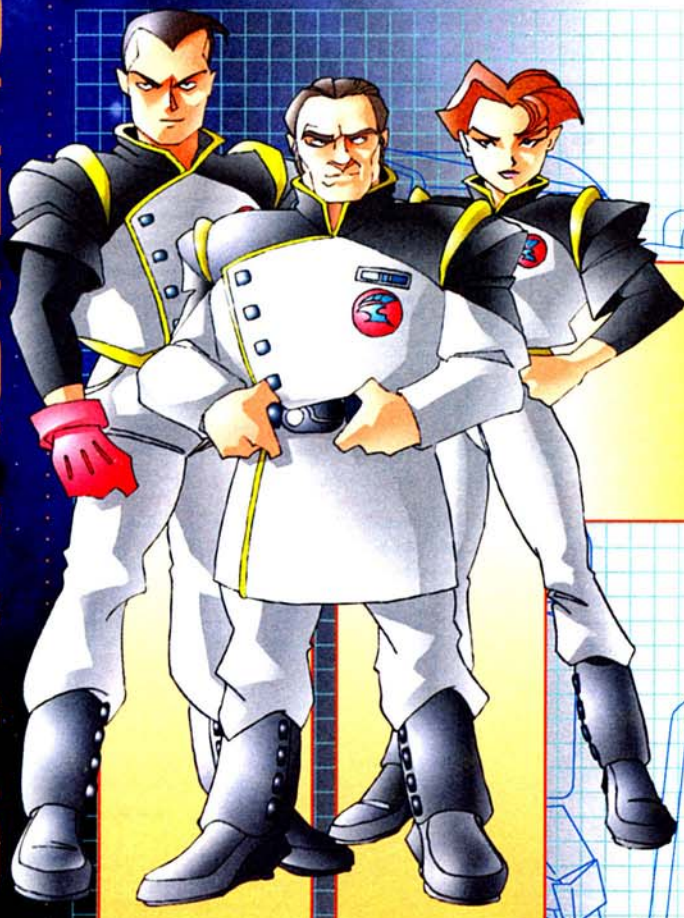
ENGINEERING DATA

- Powerplant ..... Nakasu Fusion model 6-762A/1550 KW nominal power
- Drive System ..... Nakasu Nova-762A PCC Booster/7.5 MW nominal power
- Linear Frame ..... JAW Mark 31A
- Electronics ..... 1 JIT Mark 14 Computer System/2 JIT CU-7689 Backup Computers/1 Maelstrom Electronics TP12 Fire Control System
- Sensor Array ..... Jovian Optics AWS 1226 Multipurpose Sensor Array/Jovian Optics MR-65 Medium Range EWAC System
- Screen Generators ..... 2 Maelstrom Electronics Mark 12 Generators
- Armor ..... JAW CLA-8 Laminated Composite Armor Plating
- Armament ..... 1 x Jovian Optics 652A Particle Accelerator/2 x Dessa MMJ-4 Self-Guided Missiles/2 x JAW PL3 Plasma Lance
- Optional Equipment ..... JAW MPBU-1 Booster Unit

STRUCTURE

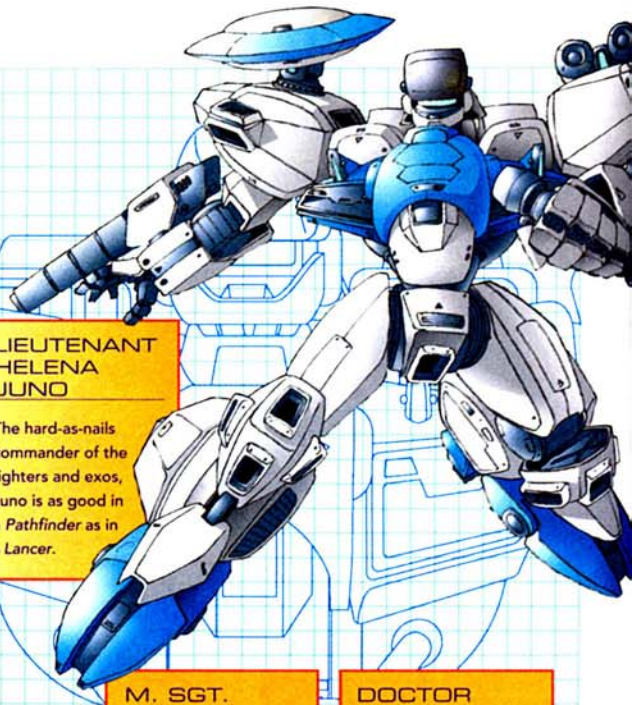


THE CHARACTERS



LIEUTENANT HELENA JUNO

The hard-as-nails commander of the fighters and exos, Juno is as good in a *Pathfinder* as in a *Lancer*.



CHIEF SAMUEL HECTORS

Columbus' trusted chief NCO, Hectors has been manipulated into betraying the ship. He may seek redemption once his betrayal is revealed.

CAPTAIN LUTHER COLUMBUS

The heart and soul of the ship, Columbus treats all his crew like family. He is a brave soldier, but seeks solutions other than warfare.

M. SGT. KATHERINE "KAT" LEO

The security chief, Kat won't stand for any nonsense. A careful investigator, she thinks pilots are all untrustworthy hotshots.

DOCTOR CASSANDRA PALLIS

The chief medical officer, Pallis knows of Hectors feelings but will not say anything out of loyalty to her friend.



SERGEANT ROSIE MORA

A hyperactive tech, Rosie treats the fighters and exos like her best friends. She only likes pilots who respect "her babies."





LEA NOMARU

A reporter for ZONet, Lea loves to be where she isn't wanted. She asks a lot of questions, but respects the JAF.



CAPTAIN MARLON KARRIBDYS

A noble pirate, Karribdys has been manipulated into thinking the *Valiant* is invading the Belt. He will fight only as long as he continues to believe this.

LT. CMDR. ADRIAN FREDRICKS

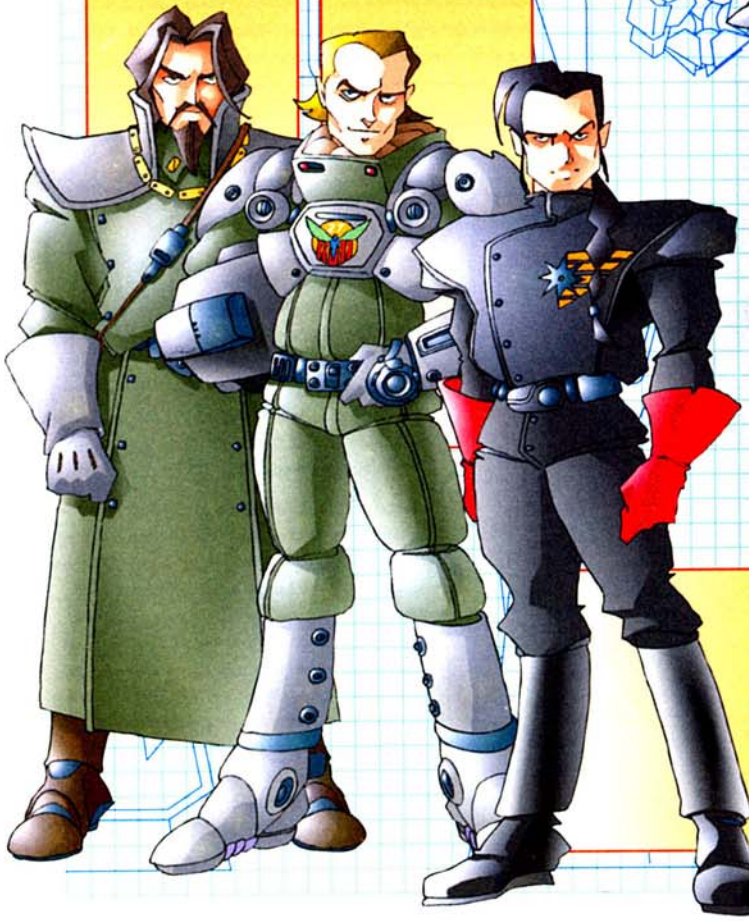
Head of CEGA's Wing 27, Fredricks thinks the *Valiant* will attack Earth forces. He wants the glory of defeating the mighty ship.

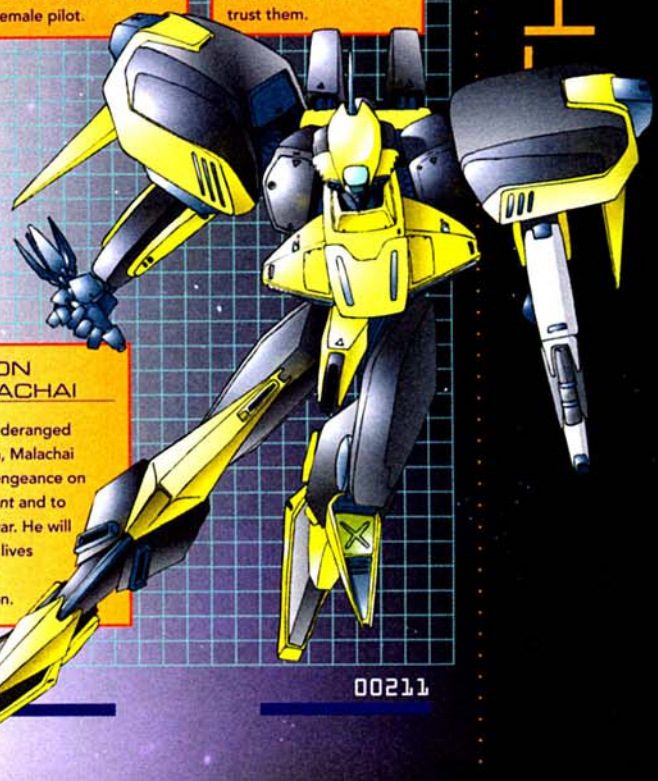
ANTON PRIAM III

The Jovian ambassador to Free Mars, Priam is stylish and arrogant. He loves mind games and would like to seduce a female pilot.

MARCUS ROYAL

Priam's assistant, Royal hates the military and can't hide his spite. Only if soldiers save Priam will he learn to trust them.

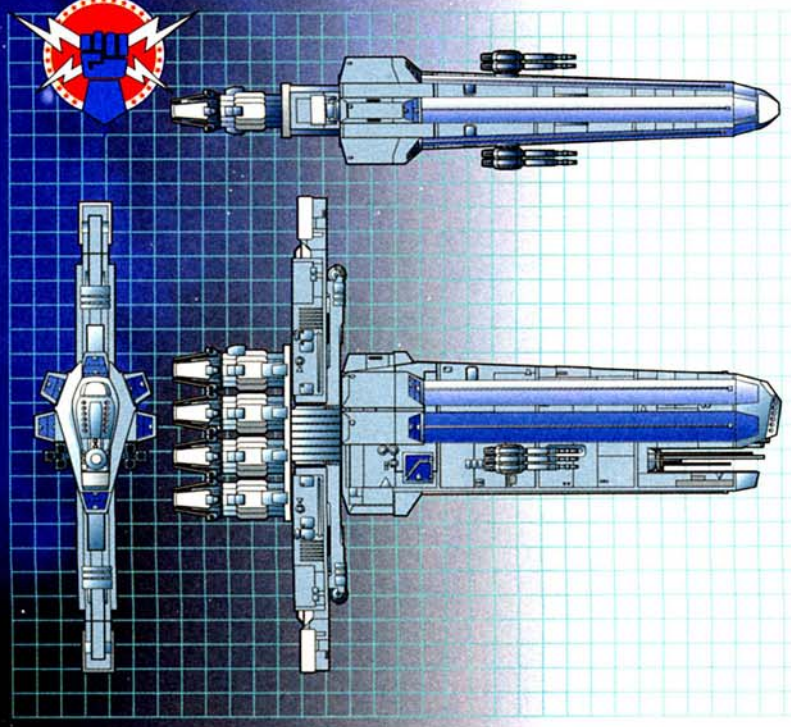




DEVON MALACHAI

A bitter, deranged Venusian, Malachai wants vengeance on the *Valiant* and to start a war. He will sacrifice lives without hesitation.

▶JSS VALIANT

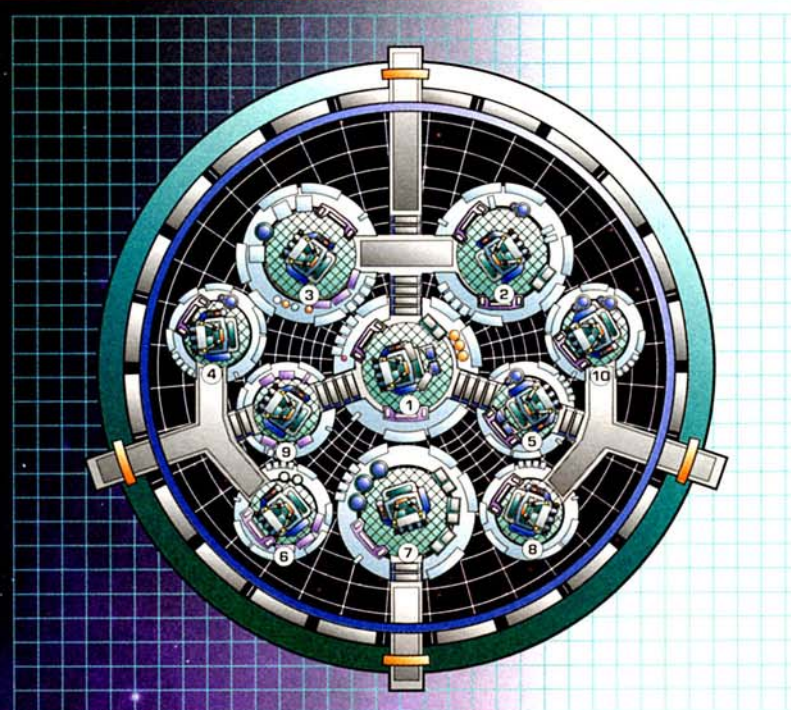


Commission:	GD-2001 (11/23/2210)
Origin:	Jovian Confederation
Manufacturer:	Valiant Consortium
Type:	Valiant-class Strike Carrier
Control system:	Bridge w/astronomical display
Length:	350 m
Width:	50 m
Empty Weight:	29,000 Tons
Loaded Weight:	50,000 Tons
Main Powerplant:	4 x 0.8 GW
Secondary Powerplant:	550 KW
Main Thrusters:	4 x 13,750 tons
Apogee motors:	100
Acceleration:	1.1 g
Avionics:	Fire Control Radar, Infrared/ Ultraviolet, Ladar, Low-light, Magnetic Anomaly Detector, Microwaves, Motion Detectors, Radcounter, Search Radar, Telescope
Fixed Armament:	PDS, 6 x kinetic kill cannons, 1 x missile bay, 1 x spinal laser
Additional Armament:	Carried vessels (3 x *Pathfinder*, 3 x *Lancer*)
Defensive Systems:	Mag screen, PDS
Equipment:	Escape pods, vehicle bay, centrifuge
Crew:	22 officers, 185 enlisted personnel

▼JSS VALIANT (LEVEL 2 CREW)

The lead vessel of the new Valiant-class strike carriers, the *JSS Valiant* is able to face almost any other warship in the solar system and will undertake long-range solo patrols, bringing the might of the JAF across human space. Well armed and carrying six fighters or exo-armors, the *Valiant* also features orientable living quarters for comfort. When the ship is not accelerating, the quarters turn 90° so that they are parallel to the ship's axis; they then rotate around the axis, creating artificial gravity. The *Valiant*'s main gun is a mighty spinal laser capable, at full charge, of punching all the way through a colony cylinder.

▶BRIDGE



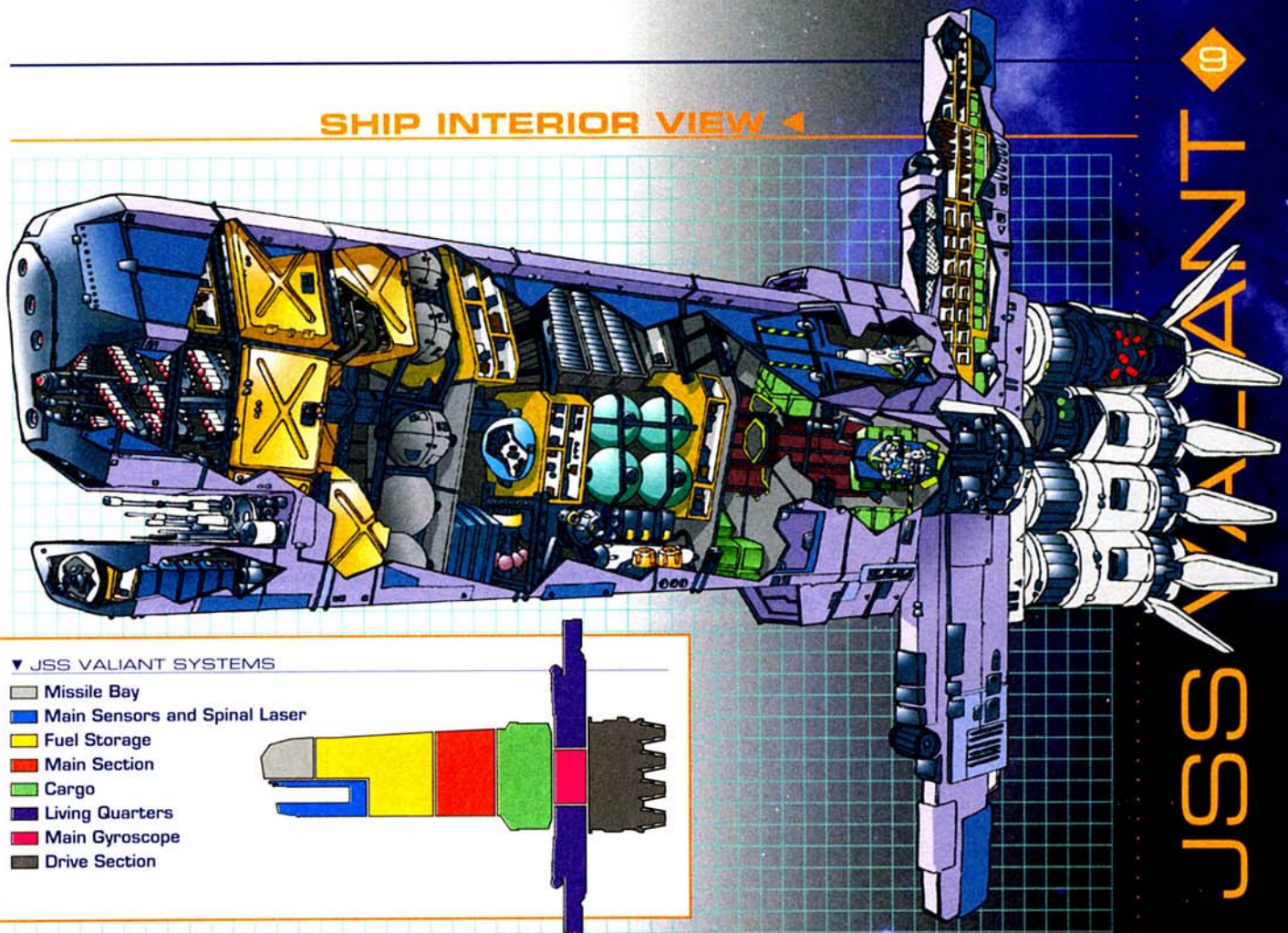
▼BRIDGE STATIONS

1. Captain
2. Sensors
3. Navigation
4. Gunnery (Spinal Laser)
5. Second-in-Command
6. Gunnery (KKC Batteries)
7. Engineering
8. Gunnery (Point Defense)
9. Communications
10. Gunnery (Missile Bay)

The ten-station bridge of the *Valiant* gathers together most of the key command personnel in battle. Located deep within the armored hull of the strike carrier, the bridge is well protected during combat. All the stations are equipped with thorough restraints to keep the command staff secured during the frequent accelerations and attitude changes of space combat. Not equipped for centrifuge operations, the bridge remains in microgravity when the ship is not accelerating. A view screen linked to several external cameras allows the captain to have a point of view from almost anywhere on the hull.

JSS VALIANT

SHIP INTERIOR VIEW



▼ JSS VALIANT SYSTEMS

- Missile Bay
- Main Sensors and Spinal Laser
- Fuel Storage
- Main Section
- Cargo
- Living Quarters
- Main Gyroscope
- Drive Section

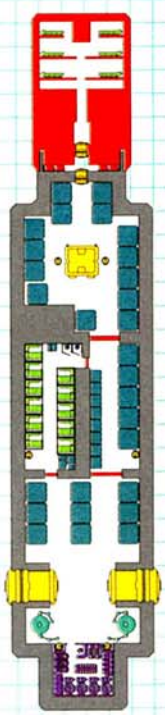
LIVING QUARTERS



LIVING QUARTERS LEVEL 1



LIVING QUARTERS LEVEL 2



LIVING QUARTERS LEVEL 3

▼ LEGEND

- Commons
- Crew Quarters
- Elevators, Airlocks, Access Panels
- Escape Pods, Lifeboat, Emergency Doors
- Galley
- Life Support
- Officer Quarters
- Sickbay
- Storage
- Waste Processing
- Work Pods

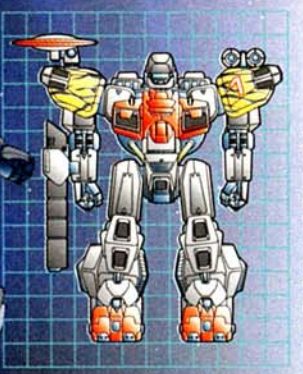
▼ ACCELERATION AND CENTRIFUGE

When the vessel ceases acceleration, the *Valiant*'s two living quarters modules rotate 90° and become elements of a centrifuge, turning about the central axis of the ship. This maintains artificial gravity in the quarters, although everything is also set up to work in zero gravity. Because long access halls between the quarters and the main hull of the ship then become vertical shafts, loud warning sirens and flashing lights are activated several minutes before rotation begins or ends. The main section of the ship has no centrifuge so remains at microgravity if the ship ceases acceleration. A series of rungs in the walls allows the crew to move about.

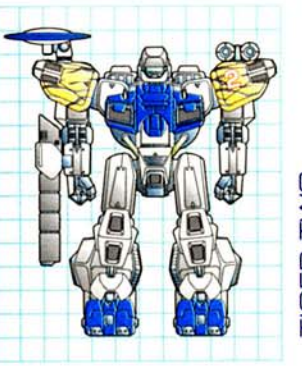
FIGHTERS AND MECHS

TIGER FLIGHT

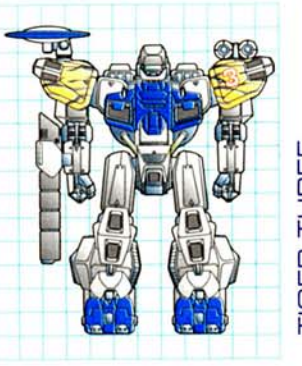




TIGER LEADER



TIGER TWO



TIGER THREE

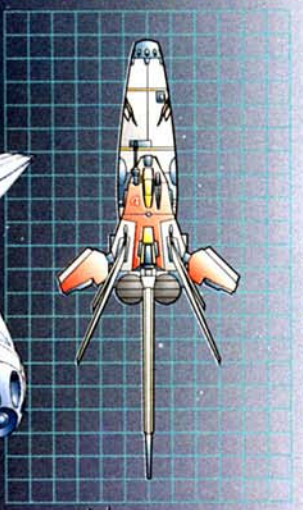


TIGER FLIGHT (PATHFINDER ALPHAS)

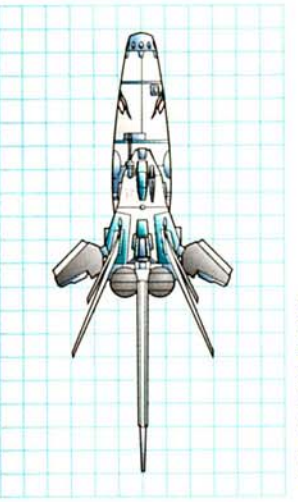
Bearing ID numbers 1 through 3, Tiger Flight consists of three *Pathfinder Alphas*, bearing distinctive tiger striping on their shoulder plates. Tiger Leader has a dominant red color scheme, while Tigers Two and Three have a blue paint scheme.

SHARK FLIGHT

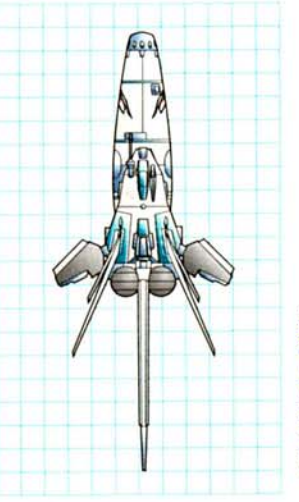




SHARK LEADER



SHARK FIVE



SHARK SIX



SHARK FLIGHT (LANCERS)

Painted with gaping shark mouths and piercing eyes, the *Lancer* fighters of Shark Flight bear ID numbers 4 though 6. Shark Leader uses a red paint scheme, while Sharks Five and Six use a green color instead.

WORKER BEES SQUADRON

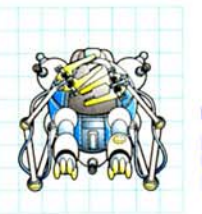




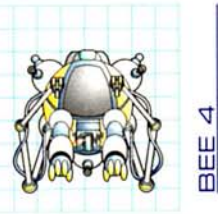
BEE 1



BEE 2



BEE 3



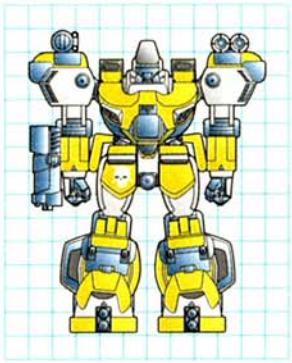
BEE 4



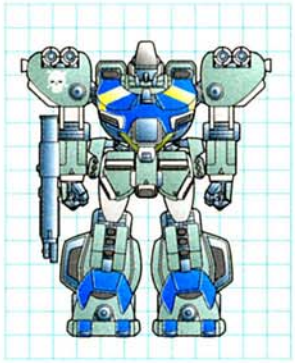
WORKER BEES (M-PODS)

Painted in garish colors and using a variety of specialized appendages, the M-Pods of the Worker Bees maintenance crew keep the *Valiant* running during its long journeys. Sergeant Rosie Mora usually pilots Bee 3, equipped with a pair of heavy pincers.

BLACK CROSS EXOS



EXPLORER



DEFENDER

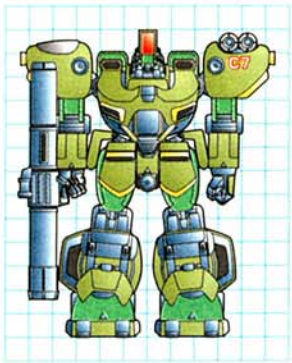




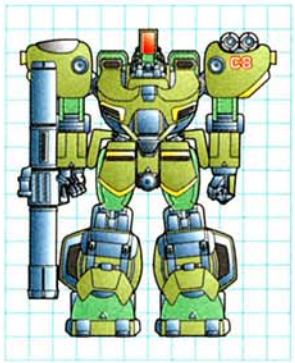
BLACK CROSS EXOS (LEVEL 2 PILOTS)▼

The Black Cross Pirates stole an *Explorer* and a *Defender* bound for Mars in TN 2208. Painted in bright colors, the two units are carried on the hull of the *Black Cross*. The pilots use very little teamwork in battle.

CEGA WING 27



WYVERN X2



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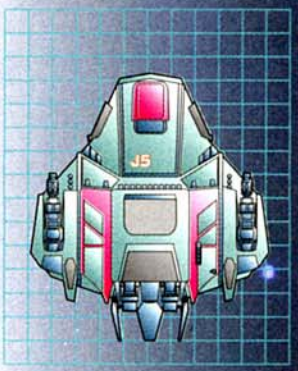


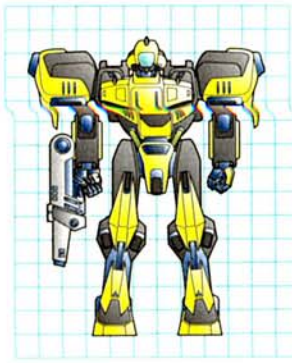
WRAITH X4



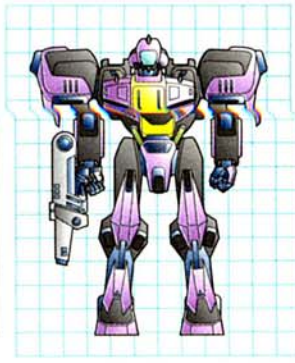
CEGA WING 27 (LEVEL 2 PILOTS)▼

Wing 27's 4 *Wyverns* and 4 *Wraiths* are painted in drab green, except for Fredricks' *Wraith* which is more vibrant. Trained soldiers, they use teamwork and have skilled leaders; Fredricks and *Wyvern* flight leader Luce Sonora are Level 3 pilots.

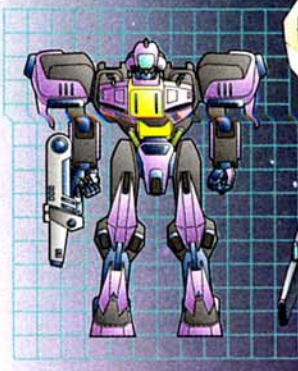
HDF SHURIKEN FLIGHT



MALACHAI'S RYU



RYU X2



RYU

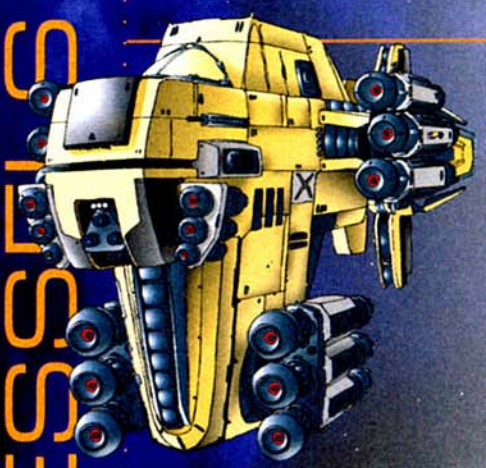


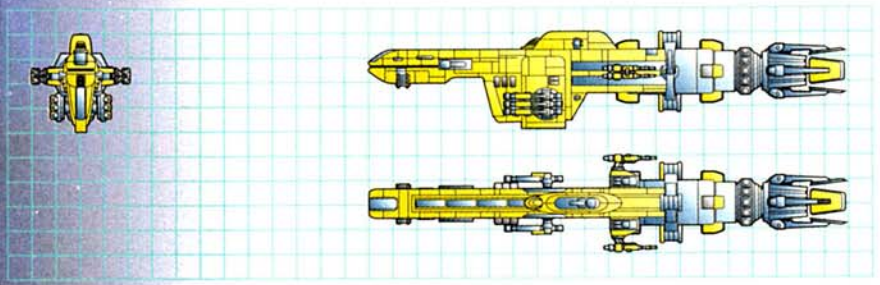
HDF SHURIKEN FLIGHT (LEVEL 3 PILOTS)▼

Fanatically loyal to Malachai, Shuriken Flight from the Venusian Home Defense Force is transported in the *SS Guinevere*. The three violet HDF *Ryus* lead any attack and Malachai's vibrant yellow *Ryu* will come in for the kill .

ENEMY VESSELS

SS BLACK CROSS

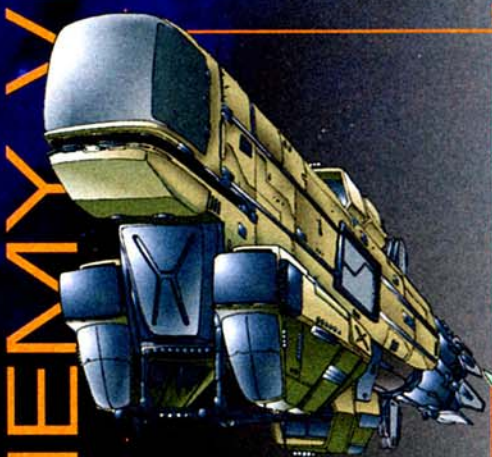


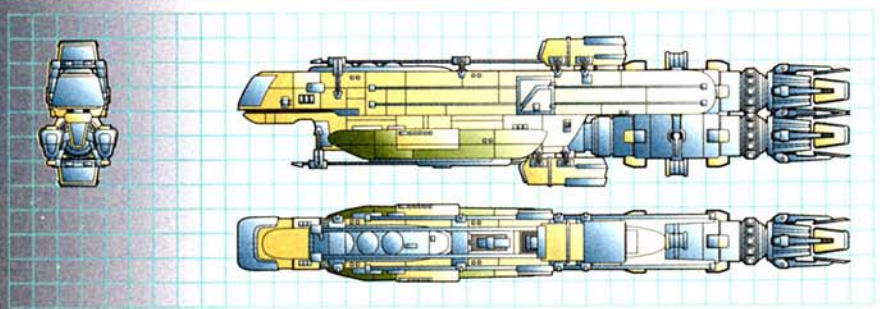


SS BLACK CROSS (LEVEL 2 CREW) ▼

In 2203, the crew of the Bricriu corvette *CSS Oderta* mutinied. Under the leadership of "Captain" Karribdys, the ship was renamed the *Black Cross*. The ship carries two exo-armors strapped to its hull.

CSS KASADO & YUBARI

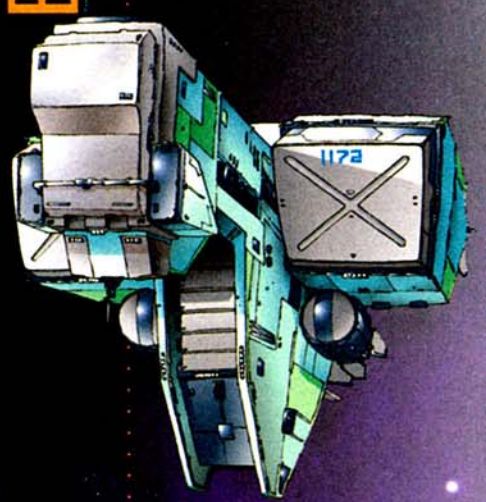


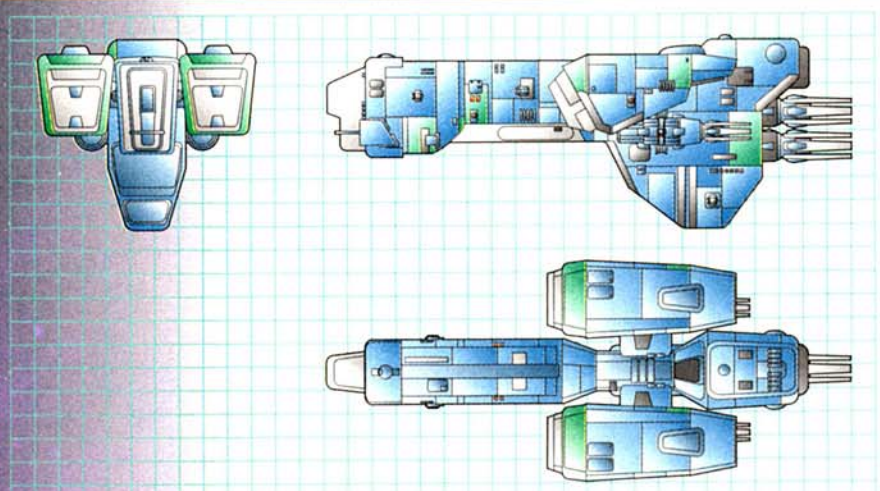


CSS KASADO & YUBARI (LEVEL 2 CREW) ▼

CEGA Wing 27 uses a pair of Tengu escort carriers to transport their *Wraith* fighters and *Wyvern* exo-armors. Both ships feature two additional modular fighter/exo bays with magnetic catapults.

SS GUINEVERE



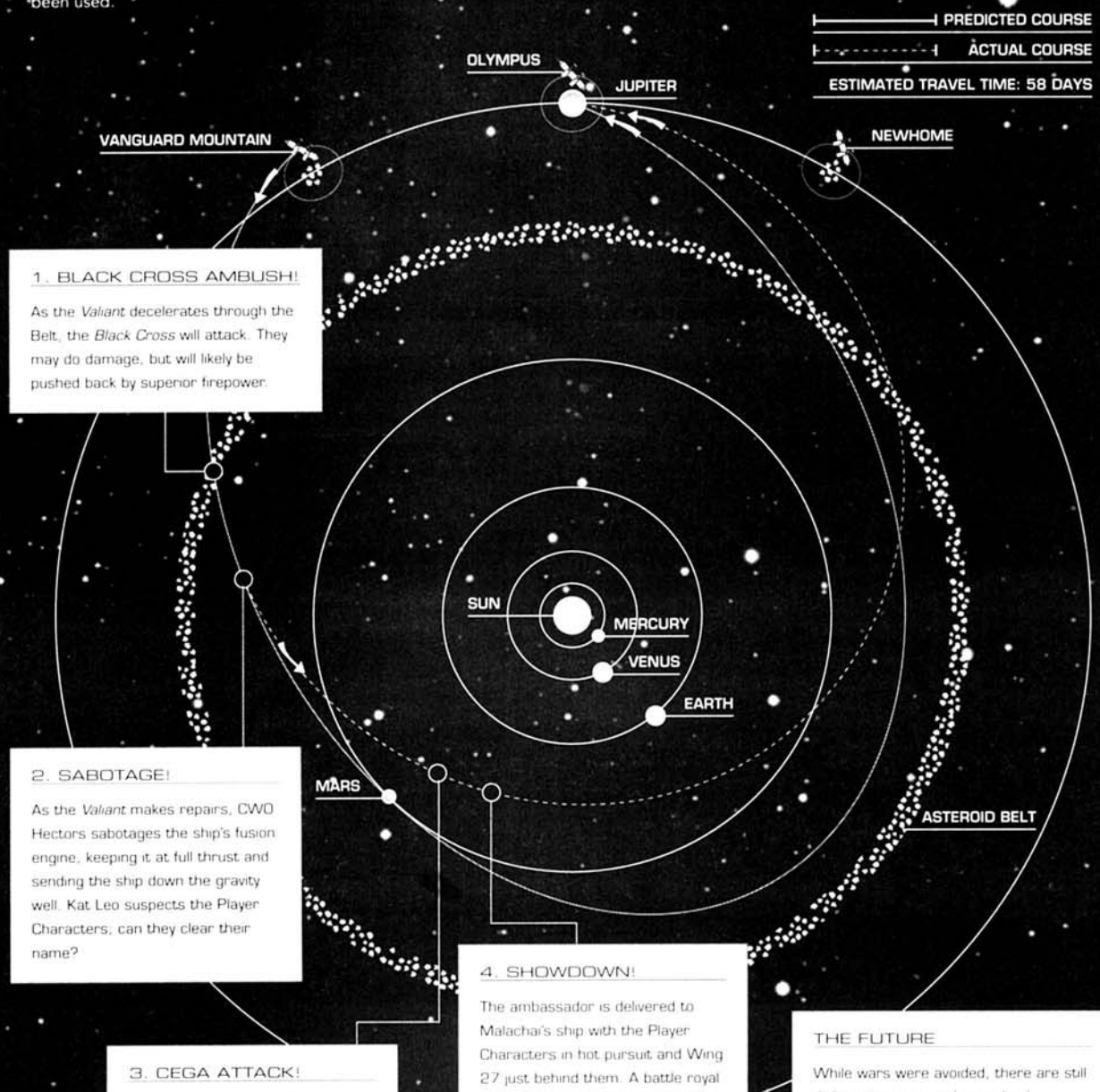


SS GUINEVERE (LEVEL 3 CREW) ▼

The modified Inari liner *Guinevere* is Malachai's ship. Its cargo bays carry four *Ryus*, and its panels hide 4 KKCs and two Space Dart missiles (use weapon stats from Javelin cruiser, Fire Control is 0).

FLIGHT PLAN AND FLIGHT FACTS

The planed flight of the *Valiant* involves the carrier effectively flying backwards in order to use its thrust to slow its orbital velocity. As this happens, it will gently fall toward the Sun until it matches the orbital velocity of Mars, at which point it is to enter the red planet's orbit. A diplomatic shuttle will then deliver the old Martian ambassador and take Priam aboard. The *Valiant* is then to accelerate and reach the orbit of Jupiter. The flight goes terribly wrong when pirates attack as the *Valiant* passes through the Belt. Hectors then sabotages the ship so that it decelerates too much and rigs the diplomatic escape pod . Before repairs can be completed, the *Valiant* has greatly decelerated and fallen past the Martian orbit into CEGA space. It is then attacked by the elite Wing 27 of the CEGA Navy. Ambassador Priam follows procedure and moves to his sabotaged escape pod, which then launches without his order. A *Ryu* exo catches the pod and brings it to Malachai's ship. The PCs must defend their ship, pursue the *Ryu*, save Priam and stop Malachai before it is too late. Wing 27 must also be defeated or convinced that they have been used.



1. BLACK CROSS AMBUSH!

As the *Valiant* decelerates through the Belt, the *Black Cross* will attack. They may do damage, but will likely be pushed back by superior firepower.

2. SABOTAGE!

As the *Valiant* makes repairs, CWO Hectors sabotages the ship's fusion engine, keeping it at full thrust and sending the ship down the gravity well. Kat Leo suspects the Player Characters; can they clear their name?

3. CEGA ATTACK!

The *Valiant* slips inside Martian orbit before the sabotage can be repaired and Wing 27 attacks. In the confusion, an HDF exo manages to kidnap Priam in his escape pod.

4. SHOWDOWN!

The ambassador is delivered to Malachai's ship with the Player Characters in hot pursuit and Wing 27 just behind them. A battle royal ensues in which Priam is hopefully saved, but Malachai surely escapes to plot anew. The *Valiant* stops decelerating and heads for home.

THE FUTURE

While wars were avoided, there are still diplomatic pieces to be put back together. The crew of the *Valiant*, however, should be more concerned by Malachai, who blames them for his defeat. He will now do everything in his power to get revenge, hopefully humiliating, disgracing and killing them (in that order).

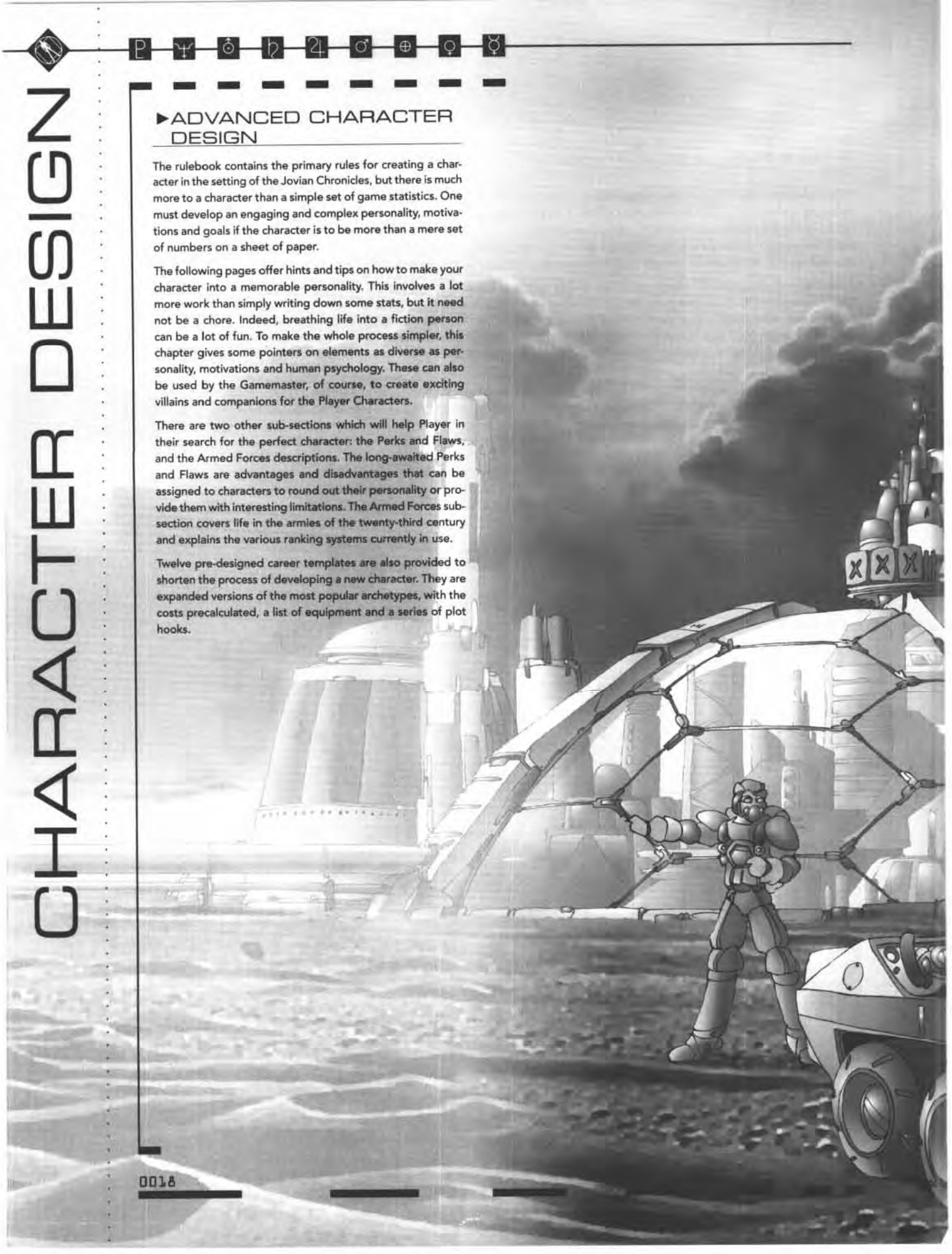
▶ADVANCED CHARACTER DESIGN

The rulebook contains the primary rules for creating a character in the setting of the Jovian Chronicles, but there is much more to a character than a simple set of game statistics. One must develop an engaging and complex personality, motivations and goals if the character is to be more than a mere set of numbers on a sheet of paper.

The following pages offer hints and tips on how to make your character into a memorable personality. This involves a lot more work than simply writing down some stats, but it need not be a chore. Indeed, breathing life into a fiction person can be a lot of fun. To make the whole process simpler, this chapter gives some pointers on elements as diverse as personality, motivations and human psychology. These can also be used by the Gamemaster, of course, to create exciting villains and companions for the Player Characters.

There are two other sub-sections which will help Player in their search for the perfect character: the Perks and Flaws, and the Armed Forces descriptions. The long-awaited Perks and Flaws are advantages and disadvantages that can be assigned to characters to round out their personality or provide them with interesting limitations. The Armed Forces subsection covers life in the armies of the twenty-third century and explains the various ranking systems currently in use.

Twelve pre-designed career templates are also provided to shorten the process of developing a new character. They are expanded versions of the most popular archetypes, with the costs precalculated, a list of equipment and a series of plot hooks.



▶ PERSONALITIES

3.1

One of the key elements in roleplaying is coming up with a personality that is interesting to play and entertaining for others to interact with. We cannot emphasize enough on the importance of proper characterization and differentiation between Player Characters. Too often, Players select stereotypes that are too close to each other's choice, and end up stepping on each other's toes. It is vital for the Gamemaster and Players to agree before starting the campaign on what is the common link between the characters. This doesn't mean that the characters must have known each other since childhood to get along, or that they need to have a common objective. Rather, everyone should agree on having common personality traits at a very basic level. This should be done even before starting character design, since it will play an important part in the process.

For instance, half a dozen Earth characters could be in a group bent on sabotaging CEGA's efforts for planetary domination, but their motivations and methods could be so diverse (one wanting to avenge his wife's death, another doing it out of political beliefs, another one wanting to prevent massacres such as the one which occured in his town, etc.) that they might not last very long together. Another group of characters could share one primary motivation (let's say, improving the quality of life of Belters), and would have chosen to do it together because they find they complement each other nicely. That last situation is ideal, since the Player Characters have a motivation which binds them together in a loyal group and they are complementary to each other (more on this later).

One of the more frequent problems in a gaming group is the tendency of certain characters to become loners because they just don't mesh well with everybody else. Having a common motivation is a way to keep the group together. It ensures that PCs share similar views and may form friendships (if they're not friends already) that will create a group synergy.

▼ CHARACTER COMPLEMENTARITY

3.1.1

Most games, even when not specifically designed with that structure in mind, follow a very cinematic process. The story moves from scene to scene, involving some or all of the characters. More often than not, a scene spotlights on one or two characters only, and this is where the difference between gaming and movies intervenes. In a movie, an actor who isn't featured in a scene goes off to do something else and has a coffee. Nobody cares. In a roleplaying campaign, Players who are not involved in a scene twiddle their tumbs, wait for their turn, get bored and throw dice at the Gamemaster.

Nothing ruins a game more than a Player Character who is under the spotlight all the time. Other Players get resentful, step out of character and spoil the fun for everybody else. This is a Bad Thing™. From the onset, the Gamemaster and the Players should work together to ensure that the characters' motivations are compatible and — pay attention now — that no PC becomes central to the storyline. Everyone should be equally important, although in different ways. Gamemasters should be wary of aggressive character designs from Players who seek to be good at everything. This is a telltale sign that other participants in the campaign will dislike him and sabotage his interventions.

Remember at all times that this is roleplaying, not television or the movies. The deceptive similarities between the genres should not blind the Gamemasters to the particularities of interactive games. Everyone wants to be the hero and everyone wants some spotlight. To ensure that, Players should collaborate during character creation to make characters which will complement each other and will NEED one another throughout the campaign.

In general, characters should be specialized, not universally competent. That specialty is often referred to by gamers as a "schtick." every character's schtick should be unique and fairly specific. In many instances, Gamemasters should consider a character's schtick before asking for a skill check. If the situation is one covered by the PC's schtick and isn't of a critical nature, the GM might consider granting automatic success to the Player.

▼ ORIGINAL PERSONALITIES

3.1.2

In an attempt to come up with a truly original personality, some Players go out of their ways to incorporate some truly outrageous features into their characters. In truth, who really cares if someone's PC is scarred yet handsome, is ambidextrous but has lost two fingers on the left hand, is in great physical shape but has a heart condition, is arrogant and self-confident except in the presence of women, and has Roy Orbison's voice? This is hardly going to make the campaign more exciting for the Players and is only going to give the Gamemaster a headache trying to remember all these insignificant details. Instead, it is much easier to take a stereotype and bend it a little.

For instance: "Anna is your typical hotshot exo-armor pilot — audacious, competent and attractive — but she's terminally ill with cancer and has no more than two years to live." Depending on the Player's take on that situation, it can lead to several story threads. Anna may not care about surviving battles and becomes reckless in combat, or she is single and may want to experience true love before she dies, or she simply wants to try everything before her time is up. By simply twisting a stereotype, everyone gets a better handle on the character. It's simple, vivid and original.

CHARACTER STEREOTYPES ◄

3.2

As we mentioned just above, stereotypes are great time-savers and can really help get a game started fast. Several players just don't know what they want to play at first, especially when it's a new game or a new world. Character classes, so often used in other games, are a great help for character creation, but provide no assistance in making an interesting roleplaying personality. After careful observation of animation (and movies, for that matter), several stereotypical personalities emerge which can be a great help to Players in a rush to get character creation over with. We provide a short list of stereotypes below. We recommend that no more than two or three Players belong to the same stereotype, so that Gamemasters can vary their storylines.

THE VETERAN ▼

3.2.1

No one is more experienced than Veterans. They're at the peak of their professions, with little else to learn in their trade. Most of the time, they're highly respected, sometimes even quoted. They may wish to retire after a full life and aren't allowed that luxury, or they may cling to their duties when they should relinquish them. Gamemasters should allow Veterans to buy a few high level Skills, but should also insist that they purchase several level-one Skills in order to represent a broad base of experience acquired over the years. Optionally, Veterans can start with 25% more points than other characters, but may not improve their top four skills during the campaign.

THE ROOKIE ▼

3.2.2

Unlike Veterans, Rookies start as relatively incompetent characters. They should be allowed to grow more rapidly, however, and Gamemasters may allow Players who have Rookie characters the option of only using part their starting Skill Points at the beginning. As the campaign progresses, they should be allowed to purchase their Skills by only paying for the difference between the skill level costs, not the full levels, for the remainder of their starting Skill Points. For instance, improving a Simple Skill from level 2 to 3 would only cost 4 points, not the normal 8 points. This allows new Players who are not yet familiar with the world an opportunity to adjust their characters as the campaign progresses.

THE TOUGH GUY/GAL ▼

3.2.3

Tough Guys/Gals are a staple of Japanese animation. Self reliant and often irritating because they're always right, these jack-of-all-trades care little about professional improvement, only about getting the job done. They often have a broad range of professional skills which come in handy in almost any situation. Optionally, Gamemasters can give them 25% fewer Skill Points to start with, but can allow them to purchase any Skill as a Simple Skill up to level 2. Several Tough Guys/Gals are mercenaries, selling their services to the highest bidder until the next job. One note: scientists can be Tough Guys/Gals. They aren't physical types, but they're just no-nonsense types with a gruff exterior and an adverse attitude.

THE EXOTIC CURIOSITY ▼

3.2.4

In typical *anime* campaigns, Exotic Curiosities are those very unusual characters with a weird or composite background. They think and act differently, and are often puzzled by those "strange human customs." While this often applies to alien creatures, it can also be true for synthetic beings, artificial intelligence or "Frankeinstein" creations. Traditionally female, they are often good-looking and candid. There are no hard-and-fast rules for these characters, but we recommend that Gamemasters remove 10 points from their starting Skill Points pool and give them some unusual and effective Perk in the campaign. For instance, an artificial intelligence might have instant access to a whole network of computers, which it could access regardless of its location.

BLUEBOOKING ▼

3.2.5

Too often borrowed without due credits, Bluebooking is undoubtedly one of Aaron Allston's greatest contributions to roleplaying. Using this technique, Gamemasters and Players may expand the background and life of Player Characters without wasting precious game time. They can flesh out the characters' personalities, or simply run solo adventures without bothering the other Players. The trick? Writing about it...

Players should equip themselves with small notebooks (in Allston's campaigns, they were using little Blue Books, thus the technique's name). Between games, Players should elaborate in writing on one of their characters' aspects. It can be in any writing style, from a monologue, a personal log, a short story, anything. They leave the notebook in the GM's hands, who reads it between games and scribbles additional notes in the notebook, then returns it to the Players. This way, complete side stories can be created between games with no one feeling left out. The process is obviously longer than playing an actual game, but offers tremendous rewards — such as playing a moving romantic scene and not having to stare at a fellow male Gamemaster in the eyes.

Nowadays, with the advent of the internet, it's also possible to Bluebook by email. It's every bit as good as the notebook technique, but has the further advantage of being a tad faster.

▶ CHARACTER PSYCHOLOGY

3.3

Roleplaying characters are more than a simple bunch of statistics and a background, they are a personality that Players adopt for an evening. Because of this, they should have a relatively well defined psychological profile — a Player should know how a character behaves and what his inner feelings are. Most roleplayers will slowly get to know their character's psychology over play and no system can fully replace this experience. It is possible, however, to help Players think about character psychology from the get-go. This section allows them to more easily create a believable, consistent and enjoyable character. The following suggestions and systems exist to do just that.

▼ MOTIVATION

3.3.1

People do things for reasons. It is important to gain some understanding as to why a character has taken a certain path in his life and how he wishes to change it. Roleplaying characters are generally very dynamic and assertive, and few people can maintain this sort of active lifestyle without someone or something pushing them forward. Players should select one or more words (or even short phrases) that sum up their motivations on a basic level.

Motivations need not be highly complex, they just need to help answer the question as top why a character acts a certain way. A character who is a JAF pilot need not have a psychologically complex fixation with the power of spacecraft — having a sense of duty toward his nation can be just as valid, if not more so. Motivations do not need to be cast in stone, but they should provide Players with a signpost as to their character's behavior. A character who is loyal will probably not betray a friend, even if the rewards are great for doing so.

Character motivations are limitless, but the following list provides some of the most typical:, Amusement, Anger, Childhood Tragedy, Curiosity, Duty, Faith, Greed, Heroism, Justice, Knowledge, Nationalism, Power, Thrill Seeking, Truth, Vengeance. Note that especially powerful motivations can be reflected by certain Character Flaws, such as Code of Honor or Quirk (see *Character Perks and Flaws*, facing page).

▼ SELF AND FACADE

3.3.2

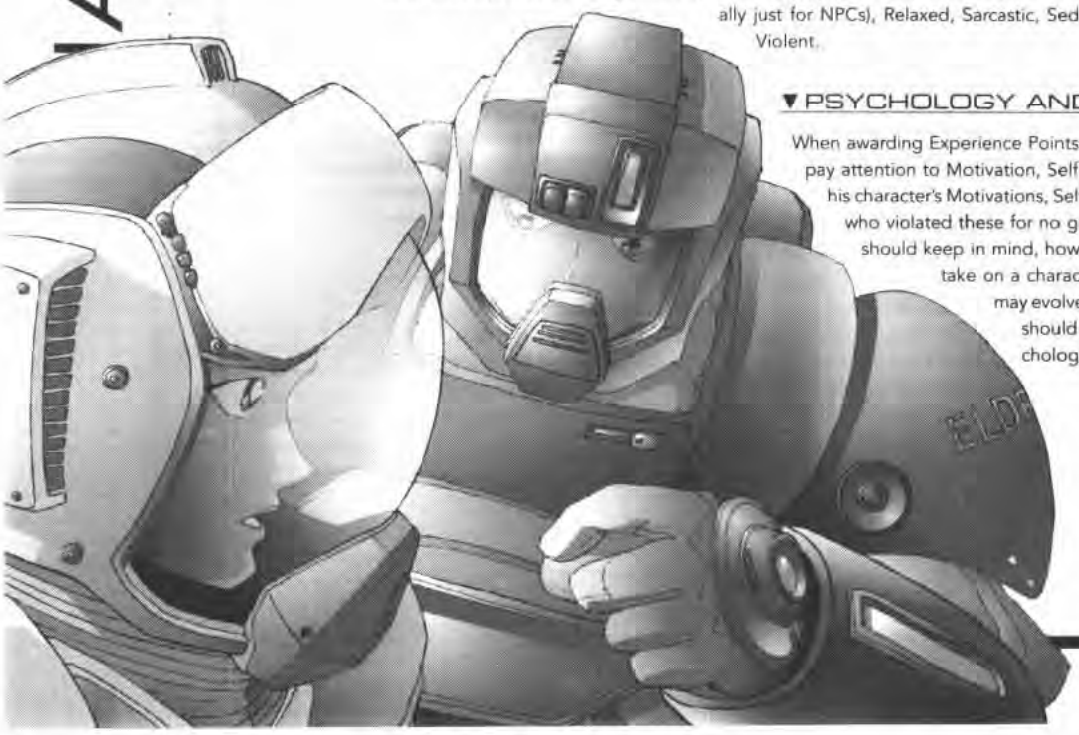
Self and Facade are other shortcuts that allow Players to rapidly define a few basics about their characters' personalities without going into a university-level dissertation. "Self" (inner mode of behavior) refers to the character's internal psychology: what he believes and how he views the world. "Facade" (external mode of behavior) refers to how the character actually behaves: the public face he puts on for others and the attitudes he projects. Self is what others will first notice about a character's personality. Most people have different Self and Facades, reflecting the fronts we all put up to hide our true selves. These fronts may exist because of a sense of duty, decorum or insecurity. A few people are very uncomplicated and have the same Self and Facade, but they are quite rare.

Choosing a Self and Facade is simple. Players should just find a word (or very brief phrase) that captures the essence of their inner or outer selves. Although this word will surely not capture all aspects of the character's psychology (there are many types of "fanatics" or "boisterous" people, for example) it does not have to — Self and Facade are there to serve as guidelines, not a hard and fast definition.

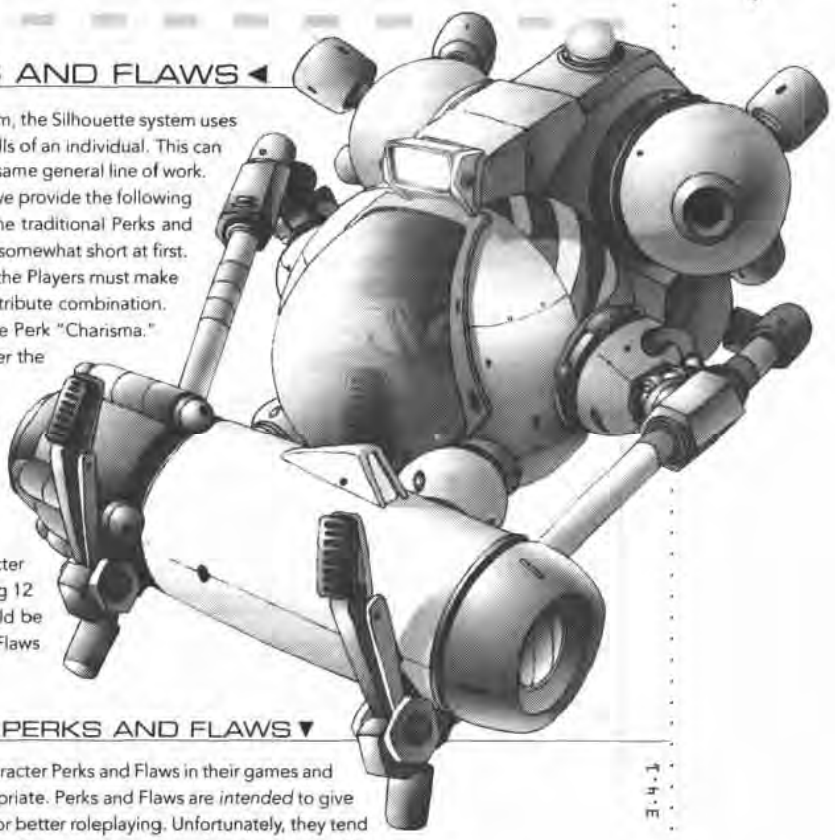
Possible Self and Facades are virtually limitless, but to help you along what follows is a list of common ones:, Angry, Arrogant, Bored, Bully, Charming, Cheerful, Curious, Daredevil, Depressed, Friendly, Frightened, Funny, Heroic, Honorable, Insecure, Loner, Loving, Nervous, Obsessive, Opportunistic, Paranoid, Perfectionist, Protective, Proud, Psychotic (usually just for NPCs), Relaxed, Sarcastic, Seductive, Selfish, Spiteful, Stern, Suave, Violent.

▼ PSYCHOLOGY AND EXPERIENCE

When awarding Experience Points for roleplaying, Gamemasters should pay attention to Motivation, Self and Facade. A Player who respected his character's Motivations, Self and Facade should be rewarded; one who violated these for no good reason should not. Gamemasters should keep in mind, however, that Players may discover a new take on a character or that the character's psychology may evolve, in which case Player and Gamemaster should discuss changing one or all of the psychology signposts.



CHARACTER PERKS AND FLAWS ◄



In order to keep the dice rolling and the bookkeeping to a minimum, the Silhouette system uses a fairly small range of numbers to describe the capabilities and skills of an individual. This can lead to characters that are fairly similar, especially if they are in the same general line of work. To help Players create unique characters with unique capabilities, we provide the following Character Perks and Flaws. The basic Attributes cover many of the traditional Perks and Flaws used in other roleplaying settings, and so the list may seem somewhat short at first. Before asking the Gamemaster to generate new Perks and Flaws, the Players must make sure that what they have in mind does not fall under a certain Attribute combination. For example, a popular singer will have a high INF rather than the Perk "Charisma." An obese person would have a very high BLD and a low FIT rather the Flaw "Obese."

Each Perk costs a certain amount of Skill Points (SPs) and each Flaw "gives back" a certain number of SPs. These are the same Skill Points that are given to purchase Skills, so a character with more Flaws than Perks can gain additional Skills or Skill Levels, while a character with more Perks will start with fewer Skills.

There is no strict limit to the number of Perks and Flaws a character can have. In order to prevent excess we recommend not exceeding 12 points of Flaws (20 in a Cinematic game). The Gamemaster should be the final arbiter as to whether a character has too many Perks or Flaws and may choose to exclude some entirely (see below).

SELECTING PERKS AND FLAWS ▼

3.4.1

Gamemasters should be very careful about allowing the use of Character Perks and Flaws in their games and they should not be afraid of imposing strict limits on what is appropriate. Perks and Flaws are *intended* to give Players a variety of options to help define their character, making for better roleplaying. Unfortunately, they tend to bring out the "munchkin" (see page 61 of the rulebook) in many Players — the variety of options, each with a cost or benefit, drives some to make the most of the system, purchasing a ludicrous number of Perks and Flaws to get special abilities and extra Skills. The number of angst-ridden, addicted, blind, one-armed combat monsters wanted by the law is legion in the halls of roleplaying history.

Solutions to this problem include limiting the number or gravity of Flaws and Perks. You can tell Players they can get only one Perk and one Flaw, forcing them to take only that which is really important for their character *concept*. Alternatively, you can limit the number of points they can get from Flaws. We recommend 12 as a good general limit, but bringing this down to 5 can work well when dealing with munchkin instincts.

Gamemasters should also have final approval over all Perks and Flaws and make their decision according to two criteria: whether they fit the character concept and the campaign concept. The first criterion prevents blind Exo-pilots; the second prevents multimillionaires in a campaign about pioneers scrounging for resources. Gamemasters can also choose to remove some Perks and Flaws altogether. Those who believe in letting Players define their character's psychology without concern for points can eliminate personality-related Flaws.

Gamemasters should also not impose unfair costs for Perks. If the campaign concept calls for everyone to have military rank, be police officers, or be political leaders, then the Players need not pay for the relevant Perks. Gamemasters may have them pay for elevated rank or especially good reputations, but the campaign "base line" should be free.

GAINING PERKS AND FLAWS DURING PLAY ▼

3.4.2

Roleplaying characters often evolve quite substantially during the course of a campaign, going, for example, from being untested pilots to national heroes. Changing Character Perks and Flaws can reflect this evolution. Only Perks and Flaws listed as Acquired can be gained over the course of a campaign, however.

In general, the Gamemaster should be the sole arbiter of Perks and Flaws once play begins. Experience Points need not be spent every time the Player Characters pick up a few new contacts and they gain no points when the government starts hunting them — these are just part of character evolution. Gamemasters should try to roughly balance new Flaws with new Perks, however, or else the PCs' lives will become no fun at all. GMs should be especially careful when dolling out highly debilitating Flaws or ones that change the character concept (like Flashbacks or Blind). Optionally, GMs could allow Players to purchase new Perks by investing Experience Points. Treat these as Simple Skills, with the level equal to the lowest cost of the Perk. The Perks can then be improved like any Skill. For example, a character buying a new Subordinate would pay 4 Experience Points for a "level 2" Subordinate and could then improve it up to level 5 (one step at a time) as any Skill (see **Jovian Chronicles**, p. 125, for costs). Wealth is commonly purchased in this manner.

▼CHARACTER PERKS

Perks are natural characteristics, aptitudes or social benefits that often prove useful to the character. Like all things in life, however, many Perks are not universally beneficial. Some Perks (usually social ones) have potential downsides that are listed along with them. Gamemasters and Players should keep these downsides in mind, but they should not outweigh the benefits of the Perk.

It is also important to distinguish Innate and Acquired Perks & Flaws. Innate Perks & Flaws are characteristics about the character which he or she was born with, and which he cannot normally get rid of. These can only be bought during character creation. Acquired Perks & Flaws, however, are not genetic in nature and can be acquired at any time during the course of a campaign (or a character's life).

●ACCELERATED HEALING (INNATE) — COST = 4▼

Thanks to some natural vigor, the character heals faster than other people (though he is not tougher because of it). The normal healing rules are used (see page 118 of the rulebook), but the character needs only 75% of the required time. Accelerated Healing has no downside and is incompatible with the Slow Healing Flaw.

●ACUTE SENSE (INNATE) — COST = 2 PER SENSE (CHOOSE ONE)▼

The character has one above-average sense, such as vision or hearing, and tends to notice fainter signals than other people. He gets a +1 modifier for Notice checks based on that particular sense. Good Sense has no downside, though overstimulation would be more painful than usual. Obviously, a character with the Blind or Deaf Flaws may not have Acute Vision or Acute Hearing.

●AMBIDEXTROUS (ACQUIRED) — COST = 1▼

The character can use either hand for tasks requiring manual dexterity, though he may not attack twice per action. Ambidextrous has no downside. Kindly note that a One-Armed character cannot be Ambidextrous at the same time.

●ANIMAL COMPANION (ACQUIRED) — COST = 1-4 DEPENDING ON THE USEFULNESS OF THE ANIMAL▼

The character has a faithful pet, steed or other animal companion. This animal is both well trained and emotionally bonded to the character, which means that it will stay by his side other than (perhaps) the occasional romp through the neighborhood. The downside of an Animal Companion is responsibility: pets must be fed, walked and housed.

●ANIMAL KINSHIP (INNATE) — COST = 2▼

The character has a "touch'" with animals, both wild and domestic. Domesticated animals will respond well to training and instructions, granting the character a +1 when dealing with them. Wild animals are less likely to attack the character and may even respond to some very basic commands (specifics are left to the Gamemaster). Animal Kinship has no downside, although many people with this Perk become vegetarians out of empathy.

●AUTHORITY (ACQUIRED) — COST = 3▼

The character represents the authorities. He could be a policeman, a SolaPol agent, a Military Police agent, etc. The effect of this Perk depends largely on the circumstances — policemen have no extra authority outside their jurisdiction. The potential downside of Authority is responsibility: the character will likely have to follow a strict code of conduct, report for duty and follow orders.

●CONNECTIONS (ACQUIRED) — COST = 3 TO 7 POINTS PER ALLY, 1 AND 5 POINTS PER CONTACT▼

The character has one or more useful connections. These can be close allies who would be willing to help the character no matter what, or more casual acquaintances with special skills or connections of their own. The cost of the connection should vary according to such factors as loyalty, influence, accessibility, resources, etc. This Perk does not cover casual, personal relationships (such as a lover, friends and neighbors) unless they are particularly useful or dedicated.

Allies are connections who are willing and able to help the character, even in dire circumstances, without asking for much in return (at least not immediately). Examples include a brother who is also a police sergeant or a friend in the military.

Contacts are connections who will not necessarily go out of their way to help the character without promise of recompense. They generally provide useful information or equipment, but will not come to the rescue at their own risk. Typical contacts include a snitch within a criminal cartel, a smuggler or a forger.

The potential downside of Connections is reciprocity. Contacts will expect either to be paid in cash or by being owed favors. Allies are less demanding, but are likely to call for help when they need it. Turning down an allies' call for help is a sure way to lose that ally.

●FAKE IDENTITY (ACQUIRED) — COST = 3 PER FAKE IDENTITY▼

The character has more than one identity. Going beyond the odd forged passport, he has a complete, fully detailed life on the side, with separate dwelling, job and identification papers. People attempting to track the cover identity back to the character will find it very difficult to do. The potential downside of Fake Identity is maintenance. The character needs to spend time and money keeping his alter ego current, doing such things as making bank transactions, subscribing to newspapers or even making appearances as that person.

●FAMOUS (ACQUIRED) — COST = BETWEEN 2 AND 5 POINTS DEPENDING ON THE DEGREE OF FAME▼

The character is famous. He can be a well-known artist or a political figure. In certain situations, famous will work for the character — people will readily help him or provide access to restricted areas. Fame's potential downside is lack of anonymity. The character may be recognized wherever he goes and may be watched by the press and other interested parties. This can make subtlety or stealth very difficult.

• FAVOR (ACQUIRED) — COST = 1 TO 5 ▼

Someone important or a powerful group owes the character one or more favors. This debt is real and known by both the character and the indebted party, and is likely to be honored, all things being equal. The character may call in this debt when convenient, although story elements may limit his opportunity to do so. The downside of a Favor is resentment: if the character is not careful, the indebted party may feel he is being taken advantage of.

DEBT COST

Financial Debts	Debts of Honor	Point Cost
5,000 credits	key favor	1
25,000 credits	multiple favors	2
100,000 credits	major boon	3
500,000 credits	multiple boons	4
1,000,000+ credits	life boon	5

• LIGHT SLEEPER (ACQUIRED) — COST = 2 ▼

The character sleeps lightly and awakens at the slightest noise. He cannot be surprised when sleeping and gets a normal defense roll. Light Sleeper has no downside, other than that it may be difficult to get a good night's sleep in a noisy environment.

• LUCK (INNATE) — COST = 4 ▼

The character is exceptionally lucky. Once per session, the Player may elect to reroll a Fumble. Alternatively, he can choose to switch the modifier of a single die roll before making the roll — for example, turning a -3 into a +3. Lucky has no downside and is incombatible with Bad Luck.

• MACHINE-TOUCH (INNATE) — COST = 5 ▼

The character is exceptionally good with machines and seems to understand them. He can purchase the Tinker skill as a Simple skill. Machine-Touch has no downside.

• NIGHT VISION (INNATE) — COST = 3 ▼

The character's eyes need very little light to see. As long as there is at least a small amount of light present, he can ignore the penalties for poor lighting (see rulebook, page 114). This perk is of no help in total darkness, however. The downside of Night Vision is that the character's eyes are sensitive to bright lights.

• PHOTOGRAPHIC MEMORY (INNATE) — COST = 3 PER POINT ▼

The character has an excellent memory. Whenever a Knowledge roll is made to recall information previously seen, heard or read, the rating of the Perk is added to the dice roll. If the character has three or more points of Photographic Memory, any Knowledge-related Skills are considered Simple for learning cost. The downside of Photographic Memory is that it's extremely difficult to blank out traumatic events. Nasty Gamemasters can give PCs with that Perk some recurring nightmares about these difficult events.

• PRESTIGE (ACQUIRED) — COST = 2 TO 4 DEPENDING ON THE SCOPE AND POWER OF THE INFLUENCE ▼

The character is either a recognized authority or carries significant prestige in a certain social, geopolitical or professional sphere. Although this is not a guarantee that the character will get his way all the time, his opinion will be listened to and he can find others to support him if need be. Typical areas of influence include: a city, the military, big business, the media and a government. Prestige's downside is notoriety: others in the same field may seek the character out or target him.

• PROPERTY (ACQUIRED) — COST = 3 TO 7 DEPENDING ON SIZE AND POWER OF THE PROPERTY ▼

The character owns a substantial and useful piece of property. This could include a nightclub, an *Inari*-class liner, a pirate ship, or a mansion used as a headquarters. This Perk should only be used for key story props and settings — the owner of a pirate ship should have this Perk, but an accountant on Venus with a condo and car does not need it. This Property is also not part of the character's assets (see Wealth Perk), and it is expected that 2% of that amount is spent quarterly on maintenance and related salaries. If the character can't make his payments, there's always the loan sharks...

If at some point the character wants to sell his property and exchange it for Wealth, he may do so by rolling a Business check against the point cost for the Property. He will get a Wealth Perk equal to (Property Cost + MoS – 1).

PROPERTY COST

Property Value	Quarterly Maintenance	Point Cost
250,000 credits	5,000 credits	3
1,000,000 credits	20,000 credits	4
5,000,000 credits	100,000 credits	5
10,000,000 credits	200,000 credits	6
50,000,000+ credits	1,000,000 credits	7

● QUICK LEARNER (INNATE)

COST = 2▼

The character learns quite rapidly and can gain extra benefit from tutors who try an impart their knowledge upon them. Quick Learners subtract one from the number of months of tutelage required to learn a Skill from a tutor, although the minimum remains one week. Those teaching a Quick Learner also get a +1 bonus to their Teaching Skill test to reduce XP cost of a Skill increase. Fore more information, see Jovian Chronicles Rulebook, p. 125. Quick Learner has no downside, except the envy of fellow students who must work harder to learn the same thing.

● RADIATION RESISTANCE (INNATE)

COST = 2▼

The character is exceptionally resistant to radiation poisoning. When making Health checks for status following a radiation exposure, a +1 modifier is applied to all dice rolls. Radiation Resistance has no downside.

● RANK (ACQUIRED)

COST = 0 TO 12▼

The character is a recognized member of a powerful military, paramilitary or civilian organization. This station will give him authority in certain circles as well as access to resources, contacts and equipment. **Military Rank** indicates membership in an organized military force with authority from one of the solar nations. **Paramilitary Rank** indicates membership in a force that wields armed might and is organized along military lines, but does not serve as the main defense force of a nation. Paramilitary forces may or may not operate with government authority. **Civilian Rank** indicates membership in an organized and powerful non-military organization, such as a powerful zaibatsu, a government department or an organized crime family. Civilian Rank is categorized according to generic stations and should be purchased only if membership confers a real benefit. Note that military rank has a fixed cost, but civilian and paramilitary rank is provided with a cost range depending on the power and influence of the group. The potential downside of Rank is responsibility. Members of the military or other powerful groups have to follow codes of conduct, abide by regulations and follow orders from superiors.

RANK COSTS

Rank	Military	PM/Civilian
enlisted/member	2	0-2
junior NCO/veteran member	4	2-4
senior NCO/elite member	6	4-6
junior officer/assistant director	8	6-8
senior officer/director	10	8-10
general officer/senior director	12	10-12

● SENSE OF DIRECTION (INNATE)

COST = 2 FOR 2D, 3 FOR 3D▼

The character seems to have a natural compass in his head. He always knows where he is located and never seems to get lost. In space, characters with the 3D Sense of Direction never get dizzy and can always figure their orientation in relation to the spacecraft, station or nearest celestial body. This cannot be taken with the Space Sickness Flaw. Sense of Direction has no downside.

● STRONG IMMUNE SYSTEM (INNATE)

COST = 3▼

Characters with a Strong Immune System are especially resistant to disease and the effects of drugs. These characters get a +1 to Health tests made against the contagion and virulence of diseases, as well as the Potency of a drug or toxin. See *Disease*, p. 79, and **Jovian Chronicles Rulebook**, p. 119, for more details on these topics. A Strong Immune System has no inherent downside other than the fact that the character will also resist *beneficial* drugs such as analgesics. This Perk is incompatible with Weak Immune System Flaw.

● SUBORDINATES (ACQUIRED)

COST = 2-5 PER SUBORDINATE ▼

The character has one or more faithful underlings. These Subordinates are professionally bound to serve the character in a well-defined way, but do so above and beyond the call of duty. The Player and Gamemaster should develop the conditions of service as well as the identities of all subordinates. These characters can become excellent supporting characters in a campaign. Typical subordinates include: manservants, body-guards and executive assistants. The downside of Subordinates is responsibility: they must often be paid and they may legitimately ask for assistance from time to time.

● THICK-SKINNED (INNATE)

COST = 4▼

The character has a high pain threshold and better resists to injuries. Thick-skinned characters add five points to their basic Stamina and recalculate their damage thresholds accordingly. This Perk is normally innate, but anyone with martial training (Hand-to-Hand skill equal to 3 or better) could acquire this Perk at character creation or during the campaign. Thick-Skinned has no downside.

● WEALTH (ACQUIRED)

COST = 3 POINTS PER LEVEL, 1 POINT PER LEVEL IF NON-RENEWABLE ▼

The character has money. Lots of it. Exactly how much depends on the character's rating. A Business skill check is multiplied by 5% to determine how much money can be withdrawn within the hour. If the character has extra time to properly shuffle his assets, he can often withdraw larger sums: 6 hours give a +1 bonus to the skill check, a full day gives a +2, a week gives a +3 and a month gives a +4 (not cumulative). Making a withdrawal temporarily reduces the character's Wealth rating by 1 for a duration equal to the period listed in the table below. That's the time it takes to "reset" the assets. If another withdrawal is made during that period and the Business roll is a fumble, the Wealth Perk is permanently reduced by one level. The character points invested in the Perk are lost. Optionally, characters can have non-renewable Wealth, that indicates a fixed amount of cash that is not making money for itself. The Wealth reduction from spending in this case is permanent.

This Perk can be bought during the campaign. Treat the Perk as a Simple skill. The potential downside of Wealth is responsibility. The wealthy must maintain their fortunes, taking at least some interest in their holdings. Tax audits and lawsuits may also be targeted at wealthy characters.

WEALTH COST ◫

Assets Value	Period	Point Cost
50,000 credits	12 hours	1
250,000 credits	1 day	2
1,000,000 credits	3 days	3
5,000,000 credits	1 week	4
10,000,000 credits	1 month	5
50,000,000 credits	3 months	6

CHARACTER FLAWS ▼

Flaws are hindrances that gets in the way of the character's life. Some of them are little more than quirks that make social interactions a little more difficult. Flaws can be removed later on during the campaign through good roleplaying and a liberal amount of Experience Points. Like the downside of Perks, some Flaws have potential upsides, small benefits that come with a hindrance. These upsides should never outweigh the penalties of the Flaw.

Getting rid of a Flaw requires two things. First, the Player must spend an amount of Experience Points equal to three times the number of points that the Flaw gives. Secondly, the Flaw must be eliminated through roleplaying (e. g. a Wanted character must defeat or otherwise dissuade his hunters, a Deaf character must undergo corrective surgery). If a Flaw is resolved through roleplaying but XPs are not spent, the Gamemaster can replace the Flaw with another one of equal cost or by another occurrence of the same one. In the previous example, the character who has defeated his pursuers might be hunted by another group or end up picking up a Nemesis.

● ADDICTION (ACQUIRED)

COST = ADDICTION OR DEPENDENCE RATING ÷ 3 (AS APPROPRIATE, ROUND UP). ▼

The character is psychologically or physically addicted to something. It might be drugs, it might be adrenaline, it might even be sex, but he needs regular doses of it. The character is considered either *dependent* or *addicted* to a drug. Characters "addicted" to an activity (sex, danger, etc.) are considered *dependent* on that activity. For more details, see *Addiction*, p. 76. Note that a character can be both *addicted* and *dependent* on the same drug. Addiction has no upside.

● ALLERGY (INNATE)

COST = -1 FOR A MILD ALLERGY, -3 FOR A SEVERE ONE ▼

The character is allergic to certain food, items or chemical compounds. This can range from a mere inconvenience to a deadly danger. When the character is exposed to the allergic agent, a Health test is made against a Threshold of 5. If failed or fumbled, Mild Allergy causes constant itching and scratching, giving an action penalty equal of -1. A severe allergy is much more dangerous: if the test is failed, the victim receives a Flesh wound; if fumbled, a Deep Wound. These must be stabilized according to the usual wound rules. Allergy medicines give a bonus to the HEA roll: +1 for off-the-shelf tablets, up to +4 for special antihystaminics.

● AGE (SPECIAL)

COST = -4 (YOUNG), -2 (OLD) ▼

The character is either unusually young or old, which may impose limits on his freedom of movement and on how seriously others take his opinions. Young characters are considered to be young teenagers (13-16 years) and will have a great deal of trouble being taken seriously by adults, may have to attend school and may not be able to get into adult establishments like bars. Old characters are considered senior citizens (65+), may also have problems with respect and may have health problems. The potential upside of Age is attitudes: juvenile misbehavior may be forgiven and older characters may benefit from some respect from the young.

Optionally, the Gamemaster can impose Attribute and Skill caps to reflect the effects of age. Young characters may have a maximum BLD and KNO of 0 and may not have any Skills at Level 3. Old characters may have a maximum AGI and FIT of 0.

● AMNESIA (ACQUIRED)

COST = -2 ▼

The character has no recollection of his life up to a few days or weeks ago. This Flaw should be severely monitored by the Gamemaster, because it can easily play havoc with a campaign. The potential upside of Amnesia is unknown allies. Some friends from the character's past life may be willing to help him, although some enemies may well be close behind.

● ANIMAL ANTIPATHY (INNATE)

COST = -1 ▼

Something about the character is disturbing to animals, both domestic and wild. Domesticated animals are less likely to respond to commands or stay clam in his presence and he suffers a -1 penalty to animal handling and Riding tests. Wild animals are more likely to attack the character and, even if they don't attack, will respond aggressively to his presence. Animal Antipathy has no upside and is incompatible with the Animal Kinship and Animal Companion Perks.

● BAD LUCK (INNATE)

COST = -5 ▼

The character is constantly plagued by bad luck. Once per game, an opponent may reroll a Fumble. Alternatively, the Gamemaster can choose to switch the result of a die roll — for example, turning a +3 into a -3. The Gamemaster, however, may not use this to kill the character outright, only to make his life miserable. Bad Luck has no upside and is incompatible with the Luck Perk.

BELIEFS (ACQUIRED)

COST = -1 TO -3 DEPENDING ON THE NATURE OF THE BELIEF

The character strongly believe something that is generally not accepted and can expose him to ridicule in the mainstream: asteroids are hollow and contain alien artifacts, there are ghost ships sailing between the planets, etc. This belief could even be dangerous, leading the character to take huge risks, such has heading out for a "hollow asteroid ship" with no supplies.

BLIND (ACQUIRED)

COST = -3 IF PERMANENT, -2 IF REMOVABLE

The character cannot see. This condition may be temporary, the result of an accident for example, or it may be permanent, if the character cannot have his eyes replaced for any number of reasons. The character suffers a -2 modifier to his Notice checks and a -4 to all combat actions. A blind person cannot perform activities which require vision. Blindness has no upside.

BLOODLUST (ACQUIRED)

COST = -3

The character is either inherently mean and vicious or suffers from a lack of control in combat due to desensitization or dehumanizing training. When in battle, he will attempt to kill his opponent by any means possible. He'll never accept a surrender, nor will he surrender or retreat permanently himself. When prisoners must be taken, they live only as long as they are useful to the character. Characters suffering from Bloodlust who wish to overcome their deadly instincts must pass a PSY test against a Threshold of 5. Bloodlust has no upside.

CODE OF HONOR (ACQUIRED)

COST = -1 TO -4 DEPENDING ON DEPTH OF THE CODE

The character lives by a code of honor. The Player and Gamemaster should define this code in terms of how stringent it is and how seriously the character takes it. Note that "honor" can mean many things to many people, so it may take some time to decide exactly what this code entails. A Code of Honor's potential upside is respect: characters who behave in a consistently honorable manner — especially when it puts them at a disadvantage — may gain the trust and admiration of other honorable people.

CRIMINAL BACKGROUND (ACQUIRED)

COST = -1 TO -2 DEPENDING ON THE SEVERITY OF THE CRIME

At some point in his past, the character committed a criminal act. He may have done some prison time or gotten away free, but the incident continues to haunt him in some way. This could entail a criminal record making it hard to get a job or respect or "old friends" continuously appearing in awkward situations. Criminal Background's potential upside is contacts: at times these "old friends" can be somewhat useful.

CURSE (ACQUIRED)

COST = -2

The character is under a curse. Whether it is real or imagined is to be determined by the Gamemaster along with the Player. Regardless, however, it should affect the character in tangible ways. This characteristic is more akin to a tragic destiny than to a supernatural "hex." The Player should choose one aspect of the character's life (love life, job, friendships, finances, etc.) that continuously refuses to "work out."

DEAF (ACQUIRED)

COST = -4, -2 IF REMOVABLE

The character cannot hear. This condition may be temporary, the result of an accident for example, or it may be permanent, if the character cannot have his ears replaced for any number of reasons. The character suffers a -1 modifier to his Notice checks, and cannot perform activities which require hearing.

DEBT (ACQUIRED)

COST = -1 TO -5

The character owes someone a substantial debt, which can include money but also debts of honor or patronage. The person to whom the character is indebted may be tolerant or demanding, but either way the debt is a recurrent drain on the character's time or resources. The potential upside of a debt is a contact: the person who the character owes may be able to be of some help occasionally, although it usually means ending up further in debt. The Player and the GM should agree on how much and when the character is expected to reimburse his debt.

DEBT COST

Financial Debts	Debts of Honor	Point Cost
50,000 credits	key favor	-1
250,000 credits	multiple favors	-2
1,00,000 credits	major boon	-3
5,000,000 credits	multiple boons	-4
10,000,000 credits	life boon	-5

DEDICATED (ACQUIRED)

COST = -1 TO -3 DEPENDING ON THE DEMANDS OF THE DEDICATION

The character is dedicated to a certain cause or a powerful, all-consuming goal. In the case of ideals, the character will follow them whenever possible. The more extreme form of this characteristic is fanaticism. If the dedication is to a specific goal, the Player and the GM should determine it together and ensure it is largely unattainable, giving the character a strong motivation throughout the campaign.Dedication's potential upsides are contacts and respect. Others dedicated to the same cause (or who seek the same goal) may be willing to help a truly dedicated character, although they may also expect such help themselves.

DEPENDENT (ACQUIRED)

COST = -1 TO -4

The character must take care of someone: an adopted child, a relative, etc. This responsibility includes care, protection and friendship and should be quite demanding on the character's schedule. In addition, enemies might attempt to use the dependent against the character. A Dependent's potential upside is aid: the other character may be helpful in certain situations.

DEPENDENT COST ◇

CP/SP total	Cost	CP/SP total	Cost
5/10	-4	10/30	-2
10/20	-3	20/30	-1

◆FLASHBACKS (ACQUIRED) — COST = -2 ▼

The character has sudden flashbacks of his past, especially in stressful situations. The Player and Gamemaster should define just what these flashbacks are and what trauma they stem from. Specific triggers for the flashbacks can also be chosen. Characters experiencing flashbacks must make a WIL or PSY roll against a Threshold of 4 to act. Flashbacks have no upside.

◆HEAVY SLEEPER (INNATE) — COST = -1 ▼

The character sleeps like a brick and is very hard to awaken. Heavy Sleepers must make PER or Notice tests with a -3 penalty to see if they awake in a dangerous situation. Heavy Sleeper has no upside and is incompatible with the Light Sleeper Perk.

◆INFAMOUS (ACQUIRED) — COST = -1 TO -4 DEPENDING ON THE SEVERITY AND EXPANSE OF THE INFAMY ▼

The character has a bad reputation. This reputation may or may not be deserved, but it sticks to the character like the proverbial bad penny. Infamy can denote unpleasant reputations (e. g. a notorious cheat) or something more terrifying (e. g. an underworld assassin). Infamy's potential upside is fear: those with terrible reputations may be intimidating.

◆INSOMNIA (ACQUIRED) — COST = -1 ▼

The character has difficulty sleeping or is plagued by constant nightmares. He is constantly tired. Optionally, the Gamemaster may impose a -1 penalty for actions that require endurance and prolonged concentration. Insomnia has no upside.

◆LAME (ACQUIRED) — COST = -4 IF PERMANENT, -2 IF REMOVABLE ▼

The character has a medical problem in one or both legs. This condition may be temporary, the result of an accident for example, or it may be permanent, if the character cannot have his legs fixed for any number of reasons. The character suffers a -1 modifier to movement-related Skill checks, and cannot perform activities which require jogging or faster movement. Being Lame has no upside.

◆LIAR (ACQUIRED) — COST = -1, -3 IF MYTHOMANIAC ▼

The character generally does not tell the truth. Whenever he speaks, he will lie if it is practical or gets him off the hook. A more serious version of this is the full-blown mythomaniac, who cannot tell the truth and keeps inventing stories about himself and the people around him. Being a Liar has no upside.

◆MECHANICAL INAPTITUDE (INNATE) — COST = -1 ▼

The character is all thumbs when it comes to mechanical or electronic devices. Any Skill test involving the use of a complex machine suffers a -1 penalty. Mechanical Inaptitude has no upside.

◆NEMESIS (ACQUIRED) — COST = -2 TO -5 DEPENDING ON POWER, INTENTIONS AND FREQUENCY OF APPEARANCE OF THE ENEMY ▼

The character has a long-time enemy or rival. Whenever they meet, they engage in contest of wit or plain combat. If the character gets rid of his Nemesis, another one will pop up to replace him until the point cost is paid (a vengeful lover? a younger sibling?). The Player and Gamemaster should cooperate to create the Nemesis and determine how the rivalry began. Nemesis' potential upside is allies: the enemy of your enemy may be your friend.

Although a Nemesis will undoubtedly cause a Player Character no end of trouble, this Flaw can be among the best in terms of campaign development. This Flaw gives a Gamemaster all the justification he needs to create a dogged master villain who pops up at the most inopportune times. GMs should put a great deal of effort into Nemeses, both because they are a lot of fun and because they will undoubtedly be very important to the character they are hunting. Nothing is quite as memorable as a good villain. An interesting variation can be noble Nemeses, who hunt the Player Character to right a wrong or because it is their duty. These are especially vexing to many Players because they cannot be disposed of without a second thought — they're good guys too, after all.

◆OBLIGATION (ACQUIRED) — COST = -1 TO -3 DEPENDING ON SEVERITY AND FREQUENCY OF THE OBLIGATION ▼

The character is under some kind of obligation. He may have a steady job and be required to show up on schedule, or he can have to obey certain people. The Player and the Gamemaster should cooperate to define the scope of the obligations and the reasons why the character is under orders. Note that characters who have the Authority or Rank Perks cannot purchase Obligation tied to the same employment that confers these benefits — the obligations are just part of the territory. They can, however, have other Obligations. Obligations has a potential upside in contacts: superiors and fellow employees can occasionally be of assistance.

◆ONE-ARMED (ACQUIRED) — COST = -2, -4 IF PERMANENT ▼

The character is missing an arm. This condition may be temporary, the result of an accident for example, or it may be permanent, if the character cannot have it replaced for any number of reasons. The character suffers a -1 modifier to any manipulation-related Skill checks, and cannot perform activities which require both hands. One-Armed has no upside.

● PARANOID (ACQUIRED) — COST = -1 ▼

The character believes that some people are in league to cause him harm. Anything bad that comes to him is automatically the result of this conspiracy. Anyone refusing to believe in said conspiracy is automatically part of it and probably out to get the character — or so he thinks. Paranoia has no upside.

● PHOBIA (ACQUIRED) — COST = -2 FOR MILD PHOBIA, -4 FOR SEVERE PHOBIA ▼

The character has an unreasonable fear of something. It might be a certain item, a situation, a color, or an animal. *Mild Phobias* mean that the character suffers a -1 action penalty when in the presence of the object of his phobia, due to nervousness and distraction. *Severe Phobias* mean that the character must pass a WIL roll against a Threshold of 4 to function at all in the presence of the object and even then suffers a -1 action penalty. Phobias have no upside.

Cost = -2 for Mild Phobia, -4 for Severe Phobia. Gamemasters can reduce the cost to -1/-3 for uncommon objects of Phobia (such as the fear of ocean in a campaign occurring in the Belt).

COMMON PHOBIA OBJECTS

Object	Medical Name	Object	Medical Name
Altitude	acrophobia	Loneliness	monophobia
Animals (choose one)	zoophobia	Night	nyctophobia
Blood	hematophobia	Noise (sudden or loud)	brontophobia
Enclosed Spaces	claustrophobia	Open places, space	agoraphobia
Crowds	demophobia	Opposite Gender	androphobia or gynephobia
Darkness	scotophobia	Plants (choose one)	—
Sunlight, light	photophobia	Sex	erotophobia
Death (symbols of)	necrophobia	Snakes	ophidiophobia
Dirt	rupophobia	Spiders	arachnophobia
Fire	pyrophobia	Strangers	xenophobia
Flying	aerophobia	Subterranean Places	troglophobia
Germs and Viruses	mysophobia	Technology	technophobia
Holy Places	hagiophobia	Water	hydrophobia
Insects	entomophobia		

● POOR (ACQUIRED) — COST = -2 ▼

The character does not have much money and has no secure source of income. Characters who obtain such a source during play will find forgotten debts catching up with them until they pay off this Flaw in XPs. Poor characters cannot afford anything above the basics without making arrangements through roleplaying. Poverty has no upside.

● POOR SENSE (ACQUIRED) — COST = -2 PER SENSE (CHOOSE ONE) ▼

The character has one or more especially poor sense. He has trouble noticing and distinguishing stimulus that are faint or muffled. The character suffers a -1 penalty to all Notice tests related to the affected sense. Poor Sense has no upside.

● QUIRK (ACQUIRED) — COST = -1 PER QUIRK (MAX. -2) ▼

A quirk is a small personality flaw or habit that poses only minor limitations on actions. Quirks are intended as roleplaying aids to reward Players for giving their characters some life. This should not be abused, however, so Players receive extra Skill Points only for their first two Quirks. Common Quirks are listed below, but Gamemasters and Players should feel free to add others as long as they are not severely limiting on the character. Note that Quirks can include good habits (such as always giving to charity or taking in strangers) as long as they are mildly limiting on the character. At the Gamemaster's discretion, characters who wish to suppress their Quirk temporarily (e. g. cowards who must run into danger) may have to pass a WIL test against a Threshold of 3. Quirks have no upsides.

Common Quirks include: cowardice, cruelty, curiosity, gluttony, greed, intolerance, lacking a sense of humor, laziness, miserly compulsion, overconfidence, pacifism, pride, selfishness, squeamishness, stubbornness, vengeance fixations, and miscellaneous good or bad habits.

● RADIATION VULNERABILITY (INNATE) — COST = -2 ▼

The character is exceptionally vulnerable to radiation poisoning. When making Health checks for status, he gets a -1 modifier to his dice roll. Radiation Vulnerability has no upside and is incompatible with the Perk Radiation Resistance.

● SECRET (ACQUIRED) — COST = -2 TO -3 DEPENDING ON THE GRAVITY OF THE SECRET ▼

The character has a dark secret in his past. The Player and Gamemaster should decide on the nature of the secret, but there should always be a good reason why this elements must be kept hidden. It could be a criminal past (Criminal Background represents a *known* criminal past), a past *indiscretion*, a *current* illicit affair, or any number of other damaging information. If the secret is revealed and the Player does not pay the XPs to remove it, then another level to the secret, or a different secret altogether must be chosen. Secrets have no upsides.

• SICK (ACQUIRED) — COST = -1 TO -4 DEPENDING ON HOW SEVER, FATAL AND DEBILITATING THE DISEASE IS

The character has a serious ailment that impairs him in some way. The Player and Gamemaster should define the illness and its symptoms. An important (if medically inaccurate) distinction is between degenerative and chronic diseases. Degenerative diseases (such as cancer) will only get worse if untreated, while chronic disease are stable but debilitating. There is no upside to Sick.

The Gamemaster and Player should agree on the specifics of the disease the Player Character suffers from. Game statistics can be generated using the Disease Rules (see *5.1.3 Diseases*, p. 79). Only masochistic Players and Gamemasters should give their characters highly contagious airborne diseases because they will surely end up with entire infected parties and sick NPCs. Easily controlled contagious diseases (or non-contagious ones) are much better choices.

• SLOW HEALING (INNATE) — COST = -4

The character heals more slowly than other people. The normal healing rules are used (see page 118 of the rulebook), but the character needs 50% more time to heal. Slow Healing has no upside.

• SLOW LEARNER (INNATE) — COST = -2

The character has a hard time learning in a structured or academic environment. He still benefits from teachers, but less than most. A Slow Learner must add one to the number of months required to learn a Skill with a tutor; the time can still be reduced to one week by skilled teachers, however. Those teaching Slow Learners also suffer a -1 penalty to their Teaching Skill test to reduce XP cost (see **Jovian Chronicles Rulebook**, p. 125, for more details). Slow Learner has no upside, and is incompatible with the Quick Learner Perk.

• SOCIAL STIGMA (INNATE) — COST = -1 TO -3 DEPENDING ON THE SEVERITY OF THE STIGMA.

The character is part of a social group that has a bad reputation. People will shun him and, in the more extreme case, try to harm him. The Gamemaster and Player should cooperate to define the stigmatized group and the nature of the stigma. In the case of space-travel campaigns, Gamemasters should adjust the Flaw's cost depending on how widespread the Stigma is. To eliminate this Flaw, the character must spentd appropriate Experience Points, but also either prove he is no longer a part of the group or somehow end the stigma toward the group — something that could take the length of a campaign. Stigma's potential upside is contacts: other members of the stigmatized group may be willing to cooperate for mutual benefit.

• SPACE SICKNESS (INNATE) — COST = -1 PER POINT

The character gets sick and nauseous when in free fall. Whenever the character finds himself out of a gravity environment, he gets a penalty equal to the rating of this Flaw to all his dice rolls. There is no upside to Space Sickness.

• SPLIT PERSONALITY (ACQUIRED) — COST = -1 TO -4 (GM'S DISCRETION)

The character has two or more personalities. They are usually different aspects of the same person, though only one is in control at any time. What triggers the switch from one personality to the other is highly variable and depends on the individual. In general, stress is the most common trigger. Each personality has its own set of mental Attributes (CRE, INF, KNO, WIL, PSY) and its own Perks and Flaws. Ideally, all personalities should have the same point cost, but the Gamemaster may diverge from this in specific cases. Player and Gamemaster should cooperate to create all the identities.

The Gamemaster should be in control of personality-switching unless the Player proves himself willing to roleplay the switches spontaneously without looking to maximize his advantage. The cost of the Flaw should be used as a guideline as to how useful the personalities will be. A -1 version could see personality switches happening at useful times about 50% of the time and switches rarely endangering the Character. The -4 version, however, should see personality switches coming at the most embarrassing or downright dangerous times. The tough-as-nails killer suddenly becomes a wallflower when he's about to interrogate a witness, for example.

• THIN-SKINNED (INNATE) — COST = -4

The character has a low pain threshold, putting him out of commission on even the lightest injuries. Thin-skinned characters subtract five points from their Stamina and recalculate their Damage Thresholds accordingly. Thin-Skinned has no upside.

• WANTED (ACQUIRED) — COST = -1 TO -5

Somebody is currently chasing the character. Whether or not this is justified, the character will have to face relentless, often-armed pursuers that appear at the worst time (Gamemaster's choice). The Player and the Gamemaster should cooperate to define the hunters and the reason for the hunt. Wanted usually indicates a group hunting the character or an individual doing so for professional reasons — a personal enemy is covered by the Nemesis Flaw. Masochistic Players can combine Wanted and Nemesis. The cost of the Flaw should be based on the power of the hunter, his intentions and the frequency of his appearances. Wanted's potential upside is allies: others hunted by the same group may be helpful while on the lamb.

• WEAK IMMUNE SYSTEM (ACQUIRED) — COST = -3

Characters with a Weak Immune System are especially vulnerable to disease and the effects of drugs. These characters get a -1 penalty to Health tests made against the contagion and virulence of diseases, as well as the Potency of a drug or toxin. See *Disease*, p. 79 and **Jovian Chronicles Rulebook**, p. 119, for more details on disease and drugs. Weak Immune System is often an innate character element, but is listed as an Acquired Flaw because it can result from severe disease. A Weak Immune System has no inherent upside, though the character will also be less resistant to *beneficial* drugs such as analgesics.

▼SAMPLE PERK AND FLAW PACKAGES

The following examples illustrate how Character Perks and Flaws can work together to create character types. None of these characters are whole, they need both game statistics and complete backgrounds to be ready to play, but they should give **Jovian Chronicles** Players an idea of how to use Character Perks and Flaws.

●BLANK SLATE — TOTAL COST: 2▼

A mystery to everyone including himself, the Blank Slate woke up one morning with no memory of his previous life. He has absorbed new Skills relatively quickly, but is still hunted by mysterious people from his past.

Perks and Flaws: Light Sleeper (2), Quick Learner (2), Amnesia (-2), Social Stigma (Illegal, -2), Wanted (-2)

●CON ARTIST — TOTAL COST: 3▼

A mainstay of bars and backstreets around the solar system, con artists make their way through life by fleecing others. Some play small games, convincing strangers to "lend" them ten or twenty credits; others go for the big scam, ending up much richer and with more dangerous enemies.

Perks and Flaws: Acute Sense (vision, 2), Connections (minor contact, 1), Luck (4), Criminal Background (-1), Debt (-2), Liar (-1)

●DERANGED KILLER — TOTAL COST: -10▼

Psychotic and vile, serial and spree killers continue to plague the 23rd century. This is an extreme example of Perk and Flaw choices, just to show Players and Gamemasters the lengths that are possible if reasonable limits are not imposed. This is **not** suggested as a Player Character type.

Perks and Flaws: Light Sleeper (2), Bloodlust (-3), Flashbacks (-2), Quirk (cruelty to animals, -1), Secret (-3), Wanted (-3)

●DETERMINED ROOKIE PILOT — TOTAL COST: 3▼

Archetypal heroes, determined pilots come to the military ready and willing to prove their worth. They are ambitious and able, but do have a tendency to alienate their fellows. Indeed, not everyone lives and breathes "by the book."

Perks and Flaws: Quick Learner (2), Rank (enlisted, 2), Sense of Direction (3D, 3), Code of Honor (soldier's code, -2), Dedicated (strong patriot, -1), Quirk (overachiever, -1)

●FUGITIVE — TOTAL COST: -4▼

On the run from the law, Fugitives must try to blend in with their surroundings and avoid legal attention. Some are hardened criminals who have escaped from rightful imprisonment, while others are desperately seeking to clear their names.

Perks and Flaws: Fake Identity (3), Light Sleeper (2), Dedicated (proving his innocence, -2), Nemesis (SolaPol Agent, -3), Secret (-2), Wanted (-2)

●GANG LEADER — TOTAL COST: 3▼

Street gangs and other small criminal groups are often the "entry level" of larger criminal empires. The leaders of these gangs are generally tough, vicious and hungry for more power.

Perks and Flaws: Connections (street contacts, 2), Rank (local crime family, 2), Subordinates (gang, 5), Addiction (-2), Criminal Background (-2), Infamous (-1), Quirk (mean-spirited,-1)

●INDEPENDENT TRADER — TOTAL COST: 4▼

A staggering number of unattached merchants ply the trade routes between the major powers, usually by carving out a small niche market thanks to inside connections. They usually operate a small ship that is still not entirely theirs and keep their eyes open for the big score.

Perks and Flaws: Animal Companion (pet ferret, 1), Connections (multiple trading contacts, 3), Property (Mule freighter, 5), Code of Honor (-2), Debt (1 million credits, -3), Quirk (prone to rambling, -1)

●MUSIC STAR — TOTAL COST: 2▼

Even spacers need entertainment, so a variety of music stars hit the scene every year. Earth, Jupiter and Venus have the most active music scenes, but some stars travel the solar system giving concerts and promoting international successes during demanding tours.

Perks and Flaws: Connections (music industry contact, 3), Famous (3), Wealthy (3), Addiction (pain killers, -1), Obligation (record company contracts and touring requirements, -2), Quirk (charming, -1), Secret (drug addiction, -2)

●OLD TIME SPACER — TOTAL COST: 2▼

Nothing beats experience. The Belt is full of miners and explorers who have spent their lives in space and know the ins and outs of that life better than anyone else. This package gives Players an example of a well-balanced character, who nevertheless has many Perks and Flaws.

Perks and Flaws: Property (Anopheles mining ship, 6), Radiation Resistance (2), Sense of Direction (3D, 3), Subordinate (first mate, 2), Age (old, -2), Beliefs (asteroids contain alien artifacts, -1), Dependent (teenage niece, -2), Dull Sense (Hearing, -2), Quirk (long winded, -1), Weak Immune System (-3)

●POLICE DETECTIVE — TOTAL COST: 2▼

Crime and punishment are constants of civilized life and all the solar nations maintain some form of police force. Investigators and detectives are the brains of the police force, analyzing crimes and tracking down criminals.

Perks and Flaws: Authority (3), Rank (detective, 2), Code of Honor (-2), Quirk (obsessive, -1)

CAREER PACKAGES ◄

In order to simplify the character generation process, the following pages provide twelve different potential careers for Player Characters. These represent some of the more typical occupations for the "heroes" of Jovian Chronicles roleplaying games. These are not complete characters that are ready to be played as is, rather they present basic Attribute and Skill selections (and costs) so that players need only worry about the few leftover points to customize their character. Gamemasters in need of a quick Non-Player Character can, however, make use of any of these sets of stats as is. Each career contains nine elements.

The description section provides a look at what the career is and how people in this occupation relate to the world of Jovian Chronicles. This should help you decide how to tie your character in with others as well as help Gamemasters get ideas for potential adventures and campaigns.

The *Typical Attributes* and *Typical Skills* sections provide the standard stats for Player Characters of this career. Secondary Traits are provided for the convenience of those using Attributes (and relevant skills) without change, but will need to be recalculated if additional Attribute (or Hand-to-Hand and Melee) levels are purchased with remaining points. A brief list of other interesting or related skills follows the standard typical skills.

The *Equipment and Cost* table provide guidelines on basic starting items. The *Typical Equipment* and *Salary* sections are the real-world advantages that come with the career. Individual Gamemasters will need to decide what the precise salary and starting equipment is on a case-by-case basis. The *Basic Costs* section gives the price in Character Points and Skill Points of the listed Attributes and Skills. Thus, anyone wanting to quickly design a character can use these costs to establish an Attribute and Skill base, using the remaining points to improve whatever Attribute or Skill deemed important by the Player.

The *Action Campaign Use* and *Intrigue Campaign Use* sections provide ideas on how career characters can become involved in different types of Jovian Chronicles campaigns. The general categories of Action and Intrigue Campaigns are explained below.

The *Possible Variations* section provides other character types closely related to the career in question. The stats provided can be used as is, or a few Skills can be added or removed to better conform to the new role.

The *Possible Subplots* section details some possible secondary story lines of subplots that can be used with characters of the career. These subplots can run for only a few adventures or the length of the campaign, giving a sense of continuity to a possibly unrelated series of adventures.



3.5

ACTION AND INTRIGUE ▼

In *Campaign Styles* (see page 223 of the rulebook), three different types of campaign "reality levels" were explained: Gritty, Adventurous and Cinematic. These three styles help determine how hard-edged and "realistic" a **Jovian Chronicles** campaign will be. They do not necessarily impose a specific type of campaign on the Gamemaster, however. All three styles can be used in a variety of settings and to tell a variety of stories.

Although many different factors can be used to categorize types of roleplaying stories and campaigns, the broad categories of Action and Intrigue are among the most useful. In Action campaigns, each game session will likely feature an exchange of gunfire or an exo-armor combat. This action will move the story forward and be the main way in which problems are resolved. Action Campaigns resemble action movies, with tension growing as the heroes (the Player Characters) face increasingly tough and ingenious opponents in mostly physical combat. Intrigue Campaigns the emphasis is placed on social interaction and manipulation. Victories are achieved not by defeating the villains in combat but by outmaneuvering them in intrigue. The very concept of "villains" is less clear in an Intrigue Campaign where no one's loyalties can be taken for granted: Intrigue Campaigns sometimes resemble espionage thrillers.

Of course, nothing precludes campaigns mixing elements of action and intrigue. Most good roleplaying campaigns will do so, just as most good thrillers or adventure films do. These categories are not set in stone, but rather serve as helpful guidelines for Gamemasters and Players.

3.5.1

▶ENTERTAINER



Although the physical distances between settlements makes live world-class entertainment a luxury, the widespread availability of high-fidelity multimedia broadcast and reception equipment means that entertainment stars proliferate in the 23rd century. Millions watch nightly entertainment reports and video specials on their favorite stars, and rare live appearances can draw tens of thousands to a settlement.

Most media darlings began small, working local nightclub circuits or producing their own multimedia show for independent release and broadcast. Large system-wide entertainment conglomerates such as *Morning Star Entertainment (Venus)* or *Laguna Films (Jovian Confederation)* hire these artists, signing multi-release deals that cover everything from product endorsement to touring. Those with business savvy can walk away extremely rich, others become underpaid bread-winners for the conglomerate.

Media superstars are widely thought of as spoiled and selfish, especially on the rugged frontier. Those who work day in and day out to ensure their community's survival have little sympathy for the contractual woes of soap opera stars and video personalities. The behavior of brash young stars — often widely reported by the *paparazzi* — does little to help their reputation.

TYPICAL ATTRIBUTES

AGI	0	APP	1	BUI	0	CRE	1	FIT	0
INF	1	KNO	0	PER	0	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Acrobatics	1	0	Etiquette	1	1	Music	2	1	Streetwise	1	1
Dance	2	0	Human Perception	2	0	Seduction	2	1	Theatrics	2	1

Other possible Skills include Business, Computer and Electronics.

EQUIPMENT AND COST

Typical Equipment:	Expensive clothing, jewelry, sunglasses, Entertainment Report magazine, luxury apartment.
Salary:	Millions per year for the top stars. Recognized stars make from 150,000 to 600,000 credits a year.
Basic Costs:	19 Character Points and 27 Skill Points.

◇ACTION CAMPAIGN USES

Not the gritty soldiers or pilots who usually populate these campaigns, entertainers may be in over their heads and need to reach into depths of skill and determination they were unsure they had. Entertainers will also benefit from a suite of interpersonal skills largely absent from the standard action repertoire.

◇INTRIGUE CAMPAIGN USES

Entertainers can be surprisingly resourceful. Well known and (perhaps) respected, they can open doors which would be closed to others. Using the cover of a promotional tour they can visit distant locales and gain access to forbidden areas. Entertainers tend to be underestimated and they can use this prejudice to hide their true motivations.

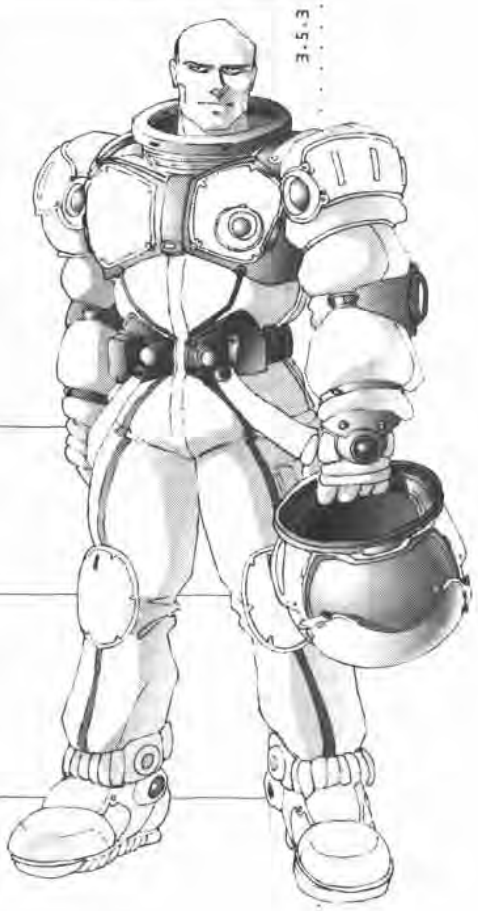
◇POSSIBLE VARIATIONS

Besides the media darling superstar, many different types of entertainers are possible. Washed out has-beens or talented unknowns present plenty of roleplaying potential. The former may be bitter and in need of new venues, whereas the latter will bring energy and determination to the campaign. Skills can also be specialized to one or more forms of entertainment, be it Singing, Dancing (including elevated AGI and FIT), or another art form.

◇POSSIBLE SUBPLOTS

Media stars are often hounded by reporters and fans and must struggle for their privacy. Stalkers are always a threat and each top star has at least one obsessive fan. Although some stars are independent, many fall under the sway of a ruthless manager or promoter who controls their finances and career. The two problems can become one if the star attracts the attention of a multi-billionaire, who may try to gather a menagerie of stars to call his own.

EXPLORER



Despite extensive colonization and resettlement, much of the solar system remains uncharted territory in 2210. The far reaches of the solar system past Jovian space and large parts of the asteroid belt have had few human visitors, and new vistas and discoveries await those brave enough to commit to such journeys.

Corporations, governments, and the Intersettlement Geographic Society all sponsor expeditions which often last years on end. Those chosen for these dangerous and lonely missions are often part scientist, part pioneer, and part prospector. The search for new information is often driven by commercial interests, but some continue to simply search for new data, continuing their work as "pure scientists."

Explorers themselves tend to be a hardy and independent lot. They see settlers as somehow sedentary and even cowardly, unable to take the leap and continue pushing human habitation outward. Some of these researchers argue for an end to human expansionism, while others speak of establishing colonies around even the most remote of the Sun's satellites. Regardless, explorers are treated with respect since they follow in the steps of the folk-heroes of solar system colonization. This is especially true in Jovian space and in the Asteroid Belt.

TYPICAL ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	1	FIT	0
INF	0	KNO	1	PER	0	PSY	0	WIL	1
STR	0	HEA	0	STA	25	UD	3	AD	3

TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Combat Sense	1	0	Earth Sciences	1	1	Navigation (Space)	2	1	Survival	2	1
Communications	1	1	Exo-Pilot	1	0	Space Pilot	2	1	Zero-G Movement	1	0

Other possible Skills include Computer, Demolitions, First Aid, Life Sciences, Gunnery (any), HTH, Small Arms.

EQUIPMENT AND COST

Typical Equipment:	Exo-suit, rugged clothing, tools, astronomical navigation computer, survival gear.
Salary:	40,000 credits per year.
Basic Costs:	19 Character Points and 28 Skill Points.

ACTION CAMPAIGN USES

Exploration teams are often backed by military might, especially when venturing into areas under contention such as newly uncovered mineral-rich asteroids in the Belt. Some also serve as scouts for military forces, piloting modified exo-armors or fighters into contended territory. These rugged individualists make a dynamic addition to military campaigns, injecting a dynamism that is often lacking from simple mission-based adventures.

INTRIGUE CAMPAIGN USES

The discovery of a new cache of valuable resources can result in the growth of a web of intrigue around the prospector. Discovering concealed military installations would only make matters worse. The frontier individualism of an explorer can also make an interesting counterpoint to the veiled and sophisticated world of interplanetary politics and espionage.

POSSIBLE VARIATIONS

Military scouts are the most common variant on the explorer career. These are full-fledged soldiers and answer to a rigid chain of command. Corporate explorers are usually more interested in a rapid bonus for the discovery of a new resource deposit than the proper scientific classification of discoveries. Planetary researchers serve similar functions as their space-faring compatriots, but use ground vehicles and explore dense geography rather than long expanses of emptiness.

POSSIBLE SUBPLOTS

A featureless asteroid might house a concealed surveillance base. The explorers may be trying to deal with the consequences of contracts undertaken for unscrupulous employers. Many are seeking the find that will make them rich or get them in the most prestigious journals. Their self-centered motivations often make explorers easy to manipulate.

▶ EXO PILOT



Exo pilots fly top of the line exo-armors into battle. These humanoid battle machines mimic the pilot's *movements while carrying* large amounts of devastating weaponry. Although fleets of large spaceships remain the backbone of many space navies, flights of exo-armors have become the most well-known expression of military power. Heavily featured in propaganda and recruiting videos, the pilots of these sleek war machines have become the darlings of the media and captured the popular imagination.

Exo pilots are renowned as hotshots and glory hounds, and military trainers often struggle to rein in their enthusiasm. The Jovian Armed Forces are infamous in military circles for unofficially sanctioning the cockiness and lack of discipline of their pilots. Jovian exo-armors are the best in the solar system, and the JAF encourages its pilots to push this advantage to the edge.

CEGA pilots are expected to be exemplary in behavior as a counterpoint to their Jovian rivals. Other armed forces have fewer exo-armors and assign them to skilled veteran pilots, who usually display a disciplined manner learned from years of space time.

TYPICAL ATTRIBUTES

AGI	1	APP	0	BUI	0	CRE	0	FIT	1
INF	0	KNO	0	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	4	AD	3

TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Combat Sense	1	1	Electronic Warfare	1	0	Gunnery (Exo)	2	1	Small Arms	1	1
Communications	1	0	Exo-Pilot	2	1	Navigation (Space)	1	0	Zero-G Movement	1	1

Other possible Skills include Computer, Electronics, Gunnery (Space), Leadership, Melee, Space Pilot, Tactics.

EQUIPMENT AND COST

Typical Equipment:	Flight uniform, sidearm, dress uniform, survival gear, access to military exo-armor.
Salary:	Varies with rank and individual armed forces. Usually 30,000 credits a year and above.
Basic Costs:	19 Character Points and 27 Skill Points

◇ ACTION CAMPAIGN USES

The exo pilot is the archetypal Jovian Chronicles action hero. Piloting top of the line machines into battle, they are the elite warriors of the 23rd century. Any campaign involving space combat can benefit from an exo-pilot Player Character. Even outside their exos, pilots are trained soldiers who know how to handle themselves in a fight.

◇ INTRIGUE CAMPAIGN USES

Although exo pilots are largely thought of as simple fighter jocks, they can just as well fit in to an intrigue campaign. As military officers, they may well be privy to confidential information, making them targets for enemy intelligence. The armed forces of various planets also mask many secrets hidden from the very governments they are sworn to protect. Uncovering such a hidden project could well launch a campaign of military and political intrigue

◇ POSSIBLE VARIATIONS

A rookie pilot fresh from training is a common variation on the typical exo pilot stereotype. These young "greenies" are wide eyed and often seek out dangerous missions for the thrill of it all. Grizzled veterans form a counterpoint to these youngsters. Haunted by ghosts and bearing the stains of their past, these old-timers can bring an air of somber experience to a **Jovian Chronicles** campaign.

◇ POSSIBLE SUBPLOTS

Exo pilots have captured the imagination of much of the solar system, and those who successfully complete a dangerous mission can find themselves becoming propaganda tools. Heroic pilots may soon find their own faces staring down from recruitment posters. Of course, not all pilots feel "heroic. " Many missions are morally dubious at best, and moral remorse may well attract the attention of enemies looking for sympathetic agents.

MEDIC

Military and civilian vessels both suffer accidents or incidental injuries to the crew, and the distances involved in interplanetary travel ensure that a medical hospital is almost certainly very far away. As such, most vessels carry at least some medical personnel aboard, if only a trained medic.



Most ship-board medics are certified by the Solar Cross, the inter-settlement medical and rescue outfight tied to the United Space Nations. Solar Cross training provides basic medical and diagnosis skills, with a heavy emphasis on emergency treatment. Medics also receive secondary training aimed at keeping wounded or ill patients stable for transfer to better medical facilities. Longer periods of study can lead to full medical certification, although individual governments usually oversee this process.

The greatest asset of space-faring medics is their ability to think on their feet. To be a certified ship's medic, the Solar Cross insists on training not only in first aid, but requires an ability to follow instructions and guidelines for critical cases. Medics travel with an extensive database of emergency procedures, enabling them to get detailed instructions even if they are unable to consult with real physicians.

TYPICAL ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	1	FIT	0
INF	0	KNO	1	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Combat Sense	1	1	Dodge	1	0	Life Sciences	2	1	Notice	1	1
Communications	1	1	First Aid	2	1	Medicine	1	1	Survival	2	1
Computer	1	1	Human Perception	1	0						

Other possible Skills include Drive, Space Pilot, Tinker, Zero-G Movement.

EQUIPMENT AND COST

Typical Equipment:	Pressure suit, medical kit, medical scanner, emergency surgery kit, medical database.
Salary:	Ranges from 35,000/year for a space medic, to over 250,000/year for medical specialists.
Basic Costs:	19 Character Points and 27 Skill Points.

ACTION CAMPAIGN USES

Medics are often at the forefront of military action, to patch up pilots and soldiers and send them back to the firezone. As such, medics can easily fit into a military campaign. An action campaign taking place outside the military can nonetheless benefit from the presence of a medic Player Character. Not only will they help patch together the gunslingers in the team, but they also provide a new set of skills and experiences from the standard grunts.

INTRIGUE CAMPAIGN USES

In campaigns filled with espionage and double-crosses, medical personnel can be a powerful asset. The line between medical research and bio-weaponry development can be very thin, and doctors and medics can find themselves crossing into a shadowy world of governmental secrecy without any warning whatsoever. Connections within the Solar Cross can also be a valuable resource, providing a tie into the administration of the United Space Nations.

POSSIBLE VARIATIONS

Full-fledged medical specialists can be interesting PCs, although their skills tend to be entirely focused on their profession. Dedicated members of the Solar Cross who travel in emergency hospital ships also make interesting characters. They will travel from hot spot to hot spot, treating the wounded and surely becoming involved in many critical events.

POSSIBLE SUBPLOTS

Friendship, rivalry and romance between medics can lead to enjoyable roleplaying; relationships with ships' captains, medical officials and patients can create stories and adventures of their own. Combat medics who befriend patients only to see them die in combat can well be led to reexamine their calling.

▶ MERCHANT



There are few , if any, settlements in the solar system that can claim to be completely self-reliant. Resources are distributed throughout the system, so planets may have a surplus of one resource and critical shortages of others. The supply lines of the settlements are navigated by the fleet of merchant vessels (large and small) which ferry people and supplies from Jupiter to Mercury. Many of these vessels bear the seal of the Mercurian Merchant Guild, the ultimate brokers of mercantile trade in the solar system.

The Guild imposes secret strictures on its members, but the merchants who fly its flag remain a varied lot. The merchant captain's creed requires independence and resourcefulness, seeking out the best routes and markets for their supplies. Those who flout the Guild's ways can expect to be blackballed by many legitimate space ports and often become smugglers of contraband.

Merchants usually begin their careers deep in debt, borrowing huge sums to acquire a used cargo vessel. The Guild helps fund these investments, and require a percentage be paid back from revenues. Those who fail to repay their debts will usually have their membership revoked and their vessels confiscated.

◫ TYPICAL ATTRIBUTES

AGI	0	APP	0	SUI	0	CRE	1	FIT	0
INF	1	KNO	1	PER	0	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◫ TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Bureaucracy	1	1	Etiquette	1	1	Haggling	2	1	Security	1	1
Business	2	1	Foreign Language	1	1	Human Perception	1	0	Streetwise	2	1
Camouflage	1	1	Forgery	1	1						

Other possible Skills include Electronic Warfare, Law, Mechanics, Navigation (Space), Space Pilot, Zero-G Movement.

◫ EQUIPMENT AND COST

Typical Equipment:	Merchant's Guild membership papers, sidearm, makeshift uniform, cargo manifest database. Full or part-ownership in a civilian cargo vessel.
Salary:	Salary depends on successful trade. Most income is usually reinvested in the vessel.
Basic Costs:	19 Character Points and 27 Skill Points.

◇ ACTION CAMPAIGN USES

Merchant captains can serve as the backbone for an action campaign. Their vessel serves as an ideal base of operations for system-spanning high-action campaigns. The search for profitable trade routes or the struggle against pirates and other rival traders, make for some very tense moments and exhilarating combats. Merchant vessels may also come under military protection when necessary, which creates an interesting dynamic between crew members and their military guardians.

◇ INTRIGUE CAMPAIGN USES

The diversity and number of merchant vessels traveling across the solar system makes them an ideal cover for covert operations. Most major powers have established so-called merchant vessels that double as intelligence gathering platforms. Others use unknowing merchant ships to transport agents and sensitive materials from planet to planet. Of course, the Guild has intrigues of its own and major factions fight shadow wars, seeking commercial advantage at any price.

◇ POSSIBLE VARIATIONS

These range from the stoic second-in-command to the people who keep outdated fusion engines from giving up the ghost. Many pirates were once merchants, and playing these corsairs of the space ways can also make for an exciting campaign. For campaigns based in a single location, the traders and buyers who purchase from the fleets are available as PCs.

◇ POSSIBLE SUBPLOTS

There are many potential subplots, including the necessity of repaying a debt or meeting a quota, or blacklisting someone who has broken Guild rules. The process of bringing a rogue trader back into the fold can make for a drawn out and interesting subplot, as can a long investigation into illegal activities taking place under the Guild's very eyes.

NOMAD

Perhaps the most rugged people in the solar system, Nomads live in converted asteroids that course around the sun. Ringed by gravity wheels, Nomad planetoids provide a difficult but good life. Each asteroid is normally ruled by a chief and supports a community of a few hundred. Each Nomad works day and night to keep the "tribe" functioning.

Nomads are notoriously hard working, and intolerant of laziness and effete behavior. They play as hard as they toil, and hard-drinking nights off are a common part of their profile. Many Nomads serve tours as workers in other parts of the solar system, bringing their technical skills to the service of large corporations and sending their wages (or purchased supplies) to their clan back home.

Citizens of more sophisticated locales are usually less than tolerant with Nomad informality and raucous behavior, projecting superiority and even contempt in all their encounters. Nomads repay these attitudes by making a game of insulting and making fools of their "sophisticated" employers. Only those who show an ability to do their own work — rather then simply manage others — earn Nomad respect.



TYPICAL ATTRIBUTES

AGI	0	APP	0	BUI	1	CRE	1	FIT	1
INF	0	KNO	0	PER	0	PSY	0	WIL	0
STR	1	HEA	0	STA	30	UD	7	AD	5

TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Combat Sense	1	0	Electronics	2	0	Mechanics	2	0	Survival	1	1
Dodge	1	0	Hand-to-Hand	2	0	Notice	1	0	Zero-G Combat	1	0
Earth Sciences	1	0	Intimidate	1	1	Small Arms	1	0	Zero-G Movement	2	0

Other possible Skills include Business, Computer, Haggling, Space Navigation, Space Pilot, Streetwise.

EQUIPMENT AND COST

Typical Equipment:	Repair tools, pressure suit, primitive firearm.
Salary:	Varies. Most clans use a barter economy. Technical contracts pay 20,000 - 45,000 credits/year.
Basic Costs:	19 Character Points and 29 Skill Points

ACTION CAMPAIGN USES

Nomads are tough as nails and willing to let their fists do the talking if necessary. Although they are rarely disciplined military veterans, they take the safety of their community very seriously and will readily lay down their lives for the clan. Their resourceful nature and expertise in living in low gravity can also make them very valuable in high-action scenarios.

INTRIGUE CAMPAIGN USES

Political intrigue and espionage are not Nomads' stock and trade,. Their political systems tend to be extremely simple and functional. The major corporations and governments which hire Nomads to do their dirty work for them, however, have more then enough lies and cover-ups to go around. Nomads can easily find themselves entwined in these webs when they are hired to prepare an asteroid for a supposedly civilian base that just happens to have docking facilities for exo-armors.

POSSIBLE VARIATIONS

Clan chiefs have the lives of their community in their hands, guiding their small world toward either prosperity or doom. They are surrounded by trusted advisors (often their close relatives) who are sometimes expected to acquire uncharacteristic knowledge. Some chiefs go as far as sending their advisors to be educated in "civilized" areas and hope they will bring back valuable expertise.

POSSIBLE SUBPLOTS

Even Nomads who travel across the solar system for corporate employers will be seriously affected by goings-on in their clan's home. Political upheaval is often violent and relatives of a deposed chief may find themselves exiled from their home. Corporate or governmental attempts to manipulate or take advantage of a Nomad community can also haunt clanners.

▶ OFFICIAL/EXECUTIVE



As the age of isolationism came to an end, government officials and corporate executives have discovered the shuttle lifestyle. While the top leaders of the solar system usually remain on their home worlds, their delegates and ambassadors fan out across the void, operating from modified diplomatic liners.

In this time of dynamic change and increasing tensions, diplomats and business representatives are on the cutting edge of reorganizing the power structure of the solar system. Each decision contributes toward the drive for a new order or the fall toward interplanetary chaos. Many executives pay little heed to these warnings, and seek only new business opportunities for their corporate bosses. Others realize how high the stakes have become and are dedicated to protect their interests in the face of the changes to come.

Although business executives and political officials often find themselves at odds and emphasize the differences between their positions, others see them as almost interchangeable. They dress for success and speak in clean and crisp sentences (often changing smoothly from one language to the other). These elite power-brokers often look down on settlers and Nomads as barbarians and ne'er-do-wells.

TYPICAL ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	0	FIT	0
INF	1	KNO	1	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	LID	3	AD	3

TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Bureaucracy	2	1	Etiquette	1	1	Law	1	1	Notice	1	1
Business	2	1	Human Perception	2	0	Leadership	1	1			

Other possible Skills include Computer, Foreign Language, Haggling, History, Intimidation, Investigation, Law.

EQUIPMENT AND COST

Typical Equipment:	Expensive clothes, personal computer, anti-espionage devices.
Salary:	Typically 60,000/year and above (government officials), and 120,000/above (executives).
Basic Costs:	19 Character Points and 29 Skill Points.

◇ ACTION CAMPAIGN USES

Government officials and top business executives are often targets for piracy, covert operations or shows of force. As a result, they often learn to fight or surround themselves with bodyguards or skilled pilots. In an action-based campaign, executives can often provide the drive for adventure. The objectives of their corporation or government (and the agendas of their enemies) place them in dangerous situations with frightening regularity.

◇ INTRIGUE CAMPAIGN USES

Executives and officials are most at home in intrigue campaigns. They deal in secrets and understandings as their stock and trade, and almost unavoidably will become involved in corporate or political intrigues. All the major powers of the solar system have their fair share of dirty secrets, and uncovering these can easily form the core of a Jovian Chronicles campaign.

◇ POSSIBLE VARIATIONS

Corporate and governmental fiefdoms rarely forgive transgressions, and playing officials exiled from the halls of power can be an interesting variation. These pariahs may escape with very valuable information and insight about the agendas and practices of their former employers. Another option is to play a mole or spy, an official who actually reports to a foreign or competing power. The shadow world of espionage is an excellent campaign backdrop.

◇ POSSIBLE SUBPLOTS

The struggle to strike a difficult deal or arrange for an unlikely treaty can form a recurring subplot for executives and officials. This can lead to efforts to make unlikely contact with those who may sway the other negotiating party. A conflict between personal and political objectives can also be an effective subplot.

REPORTER

The people's right to know and the networks' right to profits regularly send legions of reporters across the solar system in search of the next big story. The major news services maintain offices in most planetary systems, employing staffs that range from a few independent freelancers to full professional teams.

The distances (and transmission lag-time) involved in interplanetary transmission and reporting have changed the format of news coverage. Instant reports (with resulting sound-bites and five second video clips) are feasible only for local reporting. Off world correspondents use a more journalistic format, which presents a longer and more in-depth report, usually every few days.

Although some reporters are still hired only for their looks, they usually end up working only at the broadcast centers. Field correspondents are typically much more resourceful and independent, capable researchers, investigators, video technicians and authors as well as presenters. The long-term offworld assignments common to interplanetary reporting entail that few correspondents can afford to establish lasting personal relationships.



TYPICAL ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	1	FIT	0
INF	1	KNO	0	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Bureaucracy	1	0	Etiquette	1	1	Interrogation	2	1	Notice	1	1
Combat Sense	1	1	Human Perception	1	0	Investigation	2	1	Streetwise	2	1
Communications	1	0									

Other possible Skills include Computer, Electronics, Foreign Language, History.

EQUIPMENT AND COST

Typical Equipment:	Rugged all purpose clothing, portable audio/video equipment, personal computer.
Salary:	Beginners are usually paid 22,000/year; this increases with experience and prestige.
Basic Costs:	19 Character Points and 25 Skill Points.

ACTION CAMPAIGN USES

Reporting from battle scenes is perhaps the quickest route to fame and fortune in the world of the news media. Military maneuvers, pirate raids and civil wars all make for excellent headlines. Experienced reporters learn to think on their feet and keep calm in the line of fire, so they can be a real asset in action adventures.

INTRIGUE CAMPAIGN USES

If combat reporting is the quick road to fame, the most respected is investigative journalism. Uncovering the hidden agendas of the powerful players in the solar system is the stock and trade of a whole class of reporters, and this regularly plunges them into the shadow world of political and corporate intrigues. Investigative journalists can be surprisingly resourceful, using a whole network of hidden contacts to circumvent national security agencies and "follow the money" to the highest levels of authority.

POSSIBLE VARIATIONS

Not all journalists are the same and several other roleplaying opportunities exist beyond traditional hard-news reporters. Scandal sheets and tabloids proliferate on the vid stands of many planets and those who seek out the secrets of the rich and famous make a handsome living. Although many reporters now carry their own equipment, top teams still use camera technicians, and these hidden faces in the news-gathering process can also be interesting to roleplay.

POSSIBLE SUBPLOTS

Most reporters have a pet story they pursue over long years of research. Often this has more to do with their own personal feelings than the "need to know." Such a story — perhaps a probe into the background of a politician — can form a recurring subplot over an entire campaign. The struggle to maintain personal relationship also plagues reporters.

▶ SCIENTIST



In the space stations which house much of humanity, reliance on science and technology is complete. Without the special radiation shields, power plants and recycling systems, very few humans could survive away from Mother Earth. The terraforming of Venus and Mars speak even more loudly of the prestige of scientists in the 23rd century.

Few scientists have the liberty to work on pure science, however. Even those working in academic institutions are under heavy pressure to undertake work with immediate technological applications. In the private and government sectors, the pressures to produce are even stronger. A few mild beacons of theoretical work do exist, but these programs are sidelines at best.

The militarization of science is a major preoccupation for most of the scientific community. Even in relatively open societies like the Jovian Confederation, it seems as if every scientific treatise and discovery is raided by the military for wartime applications. A growing number of scientists feel disgruntled by this appropriation of their work and talks of a peace movement are growing.

▥ TYPICAL ATTRIBUTES

AGI	-1	APP	0	BUI	-1	CRE	1	FIT	0
INF	0	KNO	2	PER	0	PSY	0	WIL	0
STR	0	HEA	0	STA	20	UD	2	AD	2

▥ TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Computer	1	2	Electronics	1	2	Physical Sciences	2	2	Teaching	1	1
Earth Sciences	2	2	Life Sciences	2	2						

Other possible Skills include Bureaucracy, Electronic Design, Foreign Language (Latin), History, Mechanics, Medicine, Tinker.

▥ EQUIPMENT AND COST

Typical Equipment:	Laboratory, high-powered personal workstation.
Salary:	Depends on the employer. Academic salary usually approaches 60,000-100,000 credits a year.
Basic Costs:	19 Character Points and 29 Skill Points.

◇ ACTION CAMPAIGN USES

Scientists are more comfortable in a laboratory than in the heat of action, but there are always exceptions. Most prefer to watch from a safe distance, however. This reluctance can create excellent roleplaying opportunities. Scientists who are quick on their feet may well piece together devices or improvise solutions more effective than any firearm.

◇ INTRIGUE CAMPAIGN USES

Knowledge is power. The major governments and corporations of the solar system are well aware that the end of planetary isolationism is most keenly seen in a accelerating race for new technologies. Cutting edge research is among the most valuable resources in which power brokers deal. As such, scientist become a prime target for intrigue and covert recruitment. Those who can play the game might become magnificently wealthy. Those who cannot may vanish without a trace.

◇ POSSIBLE VARIATIONS

There are many dynamic areas of scientific and technological development in the 23rd century, each calling together special kinds of scientists and engineers. Terraforming retains prestige because of the sheer scale of operations, and attracts many to Venus and Mars to tinker with entire planets. Astrophysics, robotics, artificial intelligence and genetics are all developing fields as well, attracting young hotshots to challenge the positions of veteran thinkers.

◇ POSSIBLE SUBPLOTS

Every scientists is in search of the next frontier of discovery or application. The quest to be the first and the best consumes many and can run through an entire campaign. Rivalries between scientists are common despite empty talk of academic cooperation. The appearance of a sworn enemy on the scene can turn a scientific team's life into turmoil.

SOLDIER/SECURITY OFFICER

Despite doe-eyed predictions of a utopian life among the planets of the solar system, the 23rd century is not a time of universal peace and justice. Skirmishes constantly crop up along the border of warring nations, corporate arcologies are closed against the poor and the opportunistic, and fanatical terrorists seem ready to take innocent lives at every turn. In a world such as this, soldiers, police officers and private security guards are an all-too-common sight.

Soldiers are drawn from every aspect of society, from elite officers of the CEGA Naval Forces to the common grunts of the Martian Federal Army. Soldiers of the 23rd century are trained to be quite independent because of the massive distances involved in interplanetary (or even planet-wide) operations. In most armies, command decisions often leave much room for soldiers' own initiative.

Civilian security officers operate much as they have for hundreds of years, often based in precincts and squads assigned to specific regions or crimes. Smaller stations tend to have marshals or sheriffs who oversee all law enforcement from major crimes to traffic violations.



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TYPICAL ATTRIBUTES

AGI	0	APP	0	BUI	1	CRE	0	FIT	1
INF	0	KNO	0	PER	1	PSY	0	WIL	0
STR	1	HEA	0	STA	30	UD	7	AD	6

TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Athletics	1	1	Hand-to-Hand	2	0	Investigation	1	1	Security	2	0
Combat Sense	1	1	Interrogation	1	0	Melee	1	0	Small Arms	2	0
Dodge	1	0	Intimidate	1	1	Notice	2	1	Streetwise	1	0

Other possible Skills include Camouflage, Exo-Pilot, First Aid, Law, Navigation, Survival, Zero-G (both).

EQUIPMENT AND COST

Typical Equipment:	Sidearm, uniform, patrol vehicle, personal comm gear, flashlight, restraints (security officer); Fatigues, rifle, hand grenades, personal medical kit. (soldier)
Salary:	Varies from 17,000 to 40,000 credits a year.
Basic Costs:	19 Character Points, 29 Skill Points.

ACTION CAMPAIGN USES

Soldiers and police officers are among the building blocks of action adventure campaigns. Whether special forces soldiers or corporate security guards, they have the skills and resources to fight in whatever battles are to come. Soldiers or officers trained in secondary skills such as investigation or scouting can be even more interesting in these situations because they permit a mix of action and subtlety.

INTRIGUE CAMPAIGN USES

Although action is the bread and butter of the soldier and security officer, intrigue campaigns can feature them as well. Police officers and special forces are trained to investigate and can stumble into unusual situations. Special forces soldiers often participate in covert operations and may find themselves cut off by a black operation gone wrong.

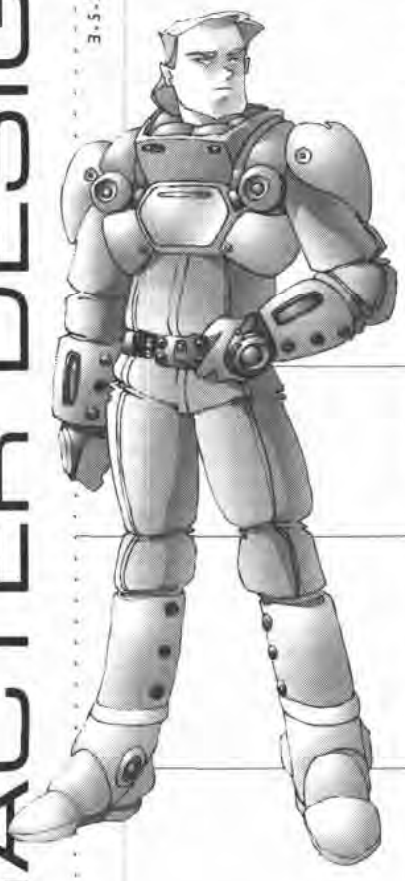
POSSIBLE VARIATIONS

Less concerned with national objectives and legalities, corporate security officers are trained only to defend the interests of their employer. This same dynamic is even purer in the case of bodyguards, who dedicate themselves as human shields and security experts for their charges. Small time police officers, from Nomad sheriffs to beat officers on Earth, can also be interesting to roleplay as they are exposed to the world beyond their limited horizons.

POSSIBLE SUBPLOTS

Soldiers, police officers and security agents are expected to draw a very clear line between themselves and their opponents (be it enemy soldiers or various types of criminals). Many, however, find themselves feeling empathy toward the other side, usually reinforced by a personal connection to an enemy or criminal.

▶ SPACEFIGHTER PILOT



Although not as glamorous as the elite exo-armor pilots, the fighter jocks who pilot fighter air- and spacecraft are a well-respected and daring lot. In planetary combat, air fighters still reign supreme because of exo-armors' lack of lift. In space combat, exos are more versatile. Pilots of space fighters swear by their craft, however, and refuse to bow before the far more expensive exos. In order to compensate for the exo's capabilities, pilots of space fighters have become inveterate hot shots, breaking into daring maneuvers with very little provocation.

Many fighter pilots are failed exo-pilots and hold significant resentment toward the elite corps which excluded them. When off duty, they go out of their way to provoke exo-pilots. Military planners, especially in the JAF, have learned not to place space-fighter pilots and exo-pilots together in close quarters.

Despite these discipline problems, the fighter pilot corps of most armed forces have a very powerful sense of *esprit de corps*. Their very resentment for the more glamorous exo-pilots bonds fighter jocks together, *making them one of the most tight-knit corps in most armed forces.*

◫ TYPICAL ATTRIBUTES

AGI	1	APP	0	BUI	0	CRE	0	FIT	1
INF	0	KNO	0	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◫ TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Aircraft Pilot	1	1	Electronic Warfare	1	0	Navigation (Space)	1	0	Space Pilot	2	0
Combat Sense	1	1	Gunnery (Space)	2	1	Small Arms	1	1	Zero-G Movement	1	1
Communications	1	0									

Other possible Skills include Gunnery (Aircraft), Hand-to-Hand, Leadership, Navigation (Air), Survival, Zero-G Combat.

◫ EQUIPMENT AND COST

Typical Equipment:	Flight suit, sidearm, survival gear.
Salary:	Ranges from 35,000 to 55,000.
Basic Costs:	19 Character Points and 27 Skill Points.

◇ ACTION CAMPAIGN USES

Another staple of the action campaign, fighter pilots are very capable in a space or air battle. Deployed as part of mixed military forces, they can easily fly side by side with exo-pilots, although neither will like it very much. Pirates and smugglers make more use of spacefighters than exos because it is easier to get both the original vehicle and spare parts.

◇ INTRIGUE CAMPAIGN USES

Fighter pilots will likely become involved in intrigue campaigns despite themselves. Not prone to sophisticated political thinking, they can nonetheless be drawn into a web of lies and secrecy. Participating in a secret military operation, witnessing *the use of a new prototype, or raiding a corporate (or diplomatic) vessel can all lead straight into a series of intrigue-*based adventures.

◇ POSSIBLE VARIATIONS

Perhaps the most glamorous of fighter pilots are test pilots. These intrepid souls risk their lives to push the envelope one step further. Although exo test pilots do exist, they are rare. The military often prefers to entrust new designs to experienced and multi-talented pilots drawn originally from the fighter corps. This point of pride is rarely left unsaid when fighter jocks and exo-pilots meet.

◇ POSSIBLE SUBPLOTS

Rivalry with an enemy pilot is always a possibility, especially when rival forces are placed in a cold war situation (such as along the Martian border). *The struggle to have a normal family life in an occupation that often involves months (or even* years) on maneuvers throughout the solar system is another common subplot for fighter pilots.

TECHNICIAN

In the high-tech world of Jovian Chronicles, few can afford to live any great distance from skilled technicians. Sealed environments such as O'Neill cylinders or Jovian stations would not last long without the massive engineering and repair crews that keep them functional. Huge spacecraft and sleek exo-armors are worth nothing to the military if they are constantly awaiting repairs.

Technical and engineering careers are among the most popular in the orbital stations, the nomad asteroids and the Jovian Confederation, where there is an acute appreciation of skilled technical knowledge and a desire to help the community by contributing to the field. Technicians tend to be dynamic and friendly, always ready to try something new or lend a helping hand. Only those who disparage the accomplishment of planetary settlements can expect poor treatment from the average technician.

The combination of social prestige and friendly reputation makes the stereotypical technician into a fatherly figure. Respected by the community around him, he offers wisdom and "paternal" commentary as he goes through life. This stereotype often seems to carry over to military techs.



3-5-13

TYPICAL ATTRIBUTES

AGI	0	APP	0	BUI	0	CRE	2	FIT	0
INF	0	KNO	1	PER	1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

TYPICAL SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Communications	1	1	Electronics	2	1	Mechanics	1	1	Tinker	2	1
Computer	2	1	Electronic Design	1	1	Physical Sciences	1	1			

Other possible Skills include Business, Electronic Warfare, Haggling, Mechanical Design.

EQUIPMENT AND COST

Typical Equipment:	Extensive tool kit, portable computer with design specs, work suit, pressure suit.
Salary:	Varies from 20,000 to 100,000 credits a year.
Basic Costs:	19 Character Points and 28 Skill Points

ACTION CAMPAIGN USES

Any campaign that features a vessel, exo-armors, a space station or any high-technology features greatly benefits from a technician or engineer. Nothing is quite so painful as a critical equipment failure when the only chances of repair are 10,000 kilometers away. Technicians can also modify equipment and tinker together more than one solution to most problems.

INTRIGUE CAMPAIGN USES

Technology is one of the main weapons of espionage and intrigue. From tailored computer viruses to nigh-microscopic listening devices, the technical resources of the major powers are immense. Those who wish to play in the shadow world had best be prepared to fight fire with fire.

POSSIBLE VARIATIONS

Different types of technicians lend themselves to different types of adventures. Computer techs can access the world of computer hacking and information alteration, to become "virtual" spies. Weapons technicians live and breathe in the world of combat, guiding their pet arms to their targets. Engineers and technical designers do more than supervise and utilize technology, they create new configurations and uses, and share much in common with scientists.

POSSIBLE SUBPLOTS

Especially in the military the major constraint on a technician's accomplishment is his access to resources rather than his skill level. The struggle to obtain needed resources and the ensuing battles with bureaucracy and high-command can make for an interesting recurring subplot. The introduction of a new technology, the appearance of a dangerous hacker, or the discovery of a dangerous piece of equipment can also serve as background for Jovian Chronicles stories.

▶MILITARY FORCES OF THE SOLAR SYSTEM

While Humanity may have transcended the boundaries of Earth's orbit, the ugly specter of war still remains. Even though the solar nations were reunited under peaceful circumstances, the first action of many governments was to increase military production and recruitment. The peaceful and secluded Jovians were so well suited to the science of warfare that they created the exo-armor, arguably one of the deadliest and most terrifying war machines ever fashioned. Of course, the other solar nations were quick to imitate them, and the last decades have witnessed a remarkable arms race taking place in the absence of war or even the threat thereof. Exo-weapon technology is now used by every major nation in the solar system. Even CEGA (which is often blamed as the source of the current frenzy of military buildup) is beginning to shift its considerable resources away from its traditional focus on warship construction in order to keep up technologically with its rivals.

The armies raised by the solar nations vary greatly in their purpose, appearance and equipment. Some, like the Venusian Home Defense Force, are elite troops charged with protecting their planet. Others seem to be best suited to invasion and conquest, like the massive armadas of CEGA and the Jovian Confederation. All share an integrated structure that features lots of organic support, a requirement for the highly technological modern armies.

The one common element in these armed forces is the loose command structure. Even the Martian Federated Army (considered rigid by twenty-third century standards) is flexible in comparison with armies of the past centuries. This doctrine springs from a need for every soldier to be able and willing to make important judgments without aid from superiors; on a battlefield where the nearest friendly human may be thousands of kilometers away, the individual soldier's initiative is far more valuable than the presence of an organized hierarchical structure. Standard units which remain in constant communication with their headquarters may follow a more strict doctrine and their loyalty may not be as important, but for those individuals who may pilot multi-million credit vehicles into deep space, flexibility and initiative are of the utmost importance, and their loyalty must be unswerving. It comes as no surprise that space navy pilots go through a tight battery of psychological tests before being accepted.

▼DAY-TO-DAY LIFE

A soldier from a famous army of the past would be horrified to see the relaxed attitude of his modern counterpart. While discipline remains at the core of military life, the modern trooper and pilot are allowed much more leeway in their behavior. Combat groups tend to be smaller and command chains shorter, both leading to an increased level of fraternization between the ranks.

The presence of women in many front line units have wrought even deeper changes in the military structure. Though there have been women warriors in the past, it is unprecedented that some of the modern armies are composed of up to one-third female personnel, in frontline units as well as support positions.

Despite military discipline, human behavior does not change much. Rather than trying to cover it up, like it has done many times in the past, the modern army now accept that there will be the occasional case of "high-level fraternization," or couples falling in love. As long as it does not impair combat operations, such relationships are tolerated. Officers will keep a close eye, though, and any drop in performance, or any disruption of the unit's operations will result in reprimands and reassignment.

One element from military life which has not changed, however, is that of bonding between members of a unit. Through their trials and tribulations, soldiers who go through difficult ordeals form unique ties between each other, and this is something that is encouraged by officers. The best units on the battlefield (or in space) are those composed of soldiers and pilots who care about each other, and will watch each other's back. To that effect, officers in all branches of all armies still encourage a "us-against-them" attitude in enlisted personnel, just to provide their soldiers with extra motivation to stick together. Whenever one man falls, everyone must pick him up — they know he would do the same if the roles were reversed. Whenever one man makes trouble, the whole unit suffers the punishment, not just the individual who caused the problem. It will be the responsibility of the members of his unit to find out who messed up (if no one admitted to it) and to inflict the appropriate punishment if and when the culprit is discovered.

This attitude also extends to the relations between the branches: the space navy mocks the infantry, the air force makes fun of artillery, etc. This rivalry between branches implies that their respective members must back each other in the face of others, an attitude which displays their loyalty to their own group. It is important for everyone to know these ties exist so that in the thick of battle, they know they can count on their teammates.

This strong sense of belonging is extremely rare among civilians. It is perhaps one of the most important motivations behind a soldier's enlistment — after all, not all military people are bloodthirsty killers. Some just do it because they need to belong somewhere.

SAMPLE DECORATIONS ▼

Decorations, medals and other insignias of valor have been a part of military traditions for millenia. The various armed forces that serve and protect the settlements of the solar system each have their own way of honoring the deeds and actions of their members.

HDF: PEGASUS SUN ◇



Also known as *Taiyo no Medaru* (the Sun's Award), the Pegasus Sun is the HDF's highest public honor. Desired by many young HDF soldiers because of its prestige, the award is silently disdained by older troops who know that it is a meaningless one. The *real* honors of the HDF are a closely kept secret.

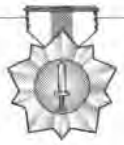
CEGA: CROSS OF ST. GEORGE ◇



The Cross of St. George is an honor bestowed upon CEGA soldiers who have faced immense odds and emerged victorious. Among the public, it has earned the unofficial title of "The Cross of Heroes."

The Cross' name is a reference to the old European story of St. George's battle with a dragon. Recipients of the award have formed an unofficial secret society called "The Dragon Hunters." Although most soldiers who earn a Cross are seasoned veterans, an increasing number of hotshot young exo-armor and fighter pilots in the CEGA military has brought some new blood into the Dragon Hunters.

FRR: STAR OF VALOR ◇



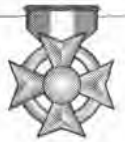
This award is given to Free Republic Rangers who perform heroic deeds while under heavy fire or other adverse conditions. It is one of the highest honors in the Republic, and its bearers are often promoted more quickly than their peers who have not earned the award.

FRR: STARBURST ◇



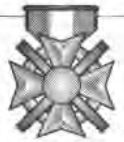
This medal is awarded to Rangers who have served for five years. The medal is upgraded every five years after it is first granted. Since the standard Ranger tour of duty is ten years, many Rangers have one or more upgrades. Officers who do not yet have their Starburst must be very good indeed to have achieved such rank so quickly.

MFA: DEIMOS CROSS ◇



The Deimos Cross is a career-boosting award to denote valor and honor. Free Republic citizens are quick to point out the Greek origins of the medal's name. They refer to it as the "Cross of Terror," noting that most of these medals are given out after riot control and other civil insurgency suppressions.

MFA: DEIMOS CROSS WITH BARS ◇



Where the Deimos Cross is little more than a pretty bauble, the Deimos Cross with Bars is a difficult-to-earn medal of valor. Its recipients must not only demonstrate extraordinary bravery and skill, but must also be model officers with spotless records. This award is highly sought after but seldom achieved; most soldiers are disqualified after their first post-bootcamp drinking binge.

JAF: GOLDEN NOVA ◇



The Golden Nova is awarded to JAF personnel for actions above and beyond the call of duty. Since technicians and other support crew are eligible for this honor, the Golden Nova can be found almost everywhere in the JAF.

Many Golden Novas were awarded in the wake of the Battle of Elysée. Most of these went to pilots who defended the capital during the battle and technicians who braved enemy fire while repairing the sabotage enemy commandos had wreaked upon the station.

JAF: GOLDEN NOVA WITH THUNDERBOLTS ◇



This medal is awarded to soldiers who, in addition to meeting the requirements for the Golden Nova, also prove willing to sacrifice themselves to save the lives of others. It has been awarded only sixteen times since its creation in 2171.

Two of the five people who received this award after the Battle of Elysée are worthy of mention. Lieutenant Carl DeMers endured fatal radiation poisoning and g-forces in order to warn Jovian forces of the attack on the capital, while Lieutenant Madeleine Koudriopoulos was instrumental in defending Elysée from the CEGA fleet (although her use of the nearly invulnerable *Prometheus* prototype in the incident has prompted many to regard her award as nothing more than a morale boost for the general populace).

▼JOVIAN ARMED FORCES

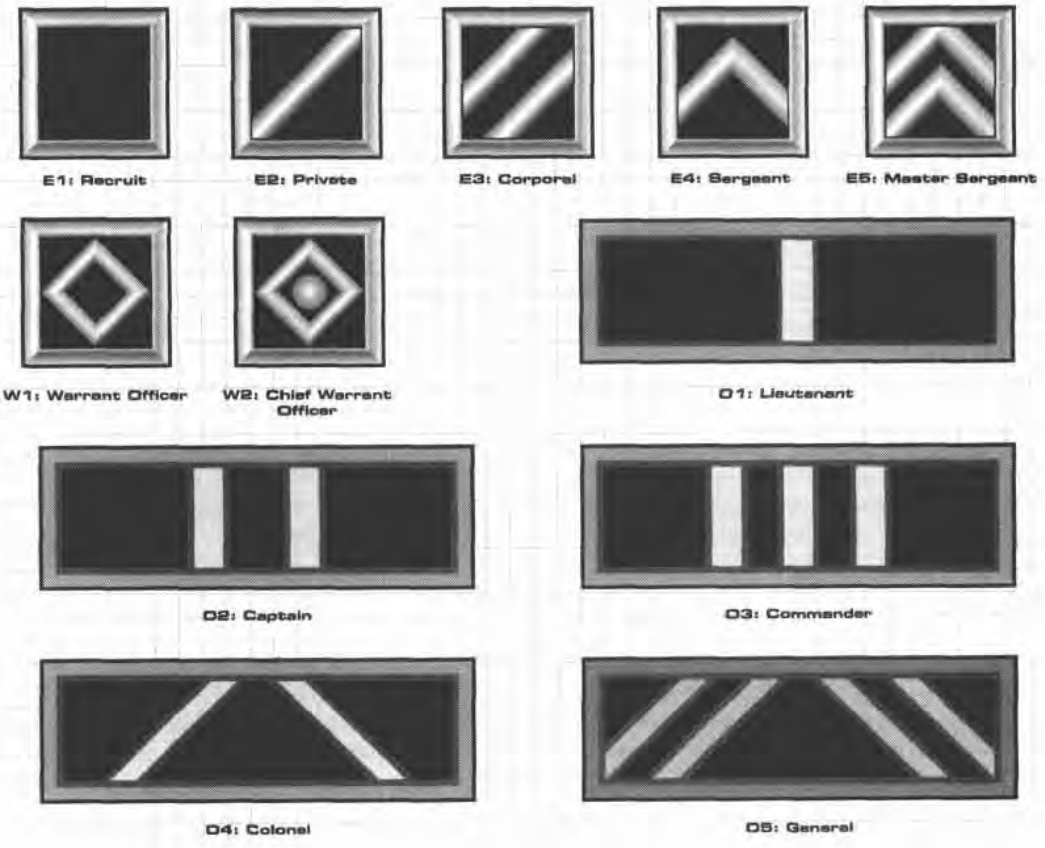
The Jovian Armed Forces are composed entirely of volunteers, a remarkable feat for such a large army. This is attributable to the high patriotism of the average Jovian citizen coupled with the JAF's skilled public relations officers. CEGA, lacking both these qualities, often resorts to compulsory service in order to fill its ranks.

The military is an integral part of Jovian society. Soldiers are permitted great freedom in choosing outside work and the length and time distribution of their tour of duty, making military service a popular choice for young Jovians. The resulting financial aid and the fact that Jovian companies show a preference for applicants with military service also help to increase the pool of applicants for the JAF. Nearly half of all secondary school graduates in the Confederation apply for acceptance into the JAF. Although pacifists in the Confederation regularly protest this heavy focus on military service, they can offer no alternative that will draw so many of the Confederation's best and brightest minds. That such a military is necessary is unarguable, especially in the wake of the Battle of Elysée, which might well have been lost if the Jovian forces had not taken such quick and appropriate action.

The preliminary screening process for the JAF is a grueling test of determination and courage that few of the thousands of annual applicants pass. Those who do manage to be recruited are sent to training camps. Recruits who show exceptional promise are earmarked for Officer Training School, which they attend concurrently with the standard training scheme. Officers take much longer to finish their military education, but end up being a much tougher bunch. Once a soldier's basic training is complete, he or she is assigned to one of the three sub-armies of the JAF. Further training takes place there, since all JAF personnel are cross-trained to some extent to increase their flexibility.

Each sub-army is divided into battlegroups of warships and squadrons of auxiliary craft. The organization of squadrons varies, since the Jovians freely mix exo-armors, conventional spacefighters and exo-suits for increased flexibility. Squadrons are divided into flights of two to ten units. Battlegroups are organized around carriers. Smaller ships are frequently transferred between battlegroups, but stay with their original Division until they are decommissioned or destroyed.

▼JOVIAN ARMED FORCES RANKS



VENUSIAN HOME DEFENSE FORCE (HDF) ▼



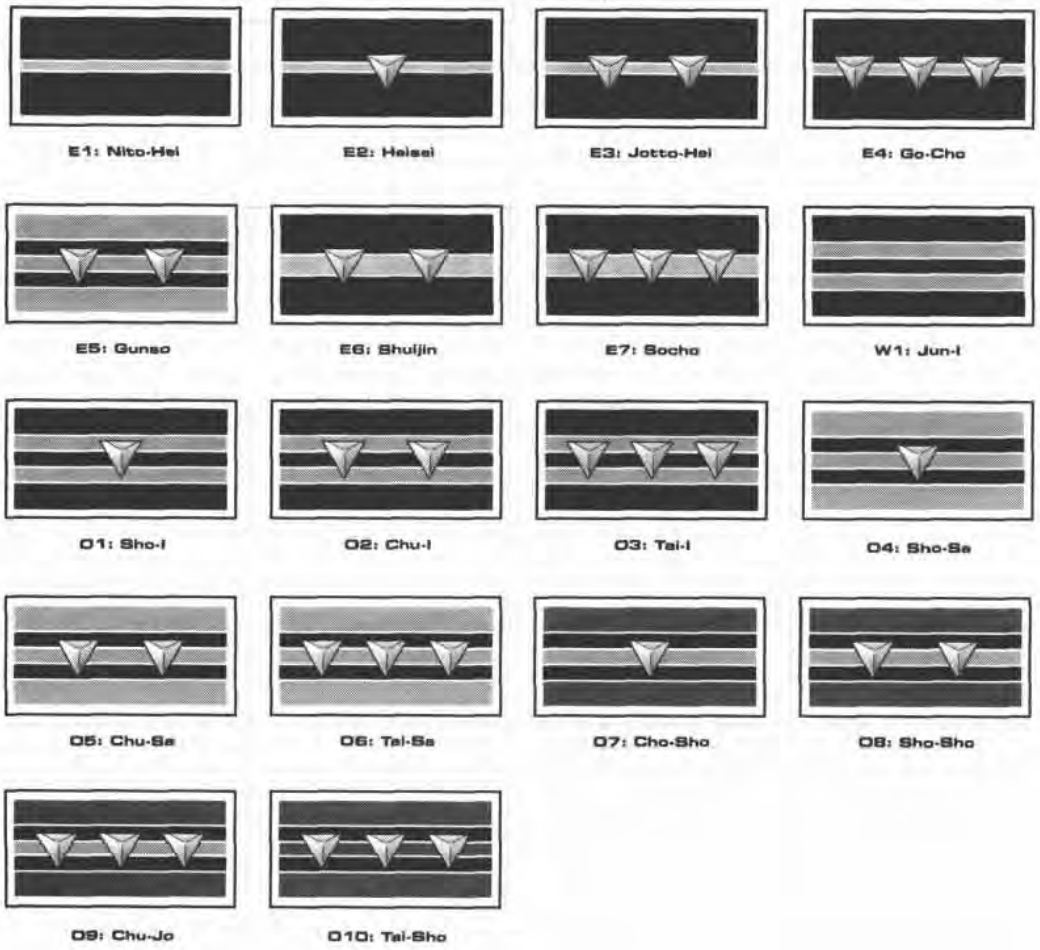
The Venusian military was created by several large Japanese corporations which needed a small security force to patrol their new planet and the surrounding space. The new Home Defense Force was structured much like the Japanese military back on Earth, with the same ranks and language.

Although Venusian culture is no longer dominated by Japanese traditions, nobody saw any good reason to change a perfectly good military organization. The modern Venusian Home Defense Force retains its Japanese flavor, and includes the Japanese ranks and adherence to many honor-related traditions.

Although the HDF is rather small compared to the CEGA or Jovian militaries, it is still a force to be reckoned with. Its troops are very highly trained, and the quality of their equipment is top-notch. Exo-weapon technology is widely used. Several corporations have spent a great deal of money to ensure that Venusian exo-armors are far superior to anything else in the solar system. The true capabilities of Venusian exo-armors are unknown, however, as is the true size of the HDF itself, since the Venusians refuse to allow anyone more than a cursory view of their military.

The standard organization of the Home Defense Force is centered around the Flight, which is composed of four machines of the same type. These can be exo-technology vehicles, conventional spacefighters or armored vehicles (although there are very few of these). Squadrons are made up of three Flights, each commanded by a Tai-I. Squadrons are assigned to a ship or base, and are commanded by Tai-sa. Infantry are often equipped with exo-suits, and are grouped into squads of eight and platoons of twenty-four.

VENUSIAN HOME DEFENSE FORCE RANKS



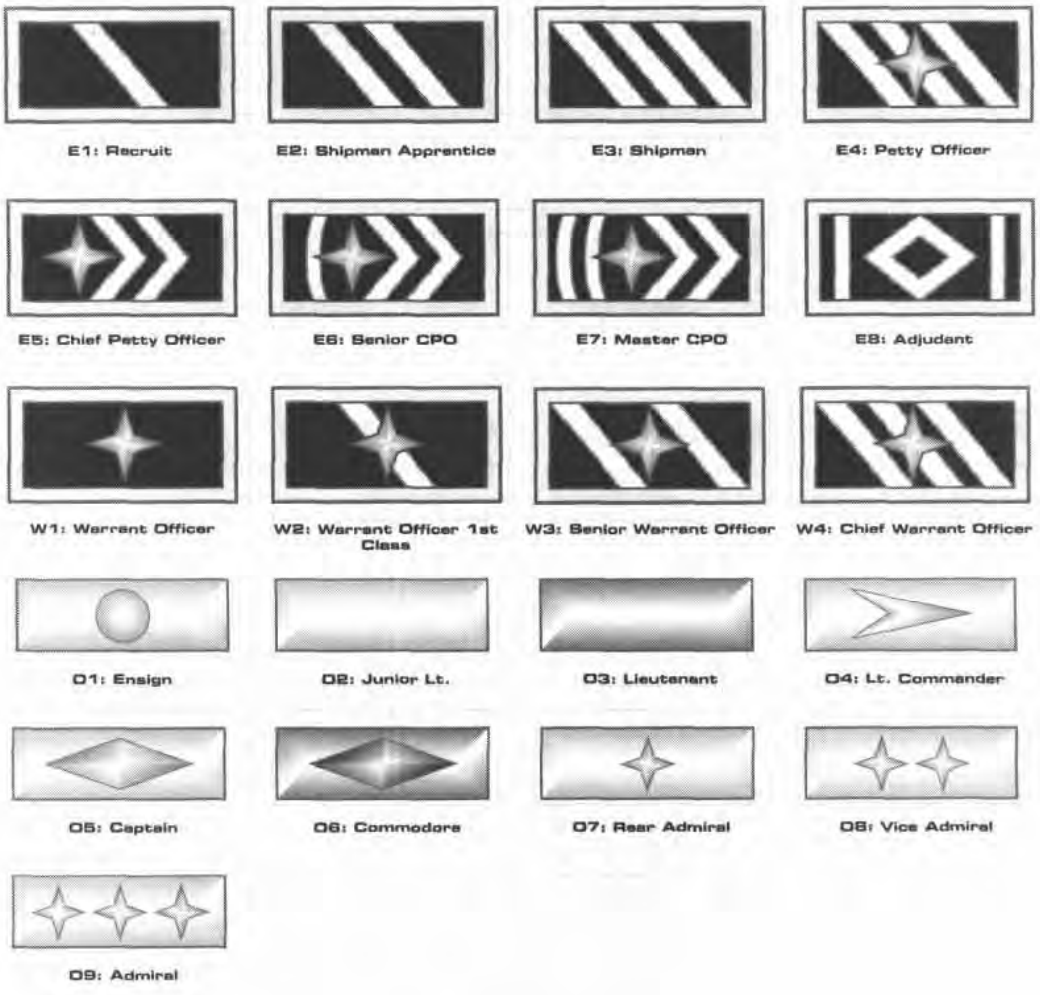
▼CEGA NAVAL FORCES

The Navy is the more powerful of the two parts of CEGA's military forces, both politically and technologically. The Navy has Council-granted priority over the Army, which allows it to requisition any personnel or equipment from the Army without explanation and with very little advance notice. This power is used mostly by obnoxious Navy officers who wish to express their contempt for the "mudkissers," since the Navy is well funded enough to recruit its own personnel and buy whatever equipment it needs.

The Navy's organization is centered around its vessels, since it is meant to be a solar system-wide mobile battle force, although spacefighters and exo-armors also play a major part in the Navy's Table of Organization and Equipment (TO&E). It is divided into six fleets, each of which is independent of the others, with its own support division and administration. Each fleet is commanded by an admiral who directs operations from a *Poseidon*-class battleship-carrier.

Fleets One through Three are escort fleets, with a large complement of fast frigates, destroyers and light carriers. They patrol international space to maintain a visible CEGA presence in the solar system. The remaining three fleets are the main warfleets, to which the Navy's battle carriers and assault ships are assigned. Fleets Four through Six have been assigned to the Earth system since their creation, and are the subject of much foreign observation. Each fleet is home to an ever-increasing number of fighter and exo-armor squadrons, a sign that the Navy is shifting focus away from planetary bombardment and toward neutralization of specific enemy resources. Squadrons are divided into Wings, which are made up of Flights of four to six vehicles.

▼CEGA NAVAL FORCES RANKS



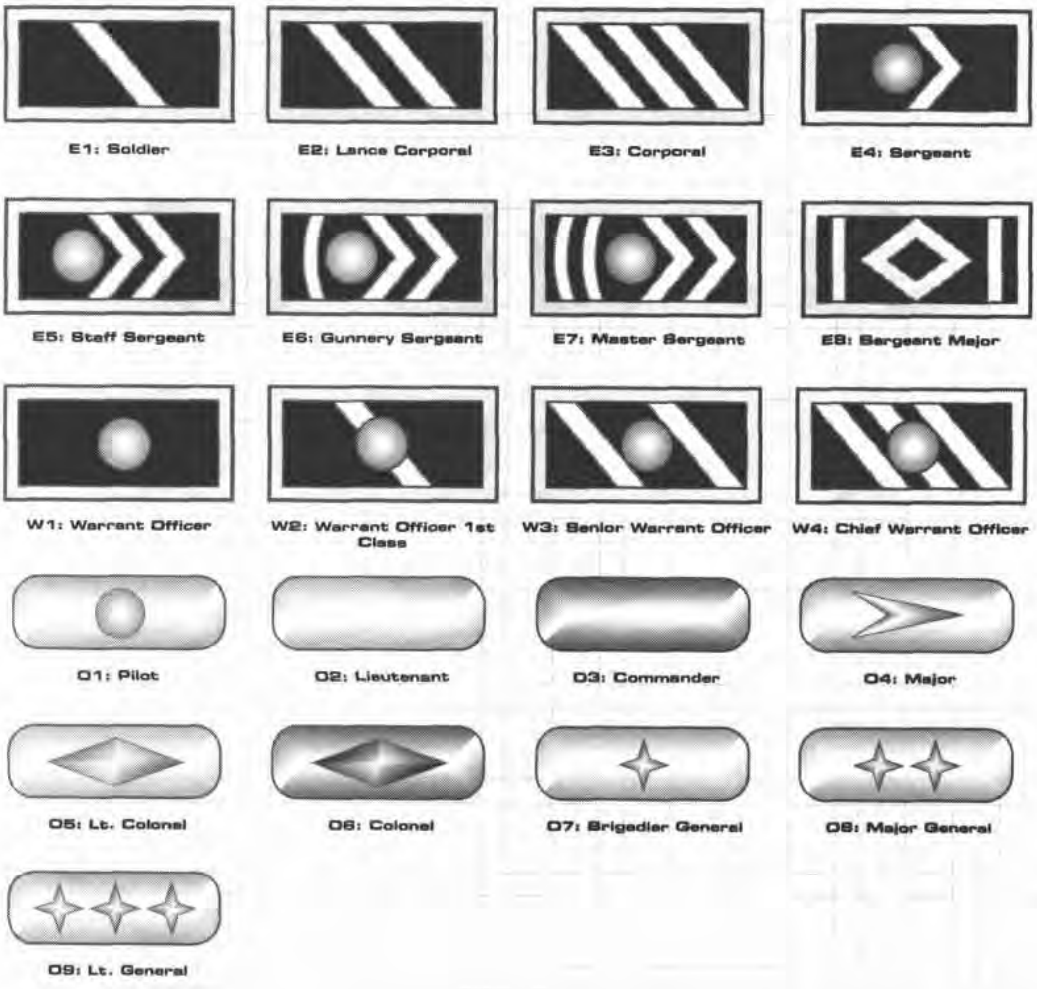
CEGA ARMY ▼

CEGA's Army is the part of the military charged with maintaining peace on Earth (and, should the occasion arise, other planets). It is centered around the regiment, each of which is commanded by a colonel. The base unit of the regiment is the platoon, which always contains units of the same type in order to facilitate maintenance and resupply. Four vehicles or approximately thirty-two men make up a platoon.

The CEGA Air Force and "wet" Navy are branches of the Army. Organization in these two branches somewhat differs from that of the main Army, but is, like the Army's, descended from twentieth-century Euro-American military doctrine. Squadrons are used in the Air Force, while the wet Navy is divided into carrier battlegroups and task forces. The availability of orbital surveillance assets and fast deployement sub-orbital transports have greatly reduced the usefulness of the wet Navy, leaving it to perform mostly logistic support and minor peacekeeping operations.

Because of the Army's paucity of funding, and the Earth's incomparably varied terrain, the Army makes use of outdated equipment that it would rather scrap. New vehicles using exo-technology are added to the conventional aircraft, ground vehicles and naval vessels which were the Army's staples at its time of creation. Almost all of the Army's exo-armors are modified versions of the Navy's *Wyvern*, but the CEGA Council has recently approved the development of smaller, more agile models for use only on Earth. This decision is in response to the Council's unwillingness to use orbital bombardment to coerce the Independent States to join CEGA, leaving the Army to find a less environmentally damaging (but equally grandiose) method of subduing the states.

CEGA ARMY RANKS



▼MARTIAN FREE REPUBLIC RANGERS

Due to the Free Republic's small population and the enormous amount of territory its military is expected to defend, the Rangers are smaller, better trained and more loosely organized than any other army in the solar system. Mobility and stealth are most important to the Rangers, so their use of small exo-suits and fast ground-effect hovertanks is quite extensive (although their token space force does use exo-armors). Their overall approach to strategy heavily emphasizes hit-and-run tactics and guerrilla-style warfare. In the face of the Martian Federated Army's superior manpower and equipment, the Rangers must plan to hit the enemy below the belt, or risk not living long enough to hit at all.

Training is, by necessity, of the "get down and dirty" philosophy, by which new recruits are taught their trade in the field. The Rangers care little for parade maneuvers and spit-and-polish, so boot camp is purely a combat-training experience. Training is often multidisciplinary and spread out over several years; the average tour of duty for a Ranger is ten years (about five Martian years).

Grueling exams are given every few months, testing everything from cryptography to emergency survival in the deep desert. There is very little idle time for Rangers; any spare time is expected to be spent training. This brutal lifestyle is vital to the security of the Republic, since every Republic soldier must be worth ten Federation soldiers on the battlefield.

Personnel with the ranks O1 through O3 are rarely referred to by their actual ranks. They prefer to use the "Marshal" rank instead, so that enemies will not know the actual rank of the officer they are addressing. Because of this, the Marshals are the most publicly recognized figures in the Rangers. They often serve as garrison commanders. Their large numbers are accounted for by all the higher ranks which also refer to themselves as Marshals, a convention that confuses everyone but the officers themselves.

There are only seven colonels in the Free Republic Rangers. They are the highest-ranking officers in the Rangers, reporting directly to the Secretary of Defense. Each colonel commands a Division of Rangers and can operate independently of the others, ensuring maximum flexibility. All seven are seasoned troops who regularly spend time in the field alongside their fellow soldiers. One of the colonels is in charge of the space-based forces, while the rest direct operations on Mars' surface.

◘MARTIAN FREE REPUBLIC RANGERS RANKS



E1: Home Guard



E2: Deputy Sheriff



E3: Sheriff



E4: Deputy Marshal



E5: Marshal



O1: Ranger



O2: Dragoon



O3: Dragoon Captain



O4: Colonel

MARTIAN FEDERAL ARMY ▼



True to the government Otto Kurtz helped create, the Federated Army is very structured and disciplined. Ranks are extremely important and the chain of command is absolutely respected, both in peace time and on the field. This blind adherence to outdated tradition is paid for in flexibility on the modern battlefield; Free Republic forces often run circles around Federated Army troops that are waiting for orders.

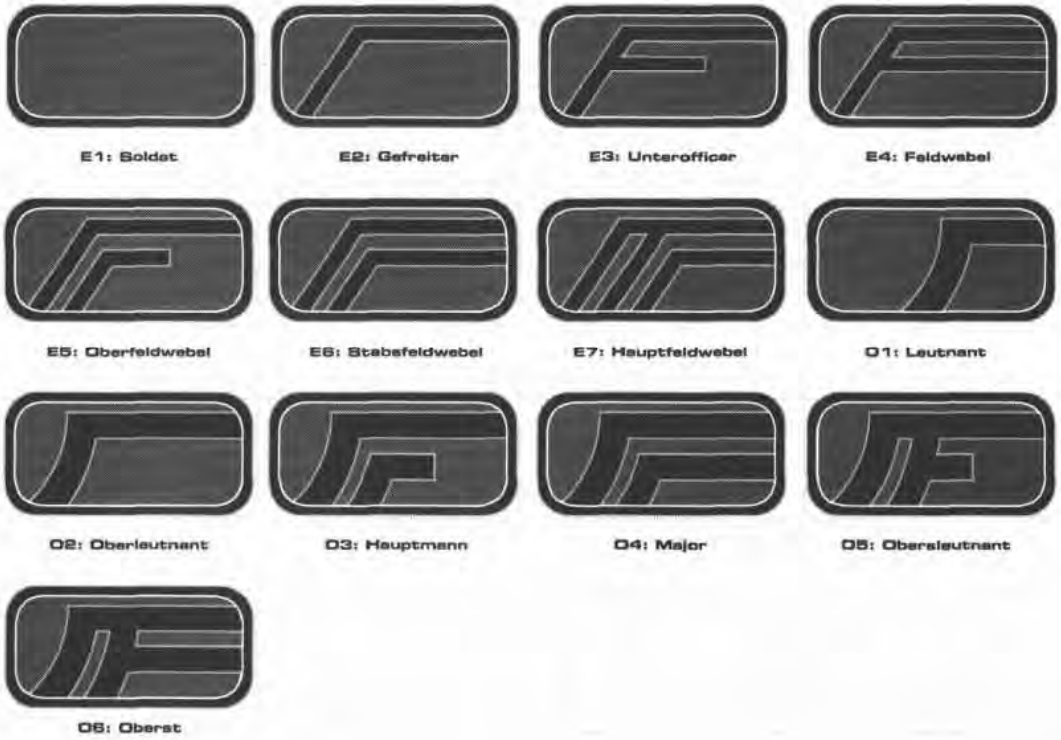
General Kurtz' German heritage shows through in the structure of his Army. The ranks and terminology are all from the German army of twenty-first-century Earth. The orderliness imposed by the structure is well in keeping with the continued rigidity of Federation society and is happily accepted by Kurtz' successors.

The Army is based on a basic five-man unit called a grupen, which is commanded by a Gefreiter or an Unterofficer. Five grupen form an Obergrupen, under the command of an Oberfeldwebel. He is assisted by an Hauptfeldwebel for both administrative and command duties. The Hauptfeldwebel is the rough equivalent of a Sergeant in the United States Army of the twentieth century. Tough and hardened by years of grunt combat, they often serve as drill officers at Army training camps. They are career noncommissioned officers who are feared and respected by the trainees they command. On the battlefield, higher-ranking officers have been known to defer (unofficially, of course) to a Hauptfeldwebel's experience and combat savvy.

Exo-armors and other vehicles are also assigned to grupen, although they are then commanded by an Oberleutnant. Each grupen is assigned a unit number that does not change throughout its existence. The prefix "Sturm" (for exo-armors), "Blitz" (for conventional and aerospace fighters) or "Panzer" (for armored ground vehicles) is added after the unit's number for a more exact description. For example, the 23rd Sturm Grupen is an exo-armor unit. The Federation small space navy is a separate entity from the Army.

Grupen are normally assigned to a garrison pool, ware stationed at one of the major Federation bases or settlements. They are reassigned to combat divisions as needed for the duration of a campaign. This fluid structure somewhat compensates for the rigid hierarchy of the army. Each grupen has its own symbol, worn by all its members and painted on all its vehicles. The soldiers take great pride in the appearance and reputation of their grupen. To help boost morale, minor cosmetic changes to the paint scheme of a grupen's vehicles (like the addition of eyes or shark jaws) are permitted. This provides a creative outlet for the otherwise repressed Federation soldiery.

MARTIAN FEDERAL ARMY RANKS



▶ ADVANCED RULES

Chapter Five contains numerous advanced rules that covers specific situations that may occurs during Jovian Chronicles campaigns. The chapter is divided into four parts. The first one deals with rules that are directly related to the characters, such as zero-gravity movement or disease rules. They are more detailed than called for by most gamemasters, but should prove useful if the characters' lives suddenly hinge on a crucial detail (such as the rate of pressure loss in their cabin).

The second section covers vehicles and their applications. It supplies rules and guidelines for special maneuvers and applications as varied as acrobatic maneuvers to fuel skimming. Like the advanced character rules, their use is entirely optional and subject to the approval of the rest of the playing group.

The third section offers guidelines on how to use the various terrains and environments of the Solar System in your campaign. This is a much more detailed complement to the *Terrain Effects* section on page 144 of the rulebook. Although prepared with the vehicle comabt rules in mind, the terrain effects described there can also be used for roleplaying purposes.

Finally, the last section explains how to abstract human beings when a large number of them are involved, either for crowd scenes, infantry assaults or boarding actions. The game statistics for a sample assault pod, used for boarding operations, are supplied at the end of the chapter.




8

▶ ADVANCED ROLEPLAYING RULES

5-1

The following texts introduce detailed rules about situations that will affect the characters' lives in important ways. These are new or more detailed versions of the basic rules found in the rulebook and should be used only when additional detail is required to avoid slowing down gameplay. They should only be used in specific situations since they bring additional (and, in most cases, unnecessary) bookkeeping.

▼ ADDICTION RULES

5-1-1

The main negative side effect of drugs (recreational or medical) is the dependency it often creates in frequent users. This dependency can greatly affect one's quality of life, social relationship and health. It also makes for great drama. The medical field divides drug addictions in two broad categories: psychological *dependence* and physiological *addiction*. For the sake of simplicity, these rules use the terms "dependence" and "addiction" to represent the psychological and physiological aspects of drug addiction, respectively.

A *little disclaimer*: these rules are for use in realistic roleplaying simulations. The use of recreational drugs by *Players* is **not** condoned in any way! Please do not reality-check these rules...

◇ DEPENDENCE

Dependency exists when a character is compelled to take a drug to satisfy a mental or emotional craving for the drug. The user is addicted to the pleasurable effects of the drug, even though the intensity of effect may have waned since it was first consumed due to drug tolerance development. Most recreational drugs eventually create psychological dependence, hallucinogens being a notable exception.

While primarily psychological, *dependency is not necessarily easier* to get rid of than physiological addiction, for it is often more insidious, based on regular habit and social conditions (peer pressure, etc.). In the case of legal drugs (i.e. alcohol, tobacco, etc.), recovery can be particularly difficult since social influences can make the addiction more acceptable.

Whenever the dependent character is presented with an opportunity to take the drug, he must make a WIL roll against the Dependence Value of the drug in order to pass up without taking penalties. If the character fails, he can still pass up, but the mental stress will give him a general action penalty, the severity of which depends on the Margin of Failure on the WIL roll. For a Margin of 1 to 4, the penalty is -1; 5 to 9, -2; and for 10 or more, the penalty is -3. Treat a Fumble as a failure of 10+. The penalty decreases by 1 for each hour, though the craving will remain: if the drug is once again presented, the character must make another roll, and so on.

If, in going cold turkey, a character consecutively succeeds a number of WIL rolls equal to the drug's Dependence Value, he can consider himself partially cured from the addiction: he gets a +3 bonus for all subsequent WIL rolls, *until* he fails. Failure means the character has fallen back into the habit, and must start the detoxification process again. Treat a Fumble as a *temporary* relapse: the character goes on a binge, then makes a WIL roll afterwards; a failure on this roll means the character has become dependent again, otherwise he still keeps his +3 bonus.

True liberation from psychological *dependence is left to the GM's discretion*, though we suggest at least a full year of abstinence before a character is totally free from the drug.

◇ ADDICTION

In contrast to psychological dependence, addiction (physiological dependence) is said to exist when one must continue to use the drug in order to avoid *withdrawal illness*, a series of physiological disorders caused by cutting the addict's regular drug intake. Addiction is a frequent problem with sedatives and some euphoriants, such as alcohol. It is also a problem (usually to a lesser degree) with some stimulants and analgesics. Drugs that cause physiological addiction usually create psychological dependence, though not always (as in some medical drugs).

The severity and nature of withdrawal symptoms varies from drug to drug. For simplicity's sake, we've grouped them under one umbrella, but feel free to describe slightly different effects depending on the character's drug of choice. Withdrawal from sedatives and euphoriants can cause *tremors, fever, convulsion, vomiting, cramps, diarrhea* and severe pain; going cold turkey on stimulants might provoke excess fatigue, disorientation, pathological irritability and severe depression.

Whenever a character misses a daily dose, he must make a HEA roll vs. the drug's Addiction Value. On a successful roll, the character experiences few side effects, but must roll again the next day, and so on, until he's consecutively succeeded in a number of rolls equal to the drug's Addiction Value. In such a case, he is no longer considered as "addicted" to the drug, though he can still be "dependent" on it, as per the rules on psychological dependence, above.

In the case of a failure, a MoF between 1 an 4 will give a corresponding penalty (-1 to -4) on all the character's rolls, as he suffers from the shakes, fever, nausea, etc. The penalty decreases by 1 for each day of rest. These symptoms disappear if the drug is taken, although this resets the withdrawal period. A Margin of Failure of 5 to 8 incapacitates the character for a number of days equal to the MoF minus 4. After that treat as if the character had obtained a MoF of 4.

◊ ADDICTION CONTINUED

A failure by 9 or more (or a Fumble) causes life-threatening bouts of fever or convulsions for a number of days equal to the MoF minus 8 (or 1 day for a Fumble). The character has a 1 in 6 chance of dying every day, 1 in 3 if not under medical attention. After this, treat as if character had failed by a Margin of 8.

In any case, a character who survives his attempt at cold turkey gains a +1 bonus in resisting the further effects of withdrawal. This bonus is cumulative, so repeated withdrawal attempts will usually free the character from physiological addiction (but not psychological dependence — that's another story).

BECOMING DEPENDENT ◊

These rules do not cover the process by which a character becomes addicted to a drug — the details of which greatly vary from drug to drug and from person to person. Most of all, this system deals with the constraints on characters already dependent on a drug. A few guidelines are provided for GMs who want to introduce addiction in a campaign.

A drug's description should give the relative addiction's "onset time" (called interval), from a few doses to a few years of continual use (intervals are given separately for dependence and addiction). The interval is rarely fixed, normally varying by a factor of one to two (GM's discretion). "Continual use" means usage at least once a day, every day, in quantities large enough to cause intoxication; "occasional use" means usage at least once a week, in quantities large enough to cause intoxication.

The interval is accompanied by a threshold against which the character must make a PSY or HEA roll (depending on the kind of addiction). The roll should be made periodically, every time the interval comes up. Failure means the character is dependent/addicted. For obvious reasons, Fatal Toxins do not have addictive qualities.

MEDICALLY ASSISTED WITHDRAWAL ◊

Medical institutions can help characters suffering from withdrawal by giving them a bonus of +1 to +4 (depending on the technology level of the world and institution) on the HEA rolls, as well as making sure that a patient will have better chance of surviving the severe withdrawal illness.

Counselling groups, psychological treatment and the like can help characters get rid of dependence, but the highest bonus they can usually provide is +2, and that's with constant therapeutic attention.

SAMPLE DRUGS ◊

Alcohol: Sedative/Euphoric/Analgesic; Potency 6; Onset Time 15 minutes; Dependence Value 5; Dependence Interval 2-4 weeks continual use, 2-4 years occasional use; PSY Threshold 3; Addiction Value 8; Addiction Interval 3-6 weeks continual use, 3-6 years occasional use; HEA Threshold 3.

PCP: Hallucinogen/Stimulant/Analgesic; Potency 12; Onset Time 30 minutes; Dependence Value 3; Dependence Interval 5 to 10 uses; PSY Threshold 3; Addiction Value 7; Addiction Interval 10 to 20 uses; HEA Threshold 5.

Cannabis: Euphoric; Potency 6; Onset Time 2 minutes; Dependence Value 4; Dependence Interval 3-6 weeks continual use, 2-4 years occasional use; PSY Threshold 4.

Barbiturates: Sedative/Euphoric; Potency 10; Onset Time 20 minutes; Dependence Value 6; Dependence Interval 1-2 weeks continual use, 4-8 months occasional use; PSY Threshold 5; Addiction Value 7; Addiction Interval 2-4 weeks continual use, 4-8 months occasional use; HEA Threshold 7.

DRUG ADDICTION EXAMPLE ◊

A soldier stationed in one of the most boring military stations in the Belt, Al spends most of his time playing cards with his pals while popping barbiturates. He does this every week, so the Gamemaster decides that after 6 months he must make both PSY and HEA rolls, vs. thresholds of 5 and 7, respectively. He fails both rolls and becomes dependent and addicted.

Realizing that he has a problem (his superiors are becoming suspicious), Al tries to reduce his habit. The next card game, he refuses to take the drug. He must make a WIL roll (he has a WIL of +1) against the Dependence Value, 6. He succeeds, and suffers no action penalty. If he keeps on refusing offers and successfully makes his roll 6 times in a row, he will receive a +3 bonus to all further WIL roll for resisting the effects of psychological dependence.

Before he can achieve that, though, he must check for the physiological effects of drug withdrawal and make a HEA roll against the drug's Addiction Value of 7. He rolls a 4 and misses by 3. Al becomes seriously ill (-3 to all his actions), which tips off his superior officers. After he has spent a few days in the infirmary, they confront him with his addiction. He agrees to go into detox. The sick bay is adequately equipped to deal with drug addiction and gives a +2 bonus for HEA rolls and a +1 bonus to PSY rolls. If Al can survive his cold turkey he will not have any more physiological need for barbiturates, though the psychological risk may linger for a few months.

▼ATMOSPHERE

The contents and pressure of the artificial atmosphere are crucial in space — if either is improperly monitored and controlled, people can and will die. Obviously, lack of oxygen is detrimental to the continuation of human life. There can be several causes to oxygen deficiency: an excess of carbon dioxide in the atmoshpere, defective air reserve or decompression. If the air supply is compromised, characters suffer while their bodies try to make do with insuficient resources.

◇OXYGEN

If the atmosphere degrades due to lack of clean air, characters will suffer from physical and mental penalties. Penalties start ten minutes after fresh oxygen is last supplied. Characters receive a -1 penalty to all mental Attributes (CRE, INF, KNO, PER, PSY, WIL) because their concentration decreases due to lack of oxygen. All mental Attributes drop at a rate of -1 per two minutes. All characters in the location must make a Fitness roll against a Threshold of four to avoid unconsciousness, with the mental Attribute penalty as a modifier. In Cinematic campaigns, the Player can chose to use WIL if it is higher than FIT.

Twenty minutes after fresh oxygen is last introduced, the character automatically loses consciousness. A random mental Attribute drops by one every turn. If any of them reaches -5, the character dies.

This rule assumes a normal oxygen content of 20%. If the oxygen content of the air is higher or lower, the durations are multiplied accordingly (e.g. twice as much oxygen means Attributes drop every four minutes instead of every two).

◇PRESSURE

A loss of pressure means that although the atmosphere has the proper oxygen content, there is not enough of it or not enough pressure to force the oxygen into the bloodstream. Loss of pressure can come from several sources, from a faulty regulator to a leak or hole in the hull of the spacecraft.

The Atmosphere Loss table shows the average amount of time it takes for the pressure to completely degrade in a given location. At each stage of decompression (three-quarter pressure, half, quarter) all characters in the location must make a Fitness roll to avoid unconsciousness, with a penalty of -1 to the roll for each level of degradation. They also suffer from the effect of lack of oxygen (-1 to all Mental Attributes per stage). If the pressure drops a quarter normal or less, the character suffers the same effects as if there were no oxygen, according to the *Oxygen* section.

◇LOSING PRESSURE

There are two ways to lose pressure: slowly, through a leak, and all at once, through explosive decompression. The latter is much more dangerous since the body does not have time to adjust and often reacts very badly (see *Exposure to Vacuum*). Otherwise, the effects described in the *Pressure* paragraph above happens.

The table below gives Armor ratings and volumes for typical locations; these can be modified by the Gamemaster by up to 50% depending on his requirements. The Armor rating shows how many damage points the walls have. This is listed in Personal Damage Scale (see page 126 of the rulebook). Doors generally have lighter effective Armor because of their opening mechanisms, and structural bulkheads are much tougher. If the damage exceeds the Armor, a one-centimeter hole is made (for simplicity, assume the hole is roughly square). The dimension increases by one centimeter for every additional time the Armor is exceeded by (for example, 35 points of damage, applied to an Armor 10 wall, will cause a 3 centimeters wide hole, or 9 cm²). If desired by the Gamemaster, these rules can also apply to spacecraft and spacesuits.

◘PRESSURIZED AREA INFORMATION

Location	Wall Armor	Door Armor	Bulkhead Armor	Volume (m³)
Airlock	15	15	20	20
Room	15	10	25	200
Hangar	20	20	40	5000
Colony	500	350	1000	4×10^{11}
► Atmosphere Loss				
Hole Size/Location	**Airlock**	**Room**	**Hangar**	**Colony**
Leak-Sized (1 cm²)	1 day	4 days	12 days	300 years
Fist-Sized (100 cm²)	2 turns	8 turns	24 turns	100 years
Man-Sized (1 m²)	1 turn	4 turns	12 turns	20 years
Vehicle-Sized (100 m²)	Instant	2 turns	8 turns	1 day
Ship-Sized (1000 m²)	Instant	Instant	1 turn	1 hour

Hole is the approximate size of the air evacuation duct or hole;

Location is the approximate comparative volume of the pressurized area.

EXPOSURE TO VACUUM ◇

Contrary to popular belief, exposure to vacuum does not kill instantly. An unprotected human can survive up to three minutes before his brain dies from oxygen starvation, though there are some severe side effects from other sources. First, the lack of pressure on the body will cause any internal gases to try and escape. Capillaries close to the skin will burst, resulting in one giant bruise across the entire body (one automatic Flesh wound per minute). If the person tries to hold his breath, severe damage will result to the lung and inner body membranes (automatic Deep Wound). If possible, it is better to try and hyperventilate to charge the blood with oxygen, then exhale as vacuum is entered.

The second major side effect comes from the temperature. Space is cold, except where a celestial body can provide heat. In the case of the solar system, this would be the Sun. A person exposed to vacuum will thus be roasted on the Sun-facing side while freezing on the other. In general, burns will be the least of a survivor's worries, but a Flesh wound is generally the result of more than one minute of direct space exposure.

For game purposes, a character can remain conscious for a number of 6-second turns equal to twelve plus his Fitness Attribute. In Cinematic campaigns, the Player can add the character's WIL to his FIT. After this period is elapsed, the character automatically loses consciousness. A random mental Attribute drops by one every turn. If any of them reaches -5, the character dies.

DISEASES ▼

5.1.3

There are very few parasites and harmful microorganisms in space habitats. Strict custom and quarantine procedures make sure that incoming visitors or new settlers do not bring in any unwanted companions. Unfortunately, quarantines are not 100% effective. Should these procedures fail, it is possible (but expensive) to sterilize whole habitat by simply evacuating the habitants and concentrating solar rays upon it to heat it up. Even in the twenty-third century, diseases are still Mankind's lot.

Diseases and illnesses are rated by contagiousness, onset time, virulence and effect. The contagiousness of an illness is the threshold number of a Health test that must be rolled when the character comes into contact with it. This roll can be modified by the GM to represent good or poor hygienic conditions (usually between -3 and +3). A successful roll means that the character does not contract the illness. A failed roll indicates that the character contracts the illness. The amount that the character fails the contagion roll by is added to the illness' virulence for that character. A fumbled contagion roll results in the character contracting the illness at double the normal virulence. The onset time of an illness is similar to the onset time of a toxin. It represents the longest incubation period for the illness. The actual time until the effect of the illness occurs is equal to the onset time divided by the Margin of Failure of the contagion Health test. Fumbled contagion tests produce an onset time equal to one tenth the normal value.

Once a character contracts an illness and the onset time has expired, he must make a second standard Health test against a target number equal to the illness' virulence rating. Keep in mind that the virulence rating is augmented by the amount that the contagion test failed by (double for fumbles). A successful Health test indicates that the character rides out the illness with minimal effects. A failed Health test indicates dangerous complications. A fumbled Health test is often fatal (Gamemaster's discretion). Each illness description should document the effects of all three results.

GRAVITY ▼

5.1.4

What is casually refered to as gravity is in fact a constant acceleration applied to the body by the gravitational field of a large mass. There is no practical difference between the acceleration provided by a gravity field and other types of accelerations, as demonstrated by the famous "elevator experiment" (refer to any basic physics textbook). Gravity is easily simulated in space by firing thrusters or rotating a living section, thereby creating centrifuge acceleration.

The following rules apply to zero-gee conditions, which should more accurately be called free fall. Indeed, all objects in the solar system are subject to the gravitic pull of the Sun, and only the orbital speed prevents them from falling on the surface of the star. Everything is, in effect, perpetually falling.

SPACE ADAPTATION SYNDROME (SAS) ◇

The first astronauts reported the presence of a strange kind of sickness that affected them when they reached orbit. They would feel sick and nauseous, with any sudden motion making all other symptoms worse. It was soon discovered that more than half of the people going into space would suffer from what was termed the Space Adaptation Syndrome: the inability of the body to conciliate the various sensory signals received. There is no way to predict who will be affected and for how long, though certain exercises and chemical compounds have been developped to help the transition.

When the character first enter micro-gravity conditions, two die should be rolled. If he has received either motion training or drugs, add a +1 to the die roll (+2 if both are used). On a five or more, the character is completely immune to the SAS effects. Otherwise, the character suffers from an action penalty equal to five minus the roll of the dice. A HEA roll versus five is made at the end of every day to see if the character recovers. Once recovered, the character is fine and gains a +1 to further SAS rolls. A few people are incapable of adapting and are perpetually ill in free fall (see *Character Flaw*, page 27).

◇ MOVING IN LOW GRAVITY

Movement under low gravity conditions (between 1 and 0.1 gee) is similar to standard movement. The exception is, obviously, that the person will be able to take much greater leaps and will have a harder time controlling the direction of the movement due to the reduced traction. A penalty of -1 is applied to all movement-related Agility tests. Movement rates are divided by the local gravity (in gee). Falling damage is multiplied by the local gravity (in gee).

Thus, an average person (FIT 0, no Athletic Skill) would be able to jog up to (12 ÷ 0.16 =) 75 meters per round on the Moon, though he would do so in great bounding leaps and would have trouble controlling his direction. Should he fall, though, he would receive only one sixth of the normal falling damage.

◇ MOVEMENT IN FREE FALL

Moving in space is a totally different experience than moving under gravity. Mass in space keep their inertia at all times, meaning that no effort need be expended to move except when changing direction or velocity. Inertia also has unfortunate side effects, such as the impossibility to change direction in mid-air.

The speed that can be reached by a person is directly related to the strength. The stronger the person, the greater the initial impulsion can be. Obviously, characters can chose to move slower, if so wished. If pushing objects, or carrying them, multiply speed by basic body mass, then divide by new mass. One must not forget that action equals reaction of equal value: if someone pushes off another person, both will float away, not just the one who gets pushed.

◫ FREE FALL MOVEMENT SPEED

- Maximum Speed (m/s) = square root of (M_{STR} x 4)/M_{BLD}]
- M_{STR} is the maximum mass lifted by the character in one gee (see rulebook, p.67).
- M_{BLD} is the character's body mass (see rulebook, p.64).

◇ COLLISIONS

Collisions are the main danger in micro-gravity movement. Since there is no way to change direction or velocity without some kind of reaction, unexperienced freefallers often collide with objects in their path, powerless to prevent the collision. This can result in bruises and even broken bones. In the most extreme cases, collisions can kill.

Two dice are rolled and the result multiplied by the speed, in meter/second, of impact. This is the damage taken by the individual. If the floating person was purposefully launched in a manner that would cause him to impact head first, add ten to the die roll. A conscious person may attempt to soften the reception. To do so, the character must roll a Zero-G Movement Skill test. The number rolled is subtracted from the speed for the purpose of damage calculations. If the number rolled is equal to or greater than the actual speed, the person "lands" unharmed. If the roll fumbles, the person hits head first and takes the extra damage associated (+10 to the die roll). If the character does not manage to land, he will rebound from the collision and float away — assume half his pre-collision speed for simplicity.

Base damage assumes that a moderately solid surface will be impacted. Unusually hard surfaces, such as armor, can double the effective speed for damage and rebound speed purposes. Soft surfaces such as rubber halve the effective speed. Special crash pads or nets can divide the collision speed by up to ten to twenty times (Gamemaster's decision).

◇ COMBAT

Personal combat in space is mostly of the hand-to-hand type. The limited confines of many habitats mean there is little room to use ranged weapons. Moreover, the extreme danger caused by strait shots hitting the life supporting bulkheads and recycling systems is too great to ignore.

Ranged weapon fire is possible, though the recoil must be taken into account by the user. For this reason, nearly recoiless weaponry such as gyroguns and lasers are prefered. Many weapons have recoil and will push back the user at a certain velocity unless he is braced. In space combat, an acceleration equal to 0.01 g (0.1 MP) is applied *opposite* the firing direction per point of Damage Multiplier (to translate this into meter/second speed, simply divide the MP value by ten — a good enough approximation).

Close combat should use the normal rules, except that any hit will cause the combatants to fly apart unless they are braced. Use the above rules to calculate kickback speeds, remembering that both comabtants are pushed in opposite directions.

◇ GRAVITY AND HEALTH

Zero and micro-gravity conditions cause a variety of health problems. The human body has been designed to function under gravity, and while removing it does confer some short-term benefit, complications will occur in the long run.

▷ GRAVITY AND HEALTH CONTINUED

Bone decalcification, whereas the calcium literally "oozes" out of the skeleton, occurs after a few weeks of zero-gravity. Certain compounds have been developped to help fix calcium into the bones to alleviate the problem. Taken with calcium supplements, they are generally enough to take care of the problem. Since the compounds are mass produced, the cost is negligible and they are available practically anywhere.

Loss of muscle tone is a more common and serious problem. Regular exercise sessions and visits to the centrifuge are recommended to prevent it. Electrical stimulators are also available; these are often used by Nomads or other spacefarers who generally don't have the time or the living space for a complete exercise regimen. If this is not taken care of, health problems can occur and the person will soon be incapable of tolerating acceleration or visiting other worlds.

In game terms, one point of FIT is lost on the first month spent without exercising. Another is lost after two months, another at four months, and so on, doubling the interval every time. At least two hours per day of vigorous exercises are required to avoid this effect, increasing by one hour every three months spent in free fall until it reaches a maximum of six hours per day. One point of BLD is lost per two points of FIT, and both HEA and STR are recalculated to take any losses into account.

MICROGRAVITY PROCEDURES AND CUSTOMS ◇

The physical requirements and limitations of the free-fall environment have forced the adoption of a set of specific procedures designed to facilitate and safeguard the lives of people living in space. Most of them are fairly simple and have long since been incorporated into space-borne cultures.

One of the oldest rules is that loose liquid, crumbs and smoke are unwelcome in free fall. These float into the air conditioning system and foul it up, and can make breathing difficult or even hazardous as loose particles are absorbed into the lungs. Hair should be worn short or attached. Loose clothes or jewelry can become entangled and so are normally shunned. Pockets, belts and Velcro straps are popular for attaching all sort of stuff. There are few nudity taboos, especially in the Nomad settlements, but it is considered rude to go about undressed elsewhere than in one own's personal quarters.

All corridors are normally lined with two strips of bright colors, usually blue and red, with arrows on them. Traffic should attempt to remain nearby the strip indicating their direction. All markings, such as shipboard indications, warning labels, etc. are usually marked twice, 180 degrees from one another. They can thus be easily read regardless of orientation. Each compartment generally also bear its volume and rad shielding factor on the wall near the doors and hatches.

People are normally encouraged to keep one hand on a handrail or other fixed object at all time, or else be tethered. Remember that the vector can't be changed without pushing against something. Large gestures are discouraged in space. Flailing around might send you flying off, or you might hurt a passing fellow spacer. Regardless of the location, ship, hangar, station, etc., people on duty, such as crewmembers, have right of way in corridors and access shafts. They may need to get somewhere fast to respond to an emergency.

RADIATION ▼

5.1.5

If only for the nearest star, every character is constantly subjected to subatomic bombardment — radiation — though temporary and permanent damage is rare. Such circumstances usually involve nuclear power (reactors, plants, bombs) or space travel (cosmic rays, solar flares, etc.). The results are usually pretty ugly, even though it often takes a few days or weeks before the silent killer completes its work.

Like the rest of the game system, the radiation rules are a compromise between simplicity and realism; some scientific accuracy has been set aside to make them more playable. This was especially necessary in dealing with such an insidious ailment as radiation poisoning, whose effects on the human body are more complex than the average gamer cares to include in his game.

RADS ◇

One rad (Roentgen Absorbed Dose) is the effect of one roentgen — the standard unit for measuring radiation — on a living organism. Absorbed rads are cumulative: a tally of the character's current irradiation level must be kept. These rads are included in effect calculation until they are eliminated by the organism, which can take quite some time. Every week, a character can purge a number of rads equal to the amount given by a Health roll, as long as he was not further exposed to radiation during that period. A character can never fully purge them out and will always retain a number of rads equal to one-tenth the largest number ever accumulated.

The table on the following page gives sample rad contamination values from various sources. The values are either absolute numbers, for one-shot radiation bursts, or rates, for prolonged exposure. Some sources have unpredictable radiation emissions and thus have a randomly determined rad contamination value. Where 1d6 is indicated, roll one die and multiply by the given value. Where 1d3 is indicated, follow the same procedure but divide the die result in half, rounding up.

SAMPLE RADIATION LEVELS

Radiation Source	Radiation Level
1-kiloton air burst at 1 km	100 rads
1-megaton air burst at 2 km	6,000 rads
1-megaton air burst at 10 km	500 rads
1-megaton air burst at 25 km	100 rads
Neutron bomb air burst at 3 km	500 rads
Fallout at ground zero, 1-megaton ground burst:	
after 1 hour	1d6 rads/minute
after 2 hours	1d3 rads/minute
after 6 hours	1d6 x 5 rads/hour
after 1 day	1d6 rads/hour
Nuclear Reactor Meltdown	1d6 x 10 rads/minute
Solar Flare	1d6 x 5 rads/minute
Background Cosmic Rays	1d6 x 0.001 rads/hour

◇ PROTECTIVE EQUIPMENT

Lead and NBC suits protect against radiation and radioactive fallout. Anti-radiation suits are given a Radiation Shielding Factor (RSF) in rads/hour. This amount is subtracted from individual bursts or from hourly rad rates for prolonged exposure. This value is divided by 60 to get the protection in rad per minute.

Protection can also be derived from a large mass, which will absorb most of the energy of the radiation. Water is one of the best radiation shield there is, but other inert material, such as rock, also provide respectable protection if there is enough of it. Non-shielded vehicles provide a basic amount of protection equal to their Armor rating squared, in millirads (0.001 rad) per minute. Buildings, constructs and large natural objects follow the same formula, but double their Structure points before squaring (see the table below for the amount of Structure points per thickness).

In addition, many vehicles are equipped with screen generators, devices that absorb or deflect incoming radiation. This is noted as the Perk HEP: Radiation in their statistics. The rad protection level, in rads/hour, is equal to ten to the power of the rating of the system (e.g., a rating 3 system would give 10^3 rads/hour of protection). In addition, all spacecraft with this Perk (regardless of the Rating) automatically get one or more "storm shelters" designed to protect the crew from radiation too strong even for the screen generators. The crew may not do anything while in the storm shelter, however.

RADIATION PROTECTION

Type	Radiation Shielding Factor (RSF)
NBC Suit	5 rads/hour
Flight Suit	0.1 rads/hour
Space Suit	5 rads/hour
Rad Suit	10 rads/hour
Personal Screen Generator (require a space suit)	1000 rads/hour
Heavy Screen Generator (require a space suit, -1 Encumbrance)	10,000 rads/hour
Water (one centimeter)	Equivalent to 25 points of Structure
Rock (one centimeter)	Equivalent to 15 points of Structure
Metal (one centimeter)*	Equivalent to 15 points of Structure

*Powerful radiations cause secondary cascade effects in metal if the thickness of the shielding is insufficent. If the total RSF is lower than half the incoming radiation, it is ignored and the radiation level is doubled.

◇ RADIATION EFFECTS

The first time a character's accumulated rads exceed 50, or at any time the character receives at least 1 rad thereafter, secretly roll his or her Health against a threshold set by the Irradiation Table, below. Do not roll more than once a day and do not apply more than one effect at a time (pick the worst). The Gamemaster should not tell the player the result of the roll, but rather describe the symptoms as they manifest themselves.

If the character succeeds the roll, he is totally unaffected by the radiation, though his level of accumulated rads stays the same. Failed rolls have a variety of effects, as detailed below. On a fumbled roll, apply the corresponding Fumble effect as dictated by the table, *then* the normal failure effects. Make a further Health roll in the case of a fumble: the result gives the number of minutes before the effect takes place.

IRRADIATION TABLE

Rads	Threshold	Fumble Effect
50-99	6	None
100-199	7	Flesh Wound
200-299	8	Flesh Wound
300-399	9	Flesh Wound
400-499	10	Flesh Wound
500-599	11	Deep Wound
600-699	12	Deep Wound
700-799	13	Deep Wound
800-899	14	Deep Wound
900-999	15	Deep+Flesh wounds
1000-1099	16	Deep+Flesh wounds
1100+	17	death

The values on this table are higher than most studies have shown. This was done to both increase character survivability and take into account the fact that some parts of the body may escape irradiation, thus lowering the overall effects.

SHORT-TERM EFFECTS ◇

A roll failed by 1 to 4 produces mild radiation sickness. Symptoms will appear in a number of hours equal to the result of a Health roll by the character. He will be fatigued and nauseous, incurring a action penalty equal to the Margin of Failure. Reduce the penalty by one every 12 hours. There are no other short and medium term effects, though later complications are possible; see *Long Term Effects* section below for more details.

A Margin of Failure between 5 and 7 will have effects similar to those of a mild radiation illness, described above, with a penalty of -4. Secondary symptoms will appear after a number of days equal to the character's Health roll: lingering fatigue, muscle pain, loss of hair. The character will be at -1 to all activity, except Health rolls which are at -2. The character must make a daily Health roll vs. 4 to recover from the sickness. Success means that the character completely recovers in 10 days, minus his or her System Shock rating (minimum of one day). A fumble will inflict a Flesh Wound on the character.

A Margin of Failure of 8 or 9 is similar to one between 5 and 7, described above, except that the secondary symptoms are more severe. The general action penalty is -2, -3 for Health rolls. A failure on the daily recovery roll will inflict a Flesh Wound, a Deep Wound in the case of a fumble.

A roll failed by 10 to 14 gives results similar to those detailed above, but graver still: the action penalty is -3, -4 for Health rolls. A failed recovery roll delivers a Deep Wound, while a fumble means that the character succumbed to the radiation. On a successful result roll again, with no penalties this time: a second success means that the character miraculously recovered, as explained above.

A roll failed 15 or more kills the character in a number of hours equal to a Health roll.

LONG TERM EFFECTS ◇

The effects of radiation on human DNA are very subtle and it can take years before the full effects manifest themselves. People who have been subjected to large doses of radiation are more prone to develop cancers and other troubles in their later years. Other unpleasant legacies of radiation effects, such as sterility or offspring mutations, are left to the Gamemaster to use as plot devices.

To simulate the long term effects, the GM may decide to have a character who suffered from radiation sickness make a yearly Health roll against half the highest Margin of Failure he ever had in resisting the effects of radiation, rounded up. Failure means that the character has contracted a life-threatening cancer — which may or may not be detectable and treatable, depending on the timeframe and the style of the campaign.

TREATING RADIATION SICKNESS ◇

Depending on the campaign's level of scientific development, it may or may not be possible to treat characters suffering from radiation poisoning. If treatment is available, it will probably come in two steps: recovery from the sickness proper, and accelerated purging of accumulated rads. Depending on the technology, a +1 to +4 bonus can be added on the recovery roll, and the purging rate may be multiplied by a factor of 2 to 8. If the character receives regular check-ups, the recovery bonus is applied for Long-Term Effects' Health rolls. Once again, depending on the location, the treatment may range from relatively cheap and commonly available to extremely expensive and rare.

▶ ADVANCED TACTICAL RULES

5.2

The following optional rules provide additional environments and strategies to the tactical game. Many of them are special case rules that apply only to some specific situations. Though they will slow down play a little, they can put new life into an old scenario by modifying overall parameters and circumstances. Some, or all of them may be used if (and only if) all of the Players agree to use them before the game.

▼ AIRCRAFT MANEUVERS

5.2.1

Aircraft can perform a variety of special maneuvers and operations due to the nature of their movement system. Obviously, aircraft and atmospheric maneuvers only work on worlds with a tangible atmosphere: Earth, Mars, Venus and Titan (gas giants have atmosphere, but no ground on which to land). Drop durations and altitude losses, where applicable, should be multiplied by the local gravitation, in gee (round up). The following rules apply to flying vehicles of all types.

◇ AEROBATICS

Rolls: an aircraft rolls when it rotate along its main axis. Rolling does not affect movement *per se*, but gives a +1 bonus to evade enemy fire and a -1 penalty for attacks. Its difficulty threshold is 4; on a failure roll on the Aircraft Control Loss Table. Rolling requires one action.

Loops: there are two kinds of Loops: a Full Loop and a Half Loop. In a Full Loop, the craft more or less ends the maneuver where it started, keeping relatively the same heading (an inverted Loop is the same as a regular Loop, but done in the direction of the ground). In a Half Loop, the craft keeps on going straight at the top of the Loop (or the bottom, for an inverted Loop). All Loops require one (half-loop) or two (full loop) actions. A pilot who fails his check must roll on the Aircraft Control Loss Table, adding 1 for a Half Loop, 2 for a Full Loop and 3 for any kind of inverted Loop.

The tightness of the Loop depends on how many Movement Points the Player spends. The minimum number of MPs is set by the turn radius times six; the difficulty of the maneuver is equal to the turn radius +1 (minimum 3; lighter-than-air craft cannot perform loopings). The movement ends in the same hex it started from, or any of the surrounding hexes. The craft can end up at the same altitude level or one above/below.

A Half Loop is similar, though the minimum number of MP is the turn radius times three. The threshold is the same as for a Full Loop. The craft ends its movement in either the hex it started from or any surrounding hex. Heading is changed by 180 degrees, and altitude must be increased (or decreased, for inverted Loops) by an amount equal to at least the turn radius times one and a half, up to twice the turn radius.

◇ AIRDROPPING

A variety of cargo can be dropped with parachutes from any height between 250 to 10,000 meters (altitude levels 2 to 40) from aircraft with speeds no greater than 20. After landing, vehicles are operational in a number of rounds equal to twice their Size (but equal to just the Size for vehicles with Walker movement). For each two levels of altitude dropped, the landing site is displaced one hex per level of Wind Force (see *Winds*, page 90), in the windward direction.

Cargo can also be dropped using a procedure known as Very Low Altitude Extraction, in which the delivery vehicle flies at altitude level 1 and simply drops the cargo from its rear ramp. The cargo is yanked away by a "drogue" chute, which slows it down and somewhat lessens the impact. The aircraft's flying speed must not exceed 8, and the Size of the dropped cargo cannot be greater than 10.

Infantry units can be equipped with paragliders and trained in the Parachuting Skill (see page 70 of the Rulebook). Maximum drop speed and height are the same as for cargo. A paratrooper unit can choose to land anywhere within an area whose radius is equal to the aircraft's altitude level. A Parachuting Skill test vs. one-half of the altitude level (round up, maximum 9) is required to land in the precise hex; otherwise, the Margin of Failure indicates how far the trooper(s) landed from their intended target, in ground hexes. The time required for the drop is half the sum of the altitude levels dropped and the number of hexes between the drop hex and the landing hex, in 30-second rounds. It takes one round for a landed paratrooper to get ready, and one more to meet with his squad.

No parachuting is done with a Wind Force greater than 2; a Wind Force of 2 will doom the paratrooper to certain death on a fumble. A Wind Force of 1 will halve the distance to the landing point if upwind and double it downwind. On the fore side of the wind, it is reduced by 1/3, while the aft side is unchanged. With a Wind Force of 2, the distance, if upwind, is reduced to zero; it is tripled if downwind. The fore sidewind distance would be reduced by 2/3, while the aft one would be halved.

◇ AIRLIFTING

Some VTOL vehicles have the Airlift Capable Perk, which enables them to pick up personnel and equipment without ever having to land. The vehicle must remain stationary over the hex where the person/items to be picked up are situated; every two rounds, the vehicle can pick up one infantry squad or one single vehicle.

FUEL SKIMMING ◇

Fuel skimming is a maneuver where a scoop-equipped vehicle plunges through a planetary atmosphere and use its speed to force gases into its holding tanks. Fuel skimming is a relatively complex maneuver, with a Piloting roll versus a Threshold of 4. If failed, the vehicle takes on only 1d6 x 10% of the intended load. A fumble damages the scoop.

Game-wise, the retractable scoop is a Tool Arm that cannot punch. Its Size rating is cross-referenced with the Size-to-Mass table (page 132 of the rulebook) to determine how many tons of gases can be scooped up per turn. These are sent to a dedicated cargo bay, taking up a volume equal to one cubic meter per ton of mass. The raw gases can be delivered to a processing facility or processed onboard. It takes one hour to process a number of cubic meters equal to twice the vehicle's Size. Each cubic meter of raw gases yield 0.1 cubic meter of usable fuel.

FIRESTARTING ▼

5.2.2

Incendiary weapons can be used to start fires. To ignite a hex, a total of 100 points of Intensity must be fired into it. No attack roll is necessary. Persistant Incendiaries add their Intensity times two. Once the hex is ignited, it is considered to be a fire of Intensity 10. At the end of every combat round thereafter, its Intensity is increased by one until it reaches 20. Once it reaches 20, every adjoining hex ignites as an Intensity 10 fire. Fire will only spread to the hexes that are downwind.

Vehicles crossing a burning hex must pass a Piloting Skill test versus a Threshold equal to one-half of the hex's Intensity. If the pilot fails the roll, treat the result as an Incendiary attack versus the vehicle with a Margin of Success equal to the Margin of Failure of the Piloting Skill test. Treat fumbles as if the Incendiary attack's Margin of Success is equal to the test Threshold.

Only Woodlands and Jungle hexes can be ignited. Alternately, Rough and Clear terrains can be grasslands or scrub and thus can be ignited. Sand, Swamp and Water hexes cannot ignite for obvious reasons. A scenario might cover them with oil or a similar flamable substance and thus allow them to be ignited.

HULL-DOWN POSITIONS ▼

5.2.3

Hull-down refers to a battlefield position where only the weapons are exposed to enemy fire, the hull itself being protected by a natural or man-made obstacle. This reduces the chances of being hit while not impeding the attacker's own fire. Aircraft cannot use Hull-Down positions, VTOLs (with Stall Speed of zero) excepted. Infantry is assumed to always look for "hull-down" positions, hence their natural -2 modifier. They may not claim any damage reduction from "hull-down" positions.

Because of the large ground scale, it is not always possible to exactly place a unit behind a land feature since these are not readily apparent on the map. Instead, a somewhat abstract system is used: by spending MPs, a vehicle can entrench itself behind hard cover almost anywhere. It is assumed that there are suitable terrain features in the hex. The MP cost (see *Hull-Down Table*, below) represents the fact that the unit must move out of its way, find suitable cover, slow down and park itself into the hull-down position. Some terrain types offer less defensive positions than others, and this is reflected in the MP cost. "Covers" shows what is hidden behind the obstacle when the vehicle is in position with weapons at the ready (the numbers listed in the table refer to the System Damage table). The vehicle can also hide completely, covering all locations but unable to fire anything but indirect fire weaponry.

The attack is made normally; if a hidden system is rolled on the System Damage Table, the obstacle absorbs part of the damage first. "Protection" gives the amount of damage points subtracted from the attack. If the damage is reduced to zero, there is no further effect on the target vehicle. To prevent unnecessary bookkeeping, the protection afforded by the cover remains constant and does not ablate under fire. Aimed attacks are not possible against hull-down vehicles.

HULL-DOWN TABLE ◫

Terrain Type	MP Cost	Covers	Protection
Clear	n/a	n/a	none
Rough, Woodland	+2	2 to 4	15
Sand, Moon Dust	+3	3 to 4	10
Jungle	+1	2 to 6	20
Swamp	+1	2 to 6	10
Water, Liquid Gases*	+3	2 to 6	5
Snow, Frozen Gases	+2	2 to 4	5
Ice	+3	2 to 4	10
Urban	+2	2 to 6	15
Dense Urban	+1	2 to 6	20
Elevation change**	+1	2 to 6	15

* These only produces hull-down effects if the vehicle is capable of immersing itself completely (it must have the Submarine movement type).

**It is assumed that the vehicle is located at the edge of the elevation level.

▼REMOTE CONTROL

5.2.4

Remote controlled vehicles are referred to as "drones." The remote control equipment is actually a software modification of the Autopilot Perk. Instead of responding to its internal programming, the Autopilot receives its instructions through the communication system and sends back environmental data gathered by its sensor array. A drone must thus be equipped with all three of the above systems. Drones are not affected by "Crew" hits — any such damage is ignored, though Armor points are lost as usual.

Drones are limited by the controller's own action total. A single person cannot control more than one vehicle at a time, though a vehicle can have multiple controllers. Because of data-encoding procedures and control lags, remotely piloted vehicles suffer a -1 modifier on all of their rolls. If the vehicle is controlled through a satellite uplink, the extra lag increases the penalty to -2. The vehicle must be within communication range. ECM affects the control link normally, and must be tested every turn.

Drones may be wire-guided instead, trailing a very fine wire for control (maximum range is equal to half the base Communication range). This removes the penalties and makes the drone immune to ECM. A Piloting roll must be made every turn against the highest MP cost for the hexes traveled to avoid snagging the cable. Flying drones must test also and use the overflown ground's MP cost. Space drones are not affected. Failure means the cable is stuck and the drone must halt for the next round to free it. A fumble means the cable is severed.

If contact is lost, the software automatically switches to the Autopilot. An Autopilot program consists of a single line of text and should be written down when the drone is released.

◘SAMPLE AUTOPILOT PROGRAMS

- Return to Base as Fast as Possible
- Follow Closest Hostile Unit
- Go to Nav Point Alpha and Await Further Orders

▼SPACECRAFT MANEUVERS

5.2.5

Spacecraft can perform a variety of special maneuvers and operations due to the nature of their movement system and the milieu in which they operate. The following rules apply to all vehicles equipped with Space movement.

◇AEROBREAKING

Aerobreaking consists of dipping into a planetary atmosphere to shed velocity, the spacecraft's kinetic energy being converted to heat. This means that less fuel is needed to brake, either decreasing transit time or increasing cargo payload.

The vehicle must have a re-entry system in order to aerobrake. The pilot must make a Piloting roll against a Threshold of 2 to keep the craft correctly oriented or suffer one Fire attack as per normal reentry rules. Modifiers due to damage apply in full. For each successful Piloting roll, the craft loses ten percent of its speed. If there is no re-entry system present, one can still aerobrake in the tenuous upper atmosphere for a one percent reduction of speed and only half damage.

◇COASTING

Many of the ships don't have enough fuel or reaction mass to keep on accelerating throughout a long trip, since some must be kept as combat reserve. Fortunately, a spacecraft will keep moving even if no acceleration is applied. The following formula shows the travel time of a spacecraft based on the amount of Burn Points the captain or pilot is willing to use during the trip. For the sake of simplicity, the actual acceleration time is ignored since it will account for only a short part of the total trip time.

◘COASTING

- Travel Time = Distance/(BPs x 15 x Efficiency)
- Efficiency = Actual Thrust/Drive Section Thrust
- Time is in seconds (divide by 3600 for the result in hours), Distance is in meters, BPs is the total Burn Points spent.

◇GRAVITY WHIP

The term "gravity whip" is used to describe the manuever by which a planet's momentum is used to accelerate (or decelerate) a spacecraft. Many space probes used this effect to save fuel and travel time, notably the Voyager space probes. A gravity whip can only be used in an orbital system — the spacecraft gains or loses speed when viewed from the entire system, not the body around which it whips. If the spacecraft is slower than the celestial body, it will accelerate; if faster, it will decelerate.

▷GRAVITY WHIP CONTINUED

A Space Navigation Skill test is made against a Threshold equal to the target's velocity in km/s, divided by ten (round up any fraction). If failed, the spacecraft gains or loses only half the speed it would normally have. If fumbled, the spacecraft misses its orbital rendez-vous completely. Find the speed of the vehicle and the orbital speed of the celestial body used (making sure the units of measure are the same). The spacecraft gains twice the difference between its own (pre-whip maneuver) speed and the celestial body's orbital speed. For example, a spacecraft moving at 5 km/s whips near Jupiter (13 km/s); it gains 2 x (13-5) = 16 km/s, for a final speed of 21 km/s. A revised travel time based on the new speed can then be recalculated if precision is required.

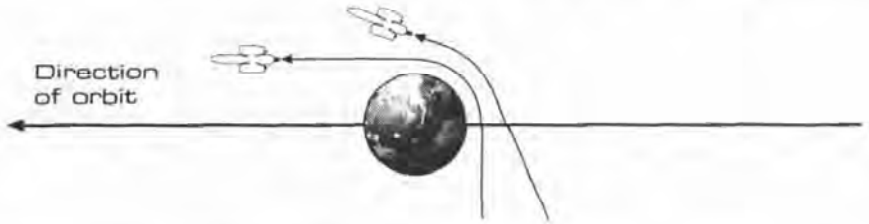
If the spacecraft intersects the orbit at an angle, only its parallel speed vector will be affected. In the interest of playability, the actual equations for calculating the new speed and direction of a spacecraft following a gravity whip are ignored. Those preferring exactitude can find them in any basic astrophysic manual. A game approximation of the new speed can be made by multiplying the spacecraft's final speed by an angle multiplier. Assume that the greater the angle between the spacecraft's original trajectory and the celestial body's, the more the spacecraft's trajectory will curve. For example, if a ship crosses the orbit of a world at a ninety degree angle, its post-whip trajectory will lie almost parallel to the world's orbital path.

ANGLE MULTIPLIER ◫

Planet Position	Angle*	Multiplier
Far	15	x 1.05
Average	30	x 1.1
Close	45	x 1.3

*Angle between spacecraft's trajectory and body's orbital trajectory.

GRAVITY WHIP DIAGRAM ◑



HYPERTHRUSTING ◇

Hyperthrusting is a risky maneuver in which the safety parameters of an engine are widely exceeded in order to provide increased thrust. Classic rocket engines can rarely do this, but plasma combustion chambers can greatly increase the available thrust. Such a maneuver is very dangerous since the thrusters may be damaged by overheating, or even explode. It is highly suggested that this rule be allowed only in Cinematic campaigns.

When hyperthrusting is selected, the engine immediatly supplies twice its maximum Overthrust, at a cost of 3 BPs for each MP spent. A Piloting Skill test versus a threshold of 5 is required. If failed, the thruster permanently loses a number of MPs equal to the Margin of Failure because of heat damage. Should the total reach -5, the thruster explodes, causing one die times the Overthrust rating (in MP) worth of damage points to the vehicle.

USING THRUSTERS AS WEAPONS ◇

By definition, a good engine makes a good weapon: superheated plasma is extremely dangerous up close, though it loses power rapidly with distance. The Damage Multiplier of thrusters is equal to the MPs spent, times half the Size of the vehicle. The Accuracy of the thruster is equal to the Maneuver of the vehicle. Burn Points are spent as normal. The plasma diffuses rapidly, losing half its Damage Multiplier per hex of range, including the first one.

WALKERS FALLING DOWN ▼

Whenever a vehicle using the Walker movement type takes large amount of damage, it may be knocked down. If the total damage received in one attack is equal to or higher than twice the vehicle's Size, the pilot must pass a Piloting skill test against a threshold equal to one plus the Margin of Success of the attack that hit it. If the walker fails the test, it falls down, taking Light damage. If the walker fumbles the test, it falls down, taking Heavy damage. Walkers must spend one MP to stand up before they can spend MPs on movement.

5-3

▶ ADVANCED TERRAIN

There are many more types of terrain than the few types described in the rulebook. In addition, special conditions such as wind and rain can affect combat and travel. The various terrain types and weather conditions are described in tactical terms, but they can also be used in roleplaying situations. Just remember to adjust the time and distance units appropriately.

5-3-1

▼ MAN-MADE STRUCTURES

Man-made structures include habitations, buildings, bridges, roads and other large immobile constructs. The Players should agree on what human constructions are on the mapboard, if any. Man-made structures take damage in a manner similar to infantry, i.e. they accumulate damage points instead of Light/Heavy Damage effects. Each structure has a Damage Point Capacity; if it takes more damage points than this, the structure is reduced to rubble. Burst fire weapons affect constructions in the same manner as infantry (see page 92).

◇ BRIDGES

Bridges span narrow bodies of water, such as rivers and straits, or chasms, such as canyons and gullies. Movement across bridges has the same MP cost as Clear terrain. Each Bridge hex is rated on three Attributes: Damage Point Capacity, elevation level, and Size capacity.

The Size capacity of a bridge hex is the maximum Size of vehicle that it can safely support. If a vehicle of larger Size attempts to cross, one die is rolled. If the die roll is equal to or less than the difference between the vehicle's Size and the bridge's Size capacity, the bridge loses one tenth of its original Damage Point Capacity per point of Size difference. The die roll is repeated until the bridge does not take damage (at which point you stop rolling) or until it collapses. If a vehicle is six or more Size points greater than the bridge's capacity, the bridge will immediatly collapse.

If a bridge hex collapses, any sections of the bridge in adjoining hexes have a 50% chance of collapsing. One die is rolled: if the result is 3 or less, the adjoining bridge hex collapses. All vehicles upon a collapsing bridge take falling damage based upon the number of elevation levels they fall.

◇ ROADS

Roads are designed to make travel easier for ground vehicles by providing them with an ideal travel surface. Roads have 100 Damage Point Capacity per ground hex. Any Ground vehicle traveling on a road for its entire movement gains an additional number of MPs equal to half its current speed (Combat or Top), rounded down to the nearest whole number. Additionally, if a vehicle (of any type) follows the path of a road, it pays the MP cost of Clear terrain instead of whatever terrain the road crosses.

Roads can be built over bridges. These roads use the bridge's Damage Point Capacity but still confer movement bonus to vehicles. Urban terrains (see below) are assumed to have small streets, but they do not normally receive the road movement bonus due to the large number of minor obstructions in urban settings (speed bumps, parked vehicles, pedestrians, etc.). Any major streets or highways are represented by roads through Urban terrain.

◇ RAILROADS

A railroad is the same as a road, gamewise. An hex can be designed as either a Road, a Rail, or both. Railroads and roads work exactly the same way, except that only vehicles with the Railroad movement type can derive a movement bonus from a Rail. Vehicles using Railroad movement must follow the rail at all times, unless they switch to another movement mode (if available). They can change direction only when the rail changes direction, and they can switch rail lines only at a junction. Both rail lines must be of the same type (both iron, or both maglev, but not iron to maglev, for example).

◇ URBAN TERRAIN

A Ground hex can easily hold several buildings since it is 50 meters across. Any hex containing under seven buildings is considered to be Urban terrain. Any hex containing seven or more buildings is considered to be Dense Urban terrain. Both types of Urban terrain favor Ground vehicles, offering poor traction for Walkers and restricted maneuver space for Hoverers.

◫ TERRAIN COSTS

Terrain Type	Walker	Ground	Hover	Obscurement
Urban*	2	1	2	1
Dense Urban*	3	2	3	2

*Damage Point Capacity: 80 per building (assuming generic buildings) for Urban, 100 per building for Dense Urban.

CLIFFS ▼

5.3.2

Any hex with an elevation change of two or more levels is considered to be a cliff. Vehicles may not normally ascend or descend cliffs. The one exception are Walkers with arms. If a Walker has arms that can lift its own Size, it can climb up or down a cliff face. The Walker's pilot must pass a Piloting Skill test vs. a Threshold of 5. The Walker ascends or descends the cliff face at a rate of 1 elevation level per combat round. If the Walker fails or fumbles the Piloting test, it falls the remaining elevation levels. Climbing consumes a vehicle's entire MP allotment and is considered to be equal to expending the vehicle's entire Combat Speed MP. Climbing Walkers are in poor defensive positions and suffer -2 to all defense rolls.

If a vehicle falls an elevation level or more, it takes a number of damage points equal to the roll of two dice times the vehicle's Size times the number of elevation levels fallen. Fumbles are an automatic kill result.

SPACE ENVIRONMENT ▼

5.3.3

The environment of space presents a number of unique characteristics that makes it very different from everything humans have had to face before. New rules have to be learned, and new dangers have to be faced.

PLANETARY RINGS ◇

Many planets in the solar system are surrounded by rings, collections of small debris and rock that are trapped by the gravity well and end up in orbit. The best example of these are Saturn's magnificent ring system, though Jupiter, Uranus and Neptune also boast sizable, if more transparent, rings.

Because they are composed of millions of small particles, rings pose a travel hazard for fast moving space ships. There are, however, reasons to go through them. They make excellent hiding places, are a good deterrent to pursuit, and can yield ice and other valuable volatiles to a stranded vessel.

Unless the ship is moving at a very high velocity, collisions will generally cause only minor abrasion damage, generally not worth checking for. The *Planetary Ring* table below assigns a Density to four main ring systems. The various ring densities within each system are ignored for playability (any good astronomy book will give more specific detail on those). The current spacecraft's speed (in hexes/turn) is multiplied by the Density to yield the number of damage point applied to the spacecraft. The Density also show the amount of water, material or volatiles that can be collected within the ring, per turn (in kilogram).

PLANETARY RINGS ◫

Location	Density	Obscurement	Composition
Jupiter	10^{6}	0	Rock, some Ice
Saturne	10^{1}	2	Ice, Frozen Gases
Uranus	10^{6}	0	Ice, Frozen Gases, Hydrocarbons
Neptune	10^{7}	0	Ice, Frozen Gases, Hydrocarbons

RADIATION BELTS ◇

Half the planets of the solar system have strong magnetic fields, caused by liquid movement within their core. These fields trap incoming charged particles before they can hit the surface, creating multiple radiation belts around the planet (the stronger the field, the more numerous belts there are). These belts are a significant radiation hazard, though most spaceships have screens strong enough to face them without any problem. For playability purposes, the belts have been abstracted for each planet: each number represents a belt. When a ship crosses a belt, it receives a certain amount of rads and damage points per turn, as indicated. Campaigns using the Cinematic RDL need not worry about radiation belts, unless it is for dramatic purposes.

RADIATION BELTS ◫

Location	Rads	Damage	Effects
Earth	1d6 x 10/1d6 x 5	15/10	Haywire
Jupiter (1-4)	1d6 x 1700	25	Haywire
Jupiter (5-10)	1d6 x 700	15	Haywire
Saturn	1d6 x 500	15	Haywire
Uranus	1d6 x 50	15	Haywire
Neptune	1d6 x 30	15	Haywire

◇ SHADOWS

Unlike most planetary environments, where objects and atmosphere both reflect light so that it shines on several sides at once, in space light comes from a single source, the Sun. Even though there are some reflective surfaces, most of the time light comes from only one direction, creating deep shadows. These shadows, in addition to being very cold (since there is no heat transfer), make most visual sensors useless.

Shadow combat functions as daytime combat except that the night detection score of a vehicle is used instead of its daytime detection score.

◇ EXTREME TEMPERATURES

Extreme cold (-150°C or lower) or extreme heat (+150°C or higher) is very detrimental to the functioning of vehicles. Any vehicle that lacks the appropriate Hostile Environment Protection Perk automatically suffers Light damage whenever pushed to Top speed. In addition, such vehicles must roll one die at the beginning of each combat round. On a roll of one, the vehicle breaks down for a number of rounds equal to the roll of one die.

In space, high temperatures are found only when exposed to the Sun, while shadows are extremely cold. Vehicles can rotate to spread the heat on their hull and thus avoid the temperature problems mentioned above.

◇ VACUUM

Only vehicles that are specially equipped for vacuum (i.e. have the Perk Hostile Environment Protection: Space) can function in a vacuum. If the vehicle lacks life support, the crew must be equipped with vacuum suits. In that case, treat all vac-suited crew injuries as if they were one damage effect higher. For example, if a Light Damage result produces a crew effect (Stunned), it is replaced with the Heavy Damage result (10% Casualties). Likewise, if the vehicle takes Heavy Damage and suffers a crew hit, the damage is increased to the same as Overkill: the people aboard are dead or incapacitated by the decompression, leaving the vehicle crewless.

▼ WEATHER AND HOSTILE CONDITIONS

Players who want to add a little extra realism to their game may want to use some or all of the optional rules below. They give the simplified game effects of common weather phenomena, such as wind, storms and rain. Weather effects are found only on Earth, Mars, Venus and Titan, though the rules for wind and clouds can also be used for the upper atmospheric layers of Jovian-type planets.

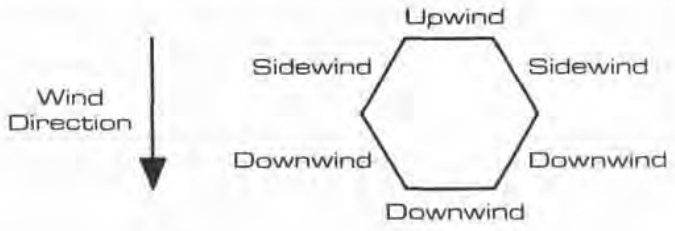
◇ WIND

Strong wind will affect the flight of any given aerial object, and make flying harder for small, lightweight aircraft. Wind is described with two values: Force and Direction. Direction is represented by a simple vector, and is assumed to be consistent throughout the game map. The Force of the wind is calculated in 30 kph increments — identical in essence to aircraft MPs.

Wind Force One (5 on the Beaufort scale) is equivalent to a good draft; flight with ultra-light craft (size 3 or less) and lighter-than-air craft will be difficult, but not impossible (add 2 to the difficulty of any maneuver). Wind Force Two (7 on the Beaufort scale) indicates a strong wind, which will make flight with ultra-light and lighter-than-air craft nearly impossible (add 4 to the difficulty of any maneuver). VTOL aircraft pilots reduce their Piloting Skill by one level. A typical storm has Wind Force Three (10 on the Beaufort scale): the Piloting Skill for fixed-wing aircraft is reduced by one level; for VTOL craft the penalty is two levels. Higher WF levels indicate hurricane-level winds: for each point above 3, the Skill level decreases by one, and Piloting rolls are required for any maneuver other than moving straight ahead.

In addition to making flight more difficult, wind also affect an aircraft's movement. At the end of the movement phase of any aircraft, it is moved downwind an additional number of hexes equal to the Wind Force. The same applies for any normal or carpet-bomb trajectory, counting the appropriate number of hexes for every turn the bomb spends falling down.

◫ WIND DIAGRAM



CLOUDS ◇

While clouds have little effect on movement, they do provide an important source of visual Obscurement. Depending on the level of detail desired, the entire map may be covered by a thick layer of clouds, or there may be only specific "cloud" areas with upper and lower limits in elevation levels. Any vehicle that goes in the clouds is considered obscured. For added realism (and bookkeeping), the wind rules can be used to move the clouds a corresponding number of hexes in the direction of the wind at the end of each turn.

Different types of clouds have different Obscurement values, from 1 (light clouds) to 3 (heavy storm clouds). This is for passive (visual) detection only; the Obscurement value decreases by 2 for active scanning.

RAIN ◇

Rain has an effect similar to clouds, and mainly causes visual Obscurement. Earth and Titan are the only place in the solar system where rain occurs, though various gases occasionally condense and "rain out" between cloud levels in the atmosphere of the gas giants.

Light rain does not affect visual detection within 4 air hexes; beyond that, it has an overall Obscurement value of 1. Medium rain has an Obscurement value of 1, while heavy rain has an Obscurement value of 2. For Active scanning, the value decreases by 1. If the rain is an electrical thunderstorm, the listed value is used. Heavy rain can also affect flight: a -1 penalty (-2 for lighter-than-air craft) is applied to all Piloting skill rolls.

BLIZZARDS AND SANDSTORMS ◇

Sandstorms are turbulent dustclouds that obscure both visibility and sensors. If a sandstorm is occurring during combat, one point is added to the Obscurement of every hex of terrain. This translates to a -1 modifier per hex of intervening terrain to all attacks.

Sandstorms can be very dangerous to flying aircraft. Like windstorm, sandstorm are given a Wind Factor, which affects movement by a certain number of hexes each turn. This "wind," however, is very fickle and constantly changes direction. Roll 1 die to determine the wind's direction each turn, for each aircraft.

Sandstorms are more devastating than windstorms of equivalent strength: a sandstorm is treated as being one (1) Wind Factor higher for determining Piloting penalties and effect on small crafts. Sandstorms have an Obsurement value of 3. Fortunately, sandstorms usually have relatively low ceilings: around 1,500 meters for small storms (altitude level 6), up to 2,500 meters (altitude level 10) for big ones.

Blizzards apply the same penalties as sandstorms. In addition, vehicles that lack the Hostile Environment Protection: Extreme Cold Perk must spend one additional MP per hex of ground terrain moved.

NIGHT ◇

Nighttime combat functions as daytime combat except that the Night Detection score of a vehicle is used instead of its daytime Detection score (see page 150 of the **Jovian Chronicles** rulebook). Infantry without nightvision equipment and vehicles without sensors will move only at half speed and have a -1 modifier applied to weapon fire.

Some units are equipped with powerful searchlights that illuminate the area around the vehicle so that it is treated as daylight. Searchlights can be turned on or off at the beginning of each round. Using searchlights obviously make the vehicle easier to spot, however. Any sensor inquiry or weapon fire directed at the vehicle is also treated as if it were in daylight, regardless of the arc of the searchlight. Enemy fire can target the searchlight(s) by performing an aimed shot. If successful, the searchlight is automatically taken out.

Some weapons and warheads release an intense burst of light which illuminate the area around them: in game terms, they are identified by the Illumination characteristic. Illumination ammunition is usually reserved for dedicated flare launchers, but can be manufactured for any gun or missile. Some lasers also have a broad beam, illumination mode to locate and blind unprotected enemy troops. If the weapon also has the Area Effect or Wide Angle characteristic, the entire illuminated area (not just the target) is counted as being in daylight.

Units are more easily detected by sound at night (obviously, only on planets with a atmosphere sufficiently thick to propagate sound, such as Earth, Venus or Titan). Vehicles can be heard up to two kilometers away, infantry only 300 meters. Naval units will be detected up to one kilometer away, unless they keep their speed below two MPs. Stealth vehicles are detected at a distance equal to the above, divided by their Rating. For example, a stealth tank with a Rating of 4 will be heard at a distance of (2000 m ÷ 4) 500 meters away.

▶ INFANTRY

5.4

Sometimes, armed men are the only combat unit small enough and flexible enough to accomplish the mission. This is true even in space, despite the problems caused by the vacuum environment. Thus, soldiers still form a large percentage of the fighting forces in the 23rd century. The following rules can also be used to abstract human beings when a large number of them are involved, either for crowd scenes or boarding actions.

There are five levels of infantry quality, which are equivalent to the Skill levels. This also determines the Stamina of the troopers. Stamina is a measure of how much physical punishment each can endure. Each infantry squad has a damage track to keep note of its status (see *Squad Damage Track*, further on). Unlike vehicle crews, infantry are assigned one generic Skill for attack, defense, and other action tests.

◫ INFANTRY QUALITY TABLE

Quality	Stamina	Skill Level	Frequency
Rookie	3	1	Common
Qualified	3	2	Common
Veteran	4	3	Uncommon
Elite	4	4	Rare
Legendary	5	5	Very Rare

▼ ARMOR

5.4.1

Three primary categories of body armor are available to infantry: Light, Medium and Heavy. The heavier armors cause Encumbrance; each point gives a -1 modifier to all attack rolls. The more advanced, self-propelled exo-suits (also refered to as powered Armor) are treated as vehicles and thus are not covered here. Only one type of Armor may be worn at a time. Infantry Armor values are not comparable to vehicle Armor values (see *Damage*, page 158 of the rulebook).

Light Armor consists of thin bulletproof clothing resembling padded combat fatigues. It provides two points of Armor. Medium Armor is a bulky suit of flexible plates worn over normal fatigues. It provides four points of Armor and causes one point of Encumbrance when worn by Rookie or Qualified troops. Troops of Veteran or better Quality do not suffer Encumbrance from Medium Armor.

Heavy Armor is a full suit of metal, ceramic and polymer plates. It provides six points of Armor and causes two points of Encumbrance when worn by Rookie or Qualified troops or one point of Encumbrance when worn by Veterans. Elite and Legendary troops do not suffer Encumbrance while wearing Heavy Armor.

◇ SPECIAL ARMOR FEATURES

Any type of Armor may include either a reflec or interference mesh covering. Reflec triple the Armor value against laser and double it against masers. Interference mesh triple the Armor value against masers. Neither of these add to Encumbrance, but they reduce the unit's Concealment by one.

Infantry must be equipped with vacuum suits in order to survive in space. Vacuum suits are free if the battle takes place in space. Any trooper who is hit suffers an additional number of damage point equal to the roll of one die due to decompression. If this damage exceeds his remaining damage points, the trooper is eliminated. Any extra damage point(s) do not carry over to the next trooper.

◇ SQUAD DAMAGE TRACK

This is composed of three columns which represent the squad members (grouped by ten whenever possible). The first column lists the members numerically from 1 to 10. The Infantry Hit Location Table (see further) refers to these trooper numbers. Circle one number to indicate the squad leader. If he is killed, the squad's effective Leadership drops to 1 (all other Skill rolls are unchanged). The second column lists the type of weapon carried by each trooper. The third column is the trooper's damage points. Each trooper can take a total number of damage points equal to his Stamina plus his Armor.

▼ MOVEMENT

5.4.2

Infantry on foot have 2 MP. They use the Walker movement costs with one exception: it never costs infantry more than 2 MP to travel one hex. No more than two elevation changes are possible per hex travelled (the squads are assumed to be equipped with climbing gear). Infantry units do not have Top speeds.

Some rapid deployment teams are equipped with Man Maneuver Units (MMUs) or tiny unarmed all-terrain vehicles (dirt bikes and the like). MMUs have 6 MPs and use the same movement costs as Hover vehicles; in space, they have 6 MPs and 60 BPs. Squads with light ATVs have 8 MPs and use the same movement costs as Ground vehicles.

SENSORS AND COMMUNICATIONS ▼

5.4.3

Most infantry squads are not equipped with special sensors and have a basic Detection value of 4 during the day and 2 at night or in shadow, with a range of 1 km. Armored infantry can be equipped with basic passive sensor equipment, giving them a Detection value of 4 at all time and a range of 2 km. Infantrymen have small personal communicators to coordinate their actions with the rest of their teammates. If required, they count as -2/2 km vehicle communication systems.

WEAPONRY ▼

5.4.4

Infantry units can carry two types of weapons, basic weapons and heavy weapons. Only a few troopers (habitually two) in a squad carry heavy weapons to deal with tougher opponents. Infantry squads are assumed to carry enough ammunition to last them through a battle. While this is not always true in real life, it dramatically reduces the paperwork for Players with infantry units.

INFANTRY WEAPON TABLE

Basic Weapons	Accuracy	Damage	Range	ROF
Pistol (Heavy, Gyroc, etc.)	0	x2	0/0/1/2	0
Autopistol	0	x1	0/0/1/2	1
Laser or Maser Pistol	+1	x1	0/0/1/2	0
Taser	0	x2*	0/0/0/1	0
Sonic Stunner	+1	x1*	0/0/0/1	0
Rifle	0	2	1/2/4/8	0
Assault Rifle	0	2	1/2/4/8	1
Heavy Rifle	0	3	1/2/4/8	0
Sniper Rifle	+1	4	2/4/8/16	0
Autoshotgun	0	x3	0/0/1/2	1
Submachinegun	0	x2	0/1/2/4	2
Gyroc Rifle	+1	x2/x3	1/2/4/8	0
Gauss Rifle	0	x4	2/4/8/16	1
Gauss Shotgun	0	x2	1/2/4/8	2
Laser Rifle	+1	x4	2/4/8/16	0
Maser Rifle	+1	x2	2/4/8/16	0
Heavy Weapons**	**Accuracy**	**Damage**	**Range**	**ROF**
Light Machinegun	0	x3	2/4/8/16	2
Chaingun	0	x3	1/2/4/8	4
Anti-Armor Rifle	+1	x7	3/6/12/24	0
Grenade Rifle	0	x8	1/2/4/8	0
Missile Launcher	0	x14	1/2/4/8	0
Light Mortar	-1	x12	3***/6/12/24	0
Sniper Laser Rifle	+1	x4	4/8/16/32	0

*No effect versus Armored infantry and vehicles; **Encumbrance -1; ***Cannot fire at range 2 or less.

INFANTRY ACTIONS ▼

5.4.5

Infantry units have one action. This action is normally used offensively, allowing one attack per weapon type carried. In general, one attack is made by the troopers carrying basic weapons, the second by the troopers carrying heavy weapons. Each attack is a Skill test using the unit's general Skill (with any applicable modifiers). Infantry may attack anything in a 360 degrees radius around them, and do not have defense arcs (consider all attacks as coming from the front).

The massed attacks of infantry squads also provide them with an effective ROF. If two or more troopers are using a certain weapon type, attack with this weapon have a ROF value, as listed in the table below. Infantry ROF use the same rules as normal vehicle ROF (see page 156 of the Rulebook). They may attempt anti-missile fire.

INFANTRY ROF BONUS

Min. Number of Troopers w/Weapon	ROF bonus	Min. Number of Troopers w/Weapon	ROF bonus
1	0	4	+2
2	+1	8	+3

◇ BOARDING ACTIONS

In space, infantry can be used as marines to board enemy ships. Though exo-suits are preferable, they often do not fit within the tight confines of space ship access corridors. Boarding actions are rare and difficult to do. Even if marines can be sent over, they must face their defensive counterparts, or even crewmen pressed into action with inadequate weaponry.

In order to dock, the attacking ship must match velocity and heading and end in the same hex as the target. Alternatively, Winch weapons may be used to "harpoon" the target and bring it close enough to disgorge troops. Once on the hull, the marines can attack external subassemblies, enter via airlocks or pierce the surface. If the last option is chosen, a number of Damage Points equal to the Armor rating of the ship section will make a hole big enough to admit a Size 2 unit (double damage for each additional two Size points). Armor Crushing weapons do double damage.

Combat takes place as normal, with each 50 meters of the hull and each sub-assembly counting as a separate Dense Urban hex (see page 89); it is thus possible for the attackers to hold only part of a large vessel. The defending Player can assign as many crewmen as desired to the defense, though they will not contribute to the ship's action total. The defenders have an additional point of Concealment at all times due to their knowledge of the ship's layout and their defensive position, two points if the attackers come in via the airlocks.

▼ ATTACKS VS INFANTRY

5.4.6

Due to their small sensor signature and uncanny ability to take advantage of any available cover, infantry do not suffer movement defense modifiers. In addition, a -2 modifier is applied to any unit other than infantry attempting to target them. Some specialized anti-infantry weapons ignore the -2 modifier (see page 88). If an infantry squad is hit, damage is calculated normally. The one exception to this rule are burst fire weapons, which add their ROF bonus to their Margin of Success instead of the Damage Multiplier.

When the squad takes damage, the attacker rolls one die on the *Hit Location Table* to see which trooper is the first to take damage. If the trooper runs out of damage points, the remaining damage points are applied to the next trooper up or down the list, and so on. If damage remains to be allotted up past trooper #1 or down past trooper #10, loop around to the other end of the damage track. Infantry units are very vulnerable to Area Effect weapons designed with the Anti-Infantry characteristic. When such a weapon hits, the damage of the weapon is inflicted upon each trooper.

A trooper is not considered to be a casualty until he has lost all damage points. The debilitating effects of injuries are ignored for convenience. A trooper with zero points remaining is not necessarily dead, but he is unconscious, wounded or otherwise unable to fight. Casualties reduce the ROF bonuses from mass attacks when the number of squad members with a particular weapon drops below the 2-, 4-, or 8-member levels.

◫ INFANTRY HIT LOCATION TABLE

Die Roll	Start at Trooper #	Direction
1	1	down
2	3	down
3	5	down
4	6	up
5	8	up
6	10	up

▼ INFANTRY THREAT VALUE

5.4.7

Choose the Skill, Armor, equipment and weapons, then calculate the Threat rating according to the formulas below. Infantry has a single generic Skill equal to the rating in the parentheses. The individual Threat Rating of all infantrymen is added up, then modified according to Quality. Infantry squads equipped with either MMUs or ATVs double their final Threat Value.

◫ FORMULA

•	Individual Infantryman Threat = square root of [(Stamina+Armor)² x Weapon Cost]
•	Weapon Cost = Dam. Mult. + Base Range + ROF

◫ INFANTRY MULTIPLIER TO THREAT VALUE

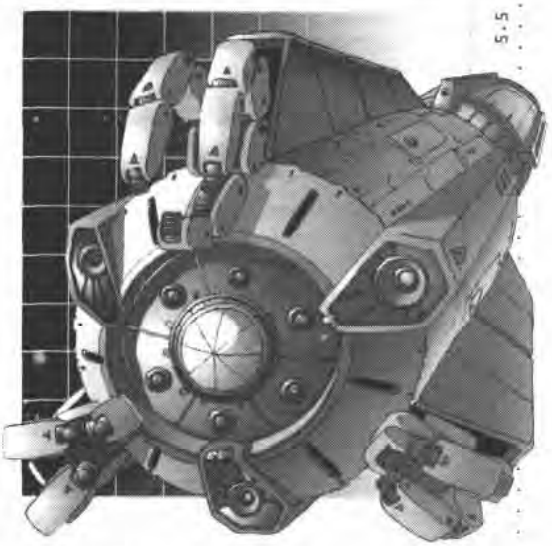
Skill Level	Threat Value Multiplier	Skill Level	Threat Value Multiplier
Rookie (1)	0.25	Elite (4)	4
Qualified (2)	1	Legendary (5)	6.25
Veteran (3)	2.25		

PIRANHA ASSAULT POD

The Piranha is a typical CEGA assault pod designed to carry a squad of marines to an enemy ship. Though normal tactics normally require that the target's engines be disabled first, the Piranha is quite capable of following its quarry and latch on using its grapple launcher. Three docking prongs hold the pod onto the target hull (they will hold on in acceleration of up to 2 gee) while the plasma cutter makes an entry hole for the marines. Piranhas are cheap and short lived, but extremely nasty.

Each Piranha can carry a complete squad of ten marines along with their equipment. Most squads are Veterans. The assault pod is equipped with an autopilot, but most marines prefer to leave the driving to one of their number. Heavily armored space suits are issued to every trooper along with close range weapons such as shotguns.

Decommissioned Piranhas have been known to be used as cheap prospecting boats. Their owner modifies them with added fuel reserves and supplies. They head for the Belt, hoping for the one juicy find that will make them rich. Few achieve their objective, and most remain poor. They come in every few months at Ceres or one of the Belt stations to take on supplies, trying to exchange old stories for a drink in one of the local bars.



5.5

VEHICLE DATA

Threat Value:								970 (1,200,000 credits, Mass Produced)
Crew								1 (2 Actions)
Size								4 (2.1 tons)
Armor								5/10/15
▶ Movement Data								
Movement Mode	Combat Speed			Top Speed				Maneuver
Space	14 (1.4 g)			28 (2.8 g)				-1
Deployment Range:								10 hrs
Reaction Mass:								200 BPs
▶ Electronics Data								
Sensors:								-1/2 km
Communications:								-1/10 km
Fire Control:								-1
▶ Perks & Flaws								
Name			Rating					Game Effect
Autopilot			-					Act as level 1 pilot
Backup Systems			1					Comm, FireCon, Life Support, Sensor
HEP: Radiation			3					Screen
HEP: Vacuum			-					Space protection
Life Support			-					Limited
Passenger Seating			-					9 troops
Reinforced Crew Compartment			-					Absorbs first "Crew" hit
3 x Tool Arm			6					Graspers, cannot punch
Brittle Armor			-					Loose twice as much Armor per hit
Sensor Dependent			-					Requires Sensors to function
Weapon Link			-					All grapples
▶ Offensive & Defensive System Data								
Qty	Name	Fire Arc	DM	BR	Acc	ROF	Ammo	Special
1	Grapple	F. Forward	x10	1	-1	0	Inf.	Entangle, Winch
1	Plasma Cutter	F. Forward	x20	M	0	0	LU2	Armor Crushing, HEAT

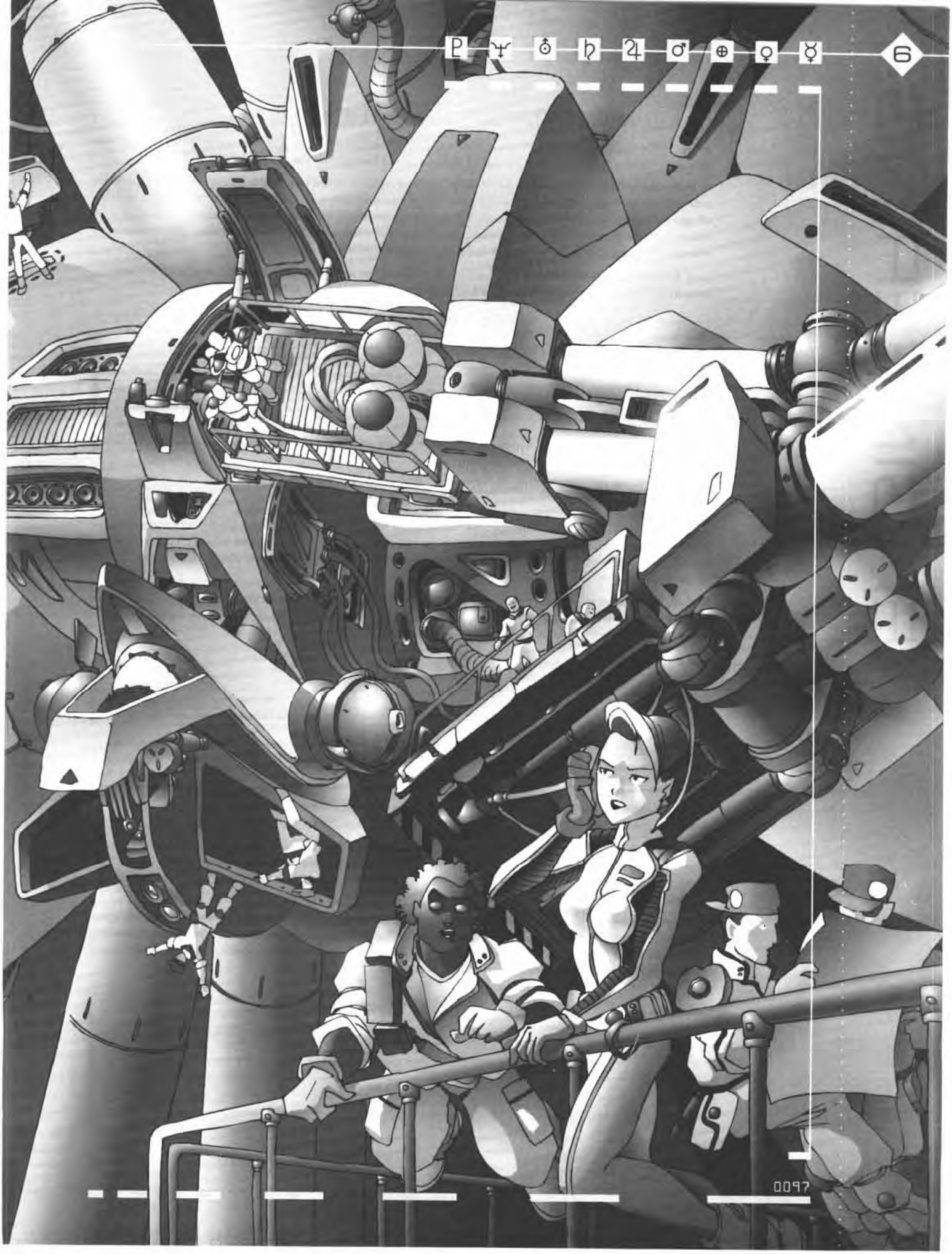
▶ MECHANICAL DESIGN

This chapter covers the generation process used to define the statistics of the vehicles and other high-tech items used in the game. One does not have to go through the construction system to play; pregenerated vehicles are provided in the various **Jovian Chronicles** sourcebooks. But to many, designing new vehicles and testing them is definitely an enjoyable part of the game.

When the Silhouette Vehicle Construction system was designed, two primary goals were set: first, keep things simple; second, allow players the maximum design flexibility possible. These two principles led to the creation of a reverse engineering-based design system. Instead of having designers pick a standardized chassis and then assign points to cram as much as possible onto it, the system let them pick their final result first and worry about cost later.

As a result, the Silhouette vehicle generation system is quite liberal compared to the ones found in many other games. It is meant to provide interesting, "real" vehicle designs instead of just mere sets of game statistics pulled out of charts and complex formulas. There is no artificial formula-based space or weight limits placed on the components: if the vehicle *must* have a certain piece of equipment, the engineers will find a way to make it fit somewhere.

Since this system was created to handle any vehicle type, it is non-linear in nature and involves a few calculations. These have been broken down in easily manageable formulas for ease of play and reference, so the math should not prove to be a burden (see the *Roots and Exponents* sidebar). It is assumed that the reader is already familiar with the various vehicular Attributes and ratings (see page 131 of the **Jovian Chronicles** rulebook).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b-1

▶ CONCEPTUALIZING THE VEHICLE

This is the first step in designing a vehicle, although it is not part of the construction process per se. The overall concept behind the vehicle must be decided upon (see the sidebar below for suggested design questions).

No limits have been placed on the number of weapons and equipment carried by a vehicle. This is intentional. It is meant to simplify the game and make the construction system more adaptable. While it is *theoretically* possible to build a tank that will sport battleship armor and weapons while still performing like a race car, that one tank will probably cost more — in resources, time and money — than an entire brigade of more regular tanks. Guidelines and technological limits have been defined to fit the style of the game, but one could still build monsters if left unchecked.

Once the basic parameters of the vehicle have been determined, the design process may begin. In addition to the book, some scratch paper, a pen and a calculator (if Threat Value and cost are desired) will also be needed.

◫ DESIGN WORK LIST

1)	What kind of vehicle is it? (e.g. tank, exo-armor, microsub, etc.)
2)	What is the vehicle's main task? (e.g. strike, siege, search and rescue, etc.)
3)	How advanced is the vehicle? (e.g. old & reliable, everyday, state-of-the-art, etc.)
4)	What are its general performances? (e.g. slow, fast, long ranged, etc.)
5)	What is the vehicle's main armament, if any? (e.g. autocannons, lasers, rockets, etc.)
6)	Does this vehicle have any important special features? (e.g. powerful sensors, a sick bay, passenger cabins, etc.)

b-1-1

▼ SELECT TARGET SIZE

The first design step is to choose a reasonable Size for the vehicle, either by using one of the formulas below or by consulting the table on page 132 of the rulebook. Size is related to both weight and volume; it determines the actual weight of the vehicle, the amount of damage it will cause in the event of a collision, and the number of hexes it occupies on the tactical map. Some vehicles occupy more space than their Size would indicate — lighter-than-air craft, for example. This will be detailed further on.

Vehicles are assumed to occupy a basic volume (in cubic meters) equal to (Size/2 +1) cubed, rounded up. This includes access and maintenance space around it. Knowing the volume is not required for the design process but is useful when doing "reality checking."

◫ DETERMINING SIZE

•	Maximum Mass = ((Size + 0.5) x 3) cubed
•	Size = ((cube root of Maximum Mass)/3) - 0.5

The maximum mass for all Size categories is in kilograms (divide by 1000 to get metric tons). The mass is rounded up for all Sizes for simplicity.

b-1-2

▼ SELECT ARMOR RATING

This rating defines how resistant to damage the vehicle will be. Even if the vehicle is not armor-plated, it must still have an Armor rating to represents the protective value of the vehicle's structure. No vehicle can have an Armor rating below 1.

Just like Damage Multipliers, Armor Value progression is not linear: Armor 10 is not just twice as strong as Armor 5, it is *four* times as strong. The Armor Rating does not only represent the thickness and angle of the armor plating, but also the general resistance of every component in the vehicle. The number of damage points required to produce Light Damage, Heavy Damage, and Overkill results are equal to once, twice, and three times the base Armor rating, respectively.

For the military enthusiasts, the base Armor rating of a vehicle is approximately equal to the square root of the armor plate thickness in millimeters, assuming perfect armor steel. Armor does not have to represent the exact thickness of the plating — some materials are stronger than others. It is possible to selectively boost the Armor rating through the addition of specialized armor plates (see *Perks and Flaws*, page 112).

◫ TYPICAL ARMOR RATINGS

Vehicle	Armor Rating	Vehicle	Armor Rating
Civilian Vehicle	1 to 5	Armored Personel Carrier	10 to 20
Utility Vehicle	3 to 8	Tank	20 to 30
Exo-Suit	5 to 10	Naval Ship	50 to 150
Exo-Armor	20 to 30	Space Ship	30 to 90
Fighter Jet	8 to 15		

DESIGNER'S HINT: ARMOR ◇

Here's a good rule of thumb for choosing a vehicle's Armor rating: unarmored or slightly armored vehicles have Armor ratings roughly equal to their Size rating to represent their structural strength. Lightly armored vehicles have Armor equal to roughly twice their Size. Moderately armored vehicles have Armor equal to about two and half times their Size. Heavily armored vehicles have Armor equal to roughly three times their Size. Anything with an Armor rating greater than three times its Size is either incredibly slow or completely unrealistic.

Due to the severe weight restrictions required by the mechanics of flight, aircraft rarely have an Armor rating that is more than twice their actual Size. For military craft, the Armor rating is usually just under that limit.

SELECT NUMBER OF CREW ▼

The number of individuals that are required to operate the vehicle is chosen here. Numerous specialized crewmembers improve a vehicle's combat efficiency, but they increase cost and vehicle size. All vehicles need at least one crewmember, but crew can be augmented or even replaced by automated systems (see *Perks and Flaws*, page 112, and *Offensive & Defensive Systems*, page 124).

Theoretically, the designer could maximize a vehicle's performance by allotting it an unusually large crew. A crewmember, however, occupies almost two cubic meters of space (with seat, instruments and egress/ingress space) — sixteen people *will not* fit confortably in a sub-compact car! What's more, a good crew is expensive. Training and paying each vehicle crewman costs hundreds of thousands of credits. In fact, the crew is often worth more money than the vehicle, so most designers will put only the minimum amount of crew required for the job.

SELECT MOVEMENT SYSTEMS ▼

Movement types define how a vehicle moves along. Each movement type confers some advantages and some disadvantages, depending on the environment where the vehicle operates. Some are more versatile than others.

A vehicle may have more than one movement type. Common examples of this are fully amphibious vehicles (Ground and Naval), exo-armors with thrusters (Walker and Space), or any combination thereof. Although there is no limit to the number of movement types a vehicle may use, few have more than one or two — the cost simply outstrips the added flexibility. Having more than one movement type does not represent an actual transformation; the movement types are available at all times (see page 145 for transformable machines).

Flight: this movement type is used by all flight-capable vehicles. This includes aircraft of all types, helicopters and vectored thrust vehicles. Each aircraft's peculiar flight characteristics are provided by suitable Perks and Flaws (see *Perks and Flaws*, page 112).

Ground: any wheeled or tracked vehicle. Wheeled vehicles are assumed to be equipped with large wheels and strong suspension for rough terrain and thus are grouped with tracked vehicles in the Ground movement type. Ordinary wheeled vehicles such as city cars have the Poor Off-Road Capacity Flaw to represent the more simple nature of their drive system (see *Flaws*, page 120).

Hover: this movement type is used by all vehicles which travel above but near the ground, such as ground-effect hovercraft and other air-cushion vehicles. Ground-effect systems only work within an atmosphere.

Naval: any conventional water vessels and hydrofoils, or anything that can float. This makes only the vehicle's hull watertight, however: it is still susceptible to flooding and capsizing.

Rail: any vehicle which uses a rail or guide of some kind to move about is part of this category. This includes classic steel railroad, MagLev, monorail, and many others. These vehicles can only move along a rail line, and the rail(s) must be of the same type as the one the movement system was designed for.

Space: a vehicle equipped with reaction thrusters uses this movement system. This movement type does not confer the ability to perform standard atmospheric flight or reentry — these must be purchased separately. It can be used as a "jumpjet" system in a gravity well (see *Jumping*, page 145 of the rulebook).

Submarine: this movement type covers underwater craft of all sorts. Most Submarine vehicles also have the Naval movement type, but it is not required (some submarine vehicles fare very poorly on the surface).

Walker: this represents a multi-legged walking vehicle. The exact number of legs presents is totally up to the designer and has no bearing on either speed and toughness, both of which are determined separately.

SPEED ◇

A Top Speed, measured in kilometers per hour, must be selected for each movement type. Each speed is divided by six (6) to get the Top Speed in Movement Points (MPs), rounding to the nearest whole number. This MP value is divided in half to obtain the Combat Speed of each movement type, rounding up. Vehicles with multiple movement modes are rarely as fast as those with only one.

◇ SPECIAL CASE: FLIGHT

The Flight movement mode includes all manner of flying machines, excluding hover-based movement. The movement mode does not discriminate between fixed and rotary wing crafts. There is, however, a fundamental difference between VTOL (vertical take-off and landing) crafts and other types of aircraft: the Stall Speed.

All vehicles with the Flight movement type are given a Stall Speed. This indicates the minimum possible speed at which the aircraft can travel before stalling out, losing lift and falling. A Vertical Take-Off and Landing (VTOL) craft has a Stall Speed of 0, which means it can actually hover in place.

Most non-VTOL aircraft have a secondary movement type (usually Ground) to taxi around the runway, though it does not necessarily have to be motorized. In such case, the second system's speed is 0, and its MPs come from the Flight MPs. Many aircraft with Ground speeds have the Decreased Maneuver Flaw (see page 120) to represent the fact they are somewhat ungainly on the ground. Note that this is actually a free bonus, since the Ground movement is generally 0 (unpowered) and thus free. VTOL crafts rarely have a secondary movement type, since they often do not need to taxi.

Air Combat MPs represent about 30 kilometers per hour each, instead of 6 kph for vehicles in the basic tactical game, to fit in with the large Air Combat 250-meter hexes.

◇ SPECIAL CASE: SPACE

The Space movement mode includes all manner of thrust-based movement. The movement mode does not discriminate between reaction and reactionless drives (though the latter does not exist in the world of the **Jovian Chronicles**). As usual, precise description of how the vehicle functions is left to the designer.

Space Combat MPs represent acceleration rather than speed: about 1 m/s² each (0.1 g), instead of 6 kph for vehicles in the basic tactical game. Fractional MPs are possible for vehicles with very low acceleration (solar sails, ion drives). In such a case, the vehicle must accumulate fractions over several rounds to get one Movement Point.

◇ DESIGNER'S HINT: POWERPLANT

Silhouette does not require the designer to buy a powerplant. It is assumed that the engineers in charge of the project know their job and will select an efficient engine that fits the chassis for the desired movement systems and speeds. If they don't... well, that's what Lemon Rolls are for. It is always nice but not required to know exactly how the vehicle is powered, if only to give the game additional atmosphere.

▼ SELECT MANEUVERABILITY

The Maneuver score represents how maneuverable and agile the vehicle is. Zero is a generic "average" rating for a human-controlled walker; other vehicles are often assigned lower values. Positive values denote nimbleness while negative values indicate a slower reaction time or poor turn radius. The Maneuver score need not be tied to the physical size of the vehicle: a cumbersome farm tractor might be just as (or even less) maneuverable than a large combat corvette whose surface is covered with maneuver verniers.

◫ MANEUVER VALUES

Maneuver	Typical Vehicle	Maneuver	Typical Vehicle
+3	Very advanced, top-of-the-line research vehicle	-4	Patrol Boat, Large Truck, Medium Space Ship
+2	Very advanced, top-of-the-line prototype	-5	Large Hovercraft, Large Space Ship
+1	Nimble Exo-Suit, Dirt Bike	-6	Large Naval Vessel or Ponderous Spaceship
0	Nimble Exo-Armor, Exo-Suit, Motor Bike, Dirt Buggy	-8	Ponderous Naval Vessel
-1	Exo-Armor, Car, Nimble Hovercraft	-9	Supertanker
-2	Large Exo-Armor, Large Car, Hovercraft, Fighter	-10	Space Station
-3	Truck, Tug Boat, Small Space Ship		

◇ DESIGNER'S HINT: MANEUVER

The table above lists some typical examples for each Maneuver Rating. If the vehicle you are designing is exceptionally agile, 1 or maybe even 2 may be added to the suggested value for that type of vehicle. If the vehicle is slow to respond, or somewhat ungainly, perhaps 1 or possibly even 2 could be subtracted from the suggested value.

In a sense, the Maneuver rating also partly represents the sophistication of the vehicle's controls. An agile vehicle that is next to impossible to pilot in battle will earn a lower Maneuver Rating than the unstable fighter which can respond to the slightest tug on the control sticks. By using this in conjunction with the correct Perks and Flaws, extra "personality" can be given to the vehicle.

SELECT DEPLOYMENT RANGE ▼

The Deployment Range of the vehicle is selected next. This is the maximum distance (expressed in kilometers) the vehicle can cover without refueling or maintenance, barring any crew needs such as food and rest. This generally has no direct influence in the tactical combat game, but is extremely important in a roleplaying campaign. It can also be used to establish complications in tactical scenarios.

Combat vehicles often have somewhat inefficient engines that guzzle their fuel or electric charge in just a few hours. Most ground vehicles can cover somewhere between 200 and 800 km before needing to be refueled or otherwise serviced. Understandably, aircraft tend to have pretty large Deployment Ranges. Fixed-wing planes have more autonomy than rotary wing aircraft: averages for the former range from 800 to 5,000 km, while for the latter it rarely exceeds 1,000 km. The "generic" cost-efficient value for all designs is 500 km, though small vehicles will probably have a lower range.

Space vehicles obviously cover far greater distances and, thanks to inertia, may not even need to expend fuel to do so. When in space, each hour of operation is treated as one kilometer of Deployment Range. Thus, an exo-armor with a Deployment Range of 500 km could walk 500 kilometers or fly in space for 500 hours (or any combination thereof, with one hour equal to one kilometer) before requiring maintenance.

DESIGNER'S HINT: DEPLOYMENT RANGE ◇

Military vehicles need to have enough fuel to reach their objective, perform their mission, and return. This means that their effective range is normally a bit less than half of their listed Deployment Range because the vehicle must conserve enough fuel to return from its mission and an extra reserve to consume in case of emergencies or combat.

Scout vehicles need to operate for long distances without access to support units. Fire support and siege vehicles generally have poor Deployment Ranges since they have near constant access to fuel and service. Urban and civilian vehicles also tend to have poor Deployment Ranges, for the same reason.

Spacecraft are a special case in the Jovian Chronicles universe. Most if not all of them are powered by extremely efficient and compact fusion engines. Range is thus much more dependent on reaction mass and food storage than on onboard fuel reserve, with the DR serving only as a benchmark for maintenance operations. Players who require more precision can assume that storage space for additional stores of food, spare parts and replacement chemicals takes up (vehicle Size^2)/ 1500 cubic meters per hour of DR, at a weight of 0.2 ton per cubic meter.

SELECT REACTION MASS ▼

This step applies only to vehicles with the Space movement type. Some kind of reaction mass (or fuel, in the case of older chemical engines) must be provided in order to propel the vehicle forward. The Reaction Mass rating shows how many Burn Points (BPs) of reaction mass may be carried internally. The weight of the reaction mass will be added to the final weight of the vehicle after the design is completed; the *Burn Points Per Ton* table is used to determine its weight. It is important to note that the acceleration of the spacecraft, as selected previously, already takes this extra weight into account.

The amount of Burn Points per ton will depend on the type of reaction mass used. Fusion engines are extremely efficient, while primitive fuel rockets will often carry many time their empty weight in fuel.

BURN POINTS PER TON ◫

Reaction Mass/Fuel Type	Weight Multiplier	Volume per Weight
Very Light Gases	10^{-5} x total BP	0.01 ton/m³
Light Gases	2×10^{-4} x total BP	0.1 ton/m³
Water	2×10^{-3} x total BP	1 ton/m³
High Efficiency Rocket Fuel	10^{-2} x total BP	2 ton/m³
Low Efficiency Rocket Fuel	5×10^{-2} x total BP	5 ton/m³

Multiply the above number by the empty weight of the craft to know the weight of the reaction mass. The Volume per Weight is given for transporting Reaction Mass as cargo.

DESIGNER'S HINT: REACTION MASS ◇

Reaction Mass and Deployment Range are the twin factors that will determine the autonomy of a space vehicle. It is useless to carry more reaction mass than can be used in the vehicle's entire deployment range, though the reverse is possible (the vehicle can always coast partway to its destination).

If the vehicle is intended to have ground-to-orbit capacity, it must carry enough Reaction Mass to allow its thrusters to operate long enough at the required thrust level to get to escape velocity. Refer to *Reaching Orbit*, page 143 of the **Jovian Chronicles** rulebook.

▼SELECT SENSORS

b-1-8

The quality and the range (in kilometer) of the vehicle's sensor array is chosen at this point. The Sensor rating represents the resolution and processing speed of the vehicle's detection systems and is crucial for battles in obscured environments. A generic military sensor array has a rating of 0. Poor or incomplete sensor systems are rated with negative values (minimum value is -5), while high quality sensors have positive ratings (max. +5). If the vehicle has no sensors, "N/A" is written down in both entries and the No Sensor Flaw is added (see *Perks and Flaws*, page 112).

Battlefield vehicles normally have Sensor ranges of at least 2 km. Sensor ranges are rarely greater than 7 or 8 km — mainly because that is about how far the horizon is on an Earth-sized planet when seen from a combat vehicle. This base range can be extended by supplying more power to the system (see page 151 of the rulebook), but this makes the emitter quite visible to hostile sensors.

Sensors mounted on a flying vehicle benefit from a higher vantage point, allowing them to reach further for the same power. When the aircraft is in the air, the range of its sensor array is multiplied by ten *while in the air*. Thus, if a plane had a 2 km Sensor range on the ground, it would be able to passively detect other objects up to 20 kilometers away in the air.

Spacecraft-mounted sensors have an even better environment to work in, since there is no atmosphere to distort the readings. The range of a spacecraft's sensor array is multiplied by one hundred. Thus, if a spaceship had a base 2 km Sensor range, it would be able to passively detect other objects up to 200 kilometers away *while in space*.

◇DESIGNER'S HINT: SENSORS

The Sensor range should be equal to or higher than the Extreme range of the most powerful weapon system aboard the vehicle. If not, the crew will not be able to use the weapon to its maximum capability. The basic Sensor range can be boosted (see page 151 of the rulebook), but doing so makes the emitter much more visible to the enemy.

▼SELECT COMMUNICATIONS

b-1-9

The quality and the range (in kilometers) of the vehicle's communications array is chosen at this point. A generic military communications system has a score of 0. Poor systems are rated with negative values (minimum is -5), while high quality systems have positive ratings (max. +5). If the vehicle has no communication system, "N/A" is written down in both entries. Communication systems normally have a ground range of at least 10 km. This can be extended by supplying more power to the system, but makes the emitter more visible on sensors (see page 151 of the rulebook). Some Perks can affect the rating and range of the Communication system (see *Perks and Flaws*, page 112).

Because there are less obstacles to get in the way of radio waves, communication systems have a better range in the air and in space. Communication range is automatically multiplied by ten at no cost, *while in the air*, for Flight-capable vehicles. Range is automatically multiplied by 100, *while in space*, for space-based communication system.

◇DESIGNER'S HINT: COMMUNICATIONS

A functional Communication system is more important than it seems. It allows the vehicle to receive coordinates for indirect fire, transmits the correct IFF signal to friendly defense installations such as minefields and automated turrets and can be used to control remote drones. A vehicle without a functional Communication system is cut off from its combat group.

Non-combat vehicles like transports often have poor communications systems, which doesn't mean they are cheap — they are just not designed to cut through the military electronic fog. They rate a -2 or -3 and have a base range of less than 10 km.

▼SELECT FIRE CONTROL

b-1-10

Fire Control modifies all of the vehicle's weapon attacks and represents the targeting computers and weapon mounts. Most combat vehicles have a standard military system (Fire Control rating of zero), which includes rangefinders, gyro-stabilized mounts and recoil compensators for the weapons. Very high tech vehicles have sophisticated fire control systems, earning them a +1 or maybe even a +2. Simple, cheap or crudely built vehicles often have poor Fire Control systems, rated at -1 or lower. The minimum value is -5: a simple metal sight on a wobbly hinge, with pull-cord trigger.

If the vehicle is a non-combat vehicle with no weapons, a Fire Control rating should still be assigned to represent its potential for mounting weapons. Most non-combat vehicles have fire control ratings of -3 or less — they don't have built-in dedicated targeting computers or gyro-stabilized mounts. Pintle-mounted weapons do not use the Fire Control system (see the *Pintle Mount* Perk, page 118).

◇DESIGNER'S HINT: FIRE CONTROL

Fire Control systems can send the vehicle's cost through the roof, so moderation should be applied when selecting a rating. If extremely accurate attacks are desired, individual weapons with high Accuracy may be a better choice. Taking a -1 Fire Control instead of zero may sound suicidal, but is a good way to stuff more powerful weapons in the vehicle.

SELECT PERKS AND FLAWS ▼

b-1-11

Many vehicles have special characteristics called Perks and Flaws. Perks are systems or design features that give additional capabilities to the vehicle. Numerous Perks can make a vehicle very complex, increasing the odds that defects will occur during design or assembly. Flaws are design shortcomings or defective systems that impair the vehicle.

A complete explanation of each Perk and Flaw can be found in the *Perks and Flaws* section, page 112. Those that apply to the vehicle should be marked down along with their rating (if applicable) and their point cost.

DESIGNER'S HINTS: PERKS AND FLAWS ◇

Perks and Flaws are the greatest pitfall for new vehicle designers in **Silhouette**. Typically, a beginner's first vehicle design has dozens of Perks and relatively few Flaws. There are two ways to control Perk costs.

The first is to cherry-pick the Perks that are most important to the design and leave out minor improvements that drive costs upwards without significantly improving performance. It is always assumed that basic equipment such as seat belts, headlights and running lights (where applicable) are already included in the vehicle's design.

The second method to control cost is to select appropriate Flaws to compensate for the chosen Perks. For example, the cost of a Satellite Uplink or other complex electronic systems could be reduced by adding the Vulnerable to Haywire Flaw, representing the vehicle's sensitivity to massive electrical attacks.

SELECT OFFENSIVE AND DEFENSIVE SYSTEMS ▼

b-1-12

The weapons and defensive systems mounted on the vehicle are selected at this stage. For more detail about the different weapon systems and options, refer to the *Offensive and Defensive System Design* section (page 124).

Loading down a vehicle with tons of weapons just for the sake of having more is not only pointless, but also wasteful. Most vehicle crews are only capable of firing one or two weapons per combat round without incurring some nasty penalties. Linking two or more weapons provides a solution, but tends to be costly in ammunition.

Choosing a balanced amount of ammo for each weapon is also very important. Vehicles often get disabled in battle; when that happens, all the points spent on extra ammo and guns are wasted. Better to assign a reasonable ammunition load and buy more vehicles than build a single gun-bristling monster that can be disabled by one lucky hit.

DESIGNER'S HINTS: WEAPONS ◇

Vehicles should have a weapon complement that reflects their mission. Fire support models have weapons capable of guided attacks or area saturation. Scouts carry light weapon loads because they are supposed to avoid combat. General purpose combat vehicles carry an assortment of medium-strength weapons to deal with a variety of situations.

A good indicator for the number of weapons that can be carried by a vehicle is the Size rating. While it is not a hard limit, if there are more weapon systems than Size points, the design is probably overarmed. Another suggested control method would be to say that a vehicle can carry one weapon of its own Size, then (Size - Min. Size)^2 for lesser weaponry. For example, a Size 12 vehicle could carry two Min. Size 11 weapons, or thirty-six Min. Size 6 weapons.

GENERATING THE NUMBERS ▼

b-1-13

The Threat Value and cost of a vehicle do not necessarily have to be figured out in order to use it in a given roleplaying campaign. Just plugging in the stats and playing is a perfectly valid option if a Gamemaster is present to balance the forces in presence. The Threat Value is useful only when hard numbers are required — for example, to help balance a one-shot tactical scenario, or to assign a price to a vehicle.

Threat Values enable the players to establish campaigns without the help of a Gamemaster. A single number is not the ultimate, perfect representation of a vehicle's worth, however. This is why a vehicle's Threat Value is further broken down into Offensive, Defensive and Miscellaneous Scores. These three "sub-values" point out the strengths and weaknesses of each vehicle design, making it much easier to balance out scenarios according to the mission at hand.

Calculating the Threat Value of a vehicle is a logical process involving separate, sequential steps. First, the Offensive Score, Defensive Score, and Miscellaneous Score values of the vehicle must be figured out. These three scores are then averaged together to determine the vehicle's total Threat Value. This allows the player to change some equipment or values without having to recalculate the whole vehicle. For the sake of simplicity, the scores and final Threat Value should be rounded off to two significant numbers once all calculations are done. This makes their use less cumbersome.

THREAT VALUE FORMULA

Threat Value = (Offensive Score + Defensive Score + Misc Score) ÷ 3

◇ROOTS AND EXPONENTS

Although **Silhouette** is a fairly simple rules system, some math was bound to creep its way in. Fortunately, most calculators have both the root and exponent functions, or at the very least the exponent function. If the calculator used is of the latter type, roots are still possible — just invert the exponent (see examples below).

The following format is used throughout: Squares are exponent 2, and Cubes are exponent 3. Higher levels of exponents are not used.

◘CALCULATING ROOTS AND EXPONENTS

•	Exponent of number = number^{exponent}
	examples: square of 2 = 2^2 = 2 x 2 = 4 cube of 2 = 2^3 = 2 x 2 x 2 = 8
•	Root of number = number$^{(1/root\ needed)}$
	examples: square root of 16 = $16^{(1/2)}$ = 4 cube root of 8 = $8^{(1/3)}$ = 2

◇THE OFFENSIVE SCORE

Vehicles with high Offensive Scores are especially good at dishing out damage. On open terrain and in face-to-face confrontations, they are very likely to come out on top. The base Offensive Score is the total of the ratings of all the vehicle's weapons and their required ammunition.

If a weapon has either a Fixed Forward (FF) arc or is turret-mounted, its weapon rating is altered. Weapons with FF arcs have a x0.6 multiplier applied to their Weapon Threat Rating while weapons with T arcs have a x1.8 multiplier applied to their Rating (this includes the cost of the turret). The turret may be deemed "slow" (ST): the player must choose a 180 degrees fire arc for it each turn; the cost multiplier is x1.5 instead. Only Weapon Cost, not ammo cost, is multiplied for these special arcs; ammunition is ammunition, regardless of the mounting of the weapon firing it.

A Weapon Link allows multiple weapons to be linked to a single fire control mechanism. One action is required to fire the weapon link. The link's Accuracy and Range are equal to the worst ratings among the link's weapons. Each weapon attacks and is rolled for separately. As soon as one weapon misses, all the other weapons not yet fired automatically miss (but still use ammunition). When a link is fired, *all* of the weapons in the link fire. However, the individual weapons that make up the link may be fired individually. Weapons may be part of more than one link. Damage is applied only after all weapons in the link have been fired; the Armor rating of the target remains the same throughout the attack.

A Sniper System is an additional targeting device that allows a weapon to have better accuracy at long range. In game terms, a weapon equipped with a Sniper System has a +1 modifier to the attack roll at Long and Extreme ranges. An Air/Ground System is a targeting device designed to help hit aerial targets (when on ground) or vice-versa. It removes the penalty for attacking targets in the air (or ground, for aircraft); see page 149 of the rulebook.

Punching ability for all types of arms is entirely optional and must be paid for by squaring one-half of the punch's Damage Multiplier to calculate the weapon rating of each punching arm. Note that it is possible to have a lower punch Damage Multiplier than the rating of the arm — it just requires more bookkeeping since a separate rating must be recorded. If a higher DM is desired, a melee weapon should be bought.

◘CALCULATING THE OFFENSIVE SCORE

Weapon Arcs and Special Systems	
•	Weapons with FF arc = Weapon Threat Rating x 0.6
•	Weapons with T arc = Weapon Threat Rating x 1.8
•	Weapons with ST arc = Weapon Threat Rating x 1.5
•	Weapon Link = Total cost of all weapons in link x 1.1
•	Sniper System = Total cost of all weapons in system x 1.1
•	Air/Ground System = Total cost of all weapons in system x 1.1
•	Punch Rating = (Damage Multiplier of arm x 0.5) squared
The Offensive Multiplier is equal to the sum of the following:	
•	Costs for all Weapons
•	Ammunition costs for all weapons
•	Cost of Special System, if present (Link, Sniper, Air/Ground)
•	*Punch rating for each arm (if applicable)*
•	**Offensive Score** = Targeting System Multiplier* x Offensive Multiplier

* Do NOT use the Fire Control rating. Instead, look up the rating on the *Targeting System Multiplier* table and use the multiplier given by the table to calculate the final Offensive Score.

TARGETING MULTIPLIER

Fire Control Score	Multiplier	Fire Control Score	Multiplier
+5	700	-1	0.5
+4	120	-2	0.333
+3	24	-3	0.25
+2	6	-4	0.2
+1	2	-5	0.167
0	1		

THE DEFENSIVE SCORE

Vehicles with high Defensive Scores are especially good at avoiding damage or surviving it. Their strong point is defending objectives and escaping enemy forces. The Armor rating and all movement modes are included in the calculation. The second and subsequent slowest movement speeds are added together. For example, if a vehicle had the Flight (fastest), Ground and Naval movement types, the latter two would be added together for calculation purposes. Ground and Rail vehicles with no other movement modes use a slightly modified Defense Score formula to reflect their simpler drive mechanisms. Their speed should be divided by 40 (for Ground only) or 60 (for Rail only) instead of 25.

The following formula produces the vehicle's Defense Score. Threat Values are calculated the same for flight-capable vehicles as for any other vehicle, with one little exception: a modified formula for the Defense Multiplier must be used. It takes into account the higher speeds of aircraft and also includes the Stall Speed since this can have a significant tactical effect.

CALCULATING THE DEFENSIVE SCORE

The Defense Multiplier is equal to the sum of the following:
• (Armor Rating) squared
• (fastest movement speed in kph ÷ 25†) cubed
• (sum of speeds of all other movement types in kph ÷ 6) squared
• (Space acceleration, in MP) squared
If the vehicle has the **Flight** movement system, the Defense Multiplier is equal to the sum of the following:
• (Armor Rating) squared
• ((Flight Speed - Stall Speed) in kph ÷ 125) cubed
• (sum of speeds of all other movement types in kph ÷ 6) squared
• (Space acceleration, in MP) squared
Defensive Score = Maneuver Multiplier* x Defense Multiplier

†Ground-only movement divide the speed by 40, Rail-only movement divide the speed by 60.

• Do NOT use the actual Maneuver rating. Instead, look up the rating on the *Maneuver Multiplier* table and use the multiplier given by the table.

MANEUVER MULTIPLIER

Maneuver Score	Multiplier	Maneuver Score	Multiplier
+3	9	-4	0.333
+2	3	-5	0.286
+1	1.5	-6	0.25
0	1	-7	0.222
-1	0.667	-8	0.2
-2	0.5	-9	0.182
-3	0.4	-10	0.167

THE MISCELLANEOUS SCORE

Specialist vehicles such as scout exo-suits, communication AFVs and the like typically have high Miscellaneous Scores to reflect their unusual abilities. Depending on the scenario played, this can be useful or detrimental.

The formula on the next page produces the vehicle's Miscellaneous Score. The vehicle's total actions are used in the formula, not just the bonus actions. The Communication, Sensor and Deployment Ranges should be divided by the correct factors before squaring or cubing them. If the sum of the Sensor and Communication ratings is negative, the square value will also become negative (for example, a total of -3 would be squared to 9, which would then become -9). The Perk/Flaw Point Totals refered to in the formula are the total cost points for all of the vehicle's Perks and Flaws, respectively.

CALCULATING THE MISCELLANEOUS SCORE

The **Miscellaneous Score** is equal to the sum of the following*:
• (Total Actions) cubed
• (Communication Range in km ÷ 10) cubed
• (Sensor Range in km ÷ 2) cubed
• (Deployment Range in km ÷ 50) squared
• (Burn Points ÷ 100) squared
• (Sensor Rating + Communication Rating) squared**
• (Perk Point Total) squared - (Flaw Point Total) squared

*The Miscellaneous score has a minimum value of zero; **If both values are negative, the square becomes a negative value.

▼CALCULATE DEFAULT SIZE AND COST

6.1.14

A basic Default Size and cost are determined to have base values to work with. The Default Size of a vehicle is calculated using the following formula. The Default Size should be rounded to the nearest whole number.

DEFAULT SIZE AND COST

• Default Size = Cube Root (Final Threat Value)
• Default Cost (in Credits) = (Final Threat Value) x 1000

▼CALCULATE PRE-PRODUCTION COST

6.1.15

The vehicle does not have to be the size generated by the calculations. It may be as large as twice the Default Size score or as small as one-fifth the Default Size score. There is no Threat Value modifier involved in changing sizes because the advantages and disadvantages tend to cancel out. For example, a smaller vehicle will be easier to transport, but a larger one will cause more damage in physical attacks.

If the vehicle is to be made smaller, the Pre-production Cost of the vehicle is equal to the Default Cost multiplied by the old Size rating, divided by the new Size. If the vehicle is to be made larger, the Pre-Production cost is equal to the Default Cost.

PRE-PRODUCTION COST

• Pre-Production Cost = Default Cost x (Default Size ÷ Actual Size)

▼SELECT PRODUCTION TYPE

6.1.16

Select the stage of production the vehicle is in. The Production Type will also define how much care is put into each unit built and how many units will be manufactured (the "# Available" column). Prototypes are hand crafted and often one-of-a-kind, making them outrageously expensive. Early production runs often still have a bug or two left in them that has yet to be worked out. Mass production runs produce cheap, reliable machines. Limited production runs improve product quality and increase cost. Scratchbuilt designs are lovingly hand crafted with little or no planning.

Along with production type comes Lemon Rolls, the only random part of vehicle design. If the Gamemaster is designing a vehicle for use in a campaign, he should feel free to ignore Lemon rules or add Defects that he finds appropriate. If designing a vehicle that the Player Characters are building, the Lemon Rolls should be made and enforced.

Note that this table is designed for vehicles of Size 1 to about 25. Larger vehicles, such as spaceships, rarely go past what could be considered the Early Production stage because of their extremely large and complex construction.

PRODUCTION TYPES

Model Type	Definition	# Available	Model Dice	Individual Dice
Testbed Prototype	New Tech	1-3	12	2
Early Prototype	New Model	1-5	8	1
Late Prototype	New Model	1-10	4	1
Early Production	New Release	5-100	3	3
Limited Production	High End Model	5-500	1	2
Mass Production	Common Model	100+	2	3
Scratch-Build	Patchwork Mess	1	N/A	10

LEMON ROLLS ◇

Not every vehicle is made the same, even if they are the same make, model and variant. Every once in a while, someone messes up and a lemon is produced. Just how many mistakes get made depends on the model of the vehicle.

In addition to the base model Lemon dice, one die is added for every full five Perks assigned to the vehicle. The dice are rolled normally: for each point over five, a Defect occurs. Fumbles are disregarded and count as ones. When a new model is produced, its model dice are rolled and the defects common to all vehicles of this model are determined. In addition, each individual vehicle gets a set number of lemon dice. Whenever a vehicle of this type is introduced into a game or campaign, its individual lemon dice should be rolled.

Due to the meticulous design and construction of Flight and Space vehicles, they tend to have fewer defects than other types of vehicles. In addition to the basic model Lemon dice, add one die for every ten (10) Perks the vehicle has, instead of the usual 5. Roll once on the Lemon Defect table per defect. If multiple options are available, only one should be selected.

Optionally, any Defect can be refused in favor of choosing the Curse: effectively, the vehicle proves Murphy's Law whenever it is convenient to the Gamemaster. For example, a tank model that gets struck by lightning 10 times more often than other tanks. A stealth submarine whose hull, for some unknown reason, picks up and resonates nearby radio stations. A destroyer which is just plain jinxed ("it's haunted... Yeah, that's it!").

LEMON DEFECT TABLE ◘

Die Roll	Defect
1	Structural Weakness (-1 Maneuver *or* -10% to Armor, rounding up)
2	Electronic Glitch (-1 Fire Control *or* -1 Sensors *or* -1 Communications)
3	Movement System Defect (-1 Maneuver *or* -10% Top Speed (min. 1 MP))
4	Vehicle has one Annoyance Flaw
5	Vehicle has additional Flaws totalling -2 or less
6	Vehicle has additional Flaws totalling between -2 and -4

CALCULATE FINAL COST ▼

The Pre-Production Cost of the vehicle is multiplied by the Production Cost Multiplier to obtain the Final Cost of the vehicle.

VEHICLE FINAL COST ◫

Model Type	Production Cost Multiplier	Model Type	Production Cost Multiplier
Testbed Prototype	x100	Limited Production	x2
Early Prototype	x20	Mass Production	x0.5
Late Prototype	x5	Scratch-Build	x0.2
Early Production	x1		

ASSIGN CREW AND NAME THE DESIGN ▼

All vehicles come with a full crew complement at no point cost, unless the scenario says otherwise. All crew are assumed to be Qualified (level 2 in all relevant Skills). However, it is possible to assign a worse or better crew according to needs. Crew quality modifies both the vehicle's final Threat Value and its cost (extra training is expensive!).

For normal vehicle crews, the skill level listed in parentheses is used for the Piloting, Gunnery and Leadership skills. The crew's Electronic Warfare and Tactics skill is one level lower. The crews of scout vehicles usually swap their Gunnery and Electronic Warfare skill levels (i.e. EW equals value in parentheses while Gunnery is one lower).

Fill out a vehicle record sheet for the new creation. Christen it with a good-sounding name or identification code and, optionally, write down its history and description. The new vehicle is ready for battle.

CREW SKILL MULTIPLIERS ◘

Crew Skill Level	Multiplier	Crew Skill Level	Multiplier
Rookie (1)	0.25	Legendary (5)	6.25
Qualified (2)	1	Legendary (6)	9
Veteran (3)	2.25	Legendary (7)	12.25
Elite (4)	4	Legendary (8)	16

▶ SPECIAL CASES

The Mechanical Design System is very exhaustive: it allows the creation of any type of vehicles and objects, from a bicycle to a gun emplacement to a huge spaceship. However, since the scale of the system is somewhat large to accommodate all those vehicles' different sizes, the smaller ones tend to suffer from a certain lack of detail. Other, more specialized items require additional explanations and special case rules.

This section explains how to design small vehicles (anything between Size 1 and 5), very large vehicles (above Size 30), emplacements, and robots.

▼ SMALL VEHICLES

Small scale vehicles (Size 5 and smaller) are easy to define using the normal rules. All that is required is a bit of ingenuity and a change of perspective. The Silhouette vehicle design system uses a set of mathematical formulas to compute the size, cost and effectiveness of a given vehicle based on its chosen capabilities. By adding decimals to the statistics and using them in the design formulas, an accurate and more detailed pattern will emerge just like the other, larger, vehicle types.

◇ SIZE

The main adjustment for small vehicles lies in the Final Size decided upon. Since the normal Size values cover quite a broad range of weights to choose from, they have been subdivided into smaller ranges for convenience. The Size value provided by that table is used in the TV calculations as usual, complete with the decimals.

◫ SMALL SCALE SIZE-TO-MASS CHART

Size	Mass in Kg	Size	Mass in Kg	Size	Mass in Kg
0.1	0-8	2.1	301-380	4.1	2401-2600
0.2	9-16	2.2	381-460	4.2	2601-2800
0.3	17-24	2.3	461-540	4.3	2801-3000
0.4	25-32	2.4	541-620	4.4	3001-3200
0.5	33-40	2.5	621-700	4.5	3201-3400
0.6	41-48	2.6	701-780	4.6	3401-3600
0.7	49-56	2.7	781-860	4.7	3601-3800
0.8	57-64	2.8	861-940	4.8	3801-4000
0.9	65-72	2.9	941-1020	4.9	4001-4200
1.0	73-80	3.0	1021-1100	5.0	4201-4400
1.1	81-102	3.1	1101-1230		
1.2	103-124	3.2	1231-1360		
1.3	125-146	3.3	1361-1490		
1.4	147-168	3.4	1491-1620		
1.5	169-190	3.5	1621-1750		
1.6	191-212	3.6	1751-1880		
1.7	213-234	3.7	1881-2010		
1.8	235-256	3.8	2011-2140		
1.9	257-278	3.9	2141-2270		
2.0	279-300	4.0	2271-2400		

◇ MOVEMENT AND MANEUVER

Small vehicles use the standard movement types with no modification to cost or capabilities. Man-worn exo-suits always use the Walker movement system. Speed is expressed in kilometers per hour, just like all other vehicles. To get the speed in *meters per roleplaying turn (6 seconds)*, the speed in kilometers per hour is multiplied by 1.65, rounding to the nearest whole number.

Small vehicles are generally more nimble than larger ones and their Maneuver Attribute should reflect this. Generally, small vehicles will not have a Maneuver of less than -3.

◇ ELECTRONICS

Small vehicles use the same Sensor, Communication and Fire Control Attributes as their larger brethren. Because of the limited internal space available, however, less equipment is generally carried. Sensor and Communication scores tend to be a bit lower (-1 or -2), but do not have to be.

ARMOR ◇

Small vehicles may have Armor ratings based on the Personal scale rather than the Vehicle scale. When this is the case, the Personal-scale Armor rating is divided by ten for Threat Value (TV) calculation. In tactical battles, it is also divided by ten, but is rounded to the nearest whole number. For example, an exo-suit could have an Armor rating of 45 on the Personal scale. This would translate to an Armor rating of 4.5 for TV purposes, and 5 for tactical battles.

SMALL SCALE WEAPONS ◇

Small scale weapons can also be designed using the standard formulas. Again, decimal values are used for extra detail. Vehicular weaponry causes ten points of Personal-scale damage per point of Vehicle scale damage.

For example, a machinegun carried by an exo-suit could have a Damage Multiplier of x22 in personal scale. This will translate in the design formula as a Damage Multiplier of 2.2 (22 divided by ten). The minimum vehicular damage caused by a weapon is always equal to one — it is not possible to design a vehicle-mounted weapon causing less damage than ten points on the personal scale.

LARGE VEHICLES ▼

Just like small vehicles, large vehicles can be built with specialized rules to better represent their capabilities and peculiarities. This section explains how to design large vehicles (anything above Size 30).

Large vehicles can be built as one large structure, but they are most often broken down into smaller parts to facilitate construction, reduce costs and increase their survivability. In **Silhouette** terms, this means that the vehicle is composed of a main hull, which may have the primary movement system(s), plus a number of superstructures and components that perform certain function and are "towed" by the main hull. Examples of this include weapon turrets, communication towers, drive units, etc. For the sake of simplicity, these are referred to as "sections" in the text.

SIZE ◇

The main adjustment for large vehicles lies in the Final Size. Movement systems are generally designed into the main hull, which is then used to "tow" the rest of the vehicle. The true Size of the overall vehicle (for collisions, physical attacks and transport) is thus the total of the mass of the main hull *plus* the respective masses of the sections added to it. This must be remembered if the vehicle is to tow or carry anything.

CREW ◇

Each section requires at least one crewmember, either human or computer. Actions are determined separately for each part of the vehicle, including the main hull. Crew casualties are likewise applied to each separate section as damage is received.

Crew may be reassigned to other sections. A number of crewmembers equal to the Size of the smallest section involved in the exchange may be transferred each turn. Transferred crewmembers do not count for action purposes in the round during which they are transferring.

MANEUVER ◇

Large vehicles are generally slower than small ones and their Maneuver rating should reflect this. Generally, large vehicles will not have a Maneuver of more than -3. All sections must have the same Maneuver rating as the main hull. They use the same movement modifiers in combat (e.g. if the main hull is moving at Combat speed, each section will be treated as moving at Combat speed).

Sections ignore any Maneuver-related damage result, but still lose Armor points as usual (1 for Light damage, 2 for Heavy damage). They are affected by any Maneuver damage suffered by the main hull.

MOVEMENT ◇

Only the main hull (and additional motive sections, if present) needs movement system(s). Other sections do not need movement systems but still have connections to the main hull to benefit from its movement — they may not take the "No Engine" Flaw or any other movement-related Perk or Flaw. Sections ignore any Movement-related damage result, but still lose Armor points as usual.

The exception to this is additional motive sections. These contribute motive power by adding their total mass to define a common "towing capacity." This is then used to tow the rest of the vehicle (the main hull simply adds its own MPs). Obviously, all motive sections must use the same movement type. If a motive section is Overkilled or can no longer supply any motive power, the speed drops; the remaining motive sections' speed is rechecked according to the towing rules.

◇ELECTRONICS

The electronic systems (Sensor, Communication, Fire Control) are distinct for each part of the vehicle. Thus, if the hull carries no weapons it can have a Fire Control rating of -5, while the turrets have a standard Fire Control of 0. A communication tower could have a very high Communication rating but not much else.

Some sections can dispense with Sensors, but they all need a Communication system to connect with the rest of the vehicle. Should it be destroyed, that section is cut off and may not receive orders from (or supply them to) the rest of the vehicle. It cannot benefit from Command points or transfer crew unless a messenger physically fetches them (that crewmember does not count for any actions while he is away from his post).

◇ARMOR

Armor is placed as normal on the main hull and components. Each section has its own Armor rating and takes damage separately. Should a section be Overkilled, any remaining damage is applied to the Armor of the main hull to see if additional damage is suffered. If the main hull is Overkilled, each section still has power for a number of turns equal to its Size, after which they lose all power and become inactive.

For example, a turret section with an Overkill value of 72 takes a critical blow from a powerful laser beam and suffers 110 points of damage as a result. The Overkill result automatically destroys the turret, while the remaining 38 points of damage are transferred to the hull.

◇WEAPONS

The weapon and ammunition carrying capacity of each section depends on its Size, as normal. Extra ammunition may be stored in other sections, but must be physically transferred. A section is considered fixed in place. If the design calls for a turret, the weapon is bought with the Turret fire arc as normal. Fixed arcs are also possible.

▼EMPLACEMENTS

Buildings and general structures such as roads and bridges are assigned Damage Point Capacities rather than an Armor rating (see *Urban Terrain*, page 88). These structures take damage by ablation rather than by Light or Heavy damage effects. It is possible to mount systems and weapons on these basic structures to give them additional capabilities: these are referred to as emplacements.

Emplacements are designed using the same system as vehicles, with a few limitations. They have a maximum Size rating of 15 (25 when added to Dense Urban structures). Their movement is always equal to zero, and their Maneuver value is equal to -10 for calculation purposes. Their defense roll will always be equal to zero — a gun emplacement does not dodge. Emplacements always benefit from the Stationary attack modifier (+2). Gun emplacements ignore any Movement or Maneuver-related damage result, but still lose Armor points as usual (1 for Light Damage, 2 for Heavy Damage).

Emplacements don't have to make room for components such as an engine, transmission or control systems, so they have more internal space to devote to weaponry and ammunition. They count as being five Size points larger than their actual Size for weapon and ammunition Size requirements. The Deployment Range shows how many hours of power are stored in their internal reserves.

▼ROBOTS

The vehicle design system can also be used to create any kind of robots or mechanical life form the game requires. For the brave of heart, it can even be used to design robotic characters. Robots can be built into any form one might think of. Just like a vehicle, they have Armor, Maneuver, Speed, etc. Most of these numbers relate directly (or almost directly) to a human Attribute, so using robots in a roleplaying environment is generally not a problem. The mental Attributes of their onboard computer "brain" (Creativity and Knowledge — plus Willpower and Psyche if applicable) are also directly equivalent to human mental Attributes.

◫HUMAN/ROBOTS EQUIVALENCIES

Robotic Attribute	Human Attribute	Robotic Attribute	Human Attribute
Threat Value	Character Points	Communication System	N/A
Size	Build	Fire Control	Agility/Perception
Movement Type(s)	Walkers	Armor	Stamina
Combat Speed	Jogging Speed	Deployment Range	Fitness
Top Speed	Sprinting Speed	Computer Attributes	Mental Attributes
Maneuver	Agility	Modules	Skills
Sensors	Perception		

THREAT VALUE ◇

The total Threat Value of the robot roughly indicates how many Character Points it is worth, allowing balance with various other characters. Robots will tend to be more powerful than humans, but less flexible. In the **Jovian Chronicles** universe, the Edicts have practically stopped research into artificial intelligence. Other campaign worlds may have access to a higher technology and feature robots that are human-like in their mental capabilities.

Threat Value points have no direct conversion to Character Points because the physical performance variation between two humans are generally too small to register on the vehicle scale. As a rule of thumb, 30 TV points will result in a humanoid robot that is roughly equal to an average human in terms of physical capabilities.

SIZE ◇

Robots can be built to any size, but most of them will weigh in at less than a ton (Size 3 or less). The use of the Small Vehicle Size Table (page 108) is highly recommended. By cross-indexing the weight with the Build table, one can determine the Build Attribute of the robot if it is required (for example, if the robot is to use tools or vehicles built to accomodate human beings of a certain size).

MOVEMENT AND MANEUVER ◇

Humanoid robots automatically use the Walker movement type, but robots can use practically any movement type the designer chooses. In fact, most robots will have a movement type that is most suited to the task(s) they have been designed to fullfill. Multiple movement systems are also possible.

The Maneuver Attribute covers the robot's natural agility and response speed. It is roughly equivalent to the human Agility Attribute and is used in the same way.

ELECTRONICS ◇

The Sensor Attribute of the robot is the equivalent of the human Perception Attribute and is used the same way. Robots often have a built-in communication system, although it is not mandatory. If the robot does not carry one, it should have the "No Communication System" Flaw. Obviously, there is no human equivalent to this Attribute.

Fire Control defines the robot's ability to use ranged weaponry, whether built-in, carried or vehicle mounted. The closest human Attribute would be an average of Agility and Perception (which are used for personal weapons and vehicular weapons, respectively).

ARMOR ◇

Robots use Armor instead of Stamina. Their Armor ratings are normally based on the Personal scale rather than the Vehicle scale: the Personal-scale Armor ratings are divided by ten for Threat Value (TV) calculation. In tactical battles, it is also divided by ten, but rounded to the nearest whole number.

DEPLOYMENT RANGE ◇

The Deployment Range's closest human Attribute would be the Fitness Attribute. Machines do not tire, however, so they do not have a Fitness rating. Robots have a Deployment Range which represents the maximum distance they can cover before needing a recharge or other maintenance, depending on their design. To determine the operating time in hours rather than distance, divide the Deployment Range (in km) by the Combat Speed of the robot. Immobile robots may use the Deployment Range directly, with one hour equal to one "kilometer."

COMPUTER ATTRIBUTES ◇

Robotic brains are built using the Computer Perk. It might be possible for a robot to be designed with an Artificial Intelligence Computer, gaining Willpower and Psyche Attributes just like human characters. Refer to the *Computers* chapter, page 136, for the computer rules.

MODULES ◇

Modules are programs that serve as the computer equivalents of skills. Unlike skills, which are "fixed," modules can be loaded as needed (see *Computers*, page 136). A number of Modules equal to the square of the Processing Power may be carried in the memory of the machine, although only a limited number may be run at any one time, depending on the computer's Processing Power.

▶ PERKS

Many vehicles have special features, such as ejection systems and cargo bays, that are not covered by the vehicle's tactical and strategic statistics. These features are represented by Perks. Many Perks are primarily intended for background and roleplaying purposes and do not have significant tactical effects.

Perks which have an "AUX" icon are defined as Auxiliary Systems for damage purposes. Perks which have an "R" icon have a Rating associated to them.

R

ABLATIVE ARMOR — COST: PER DEFENSE ARC = RATING ÷ 2

One (or more) facing of the vehicle is covered with a special armor plating which shatters under kinetic stress or vaporizes when hit. This absorbs incoming damage, but the ablative armor must invariably be replaced after each battle. The maximum amount of ablative armor that may be carried is equal to half the Armor rating of the vehicle, rounded down. Each defensive arc (Front, Sides and Rear) must be protected separately.

When the vehicle is hit, the current Perk rating is added to the Armor rating of the vehicle. Ablative armor automatically loses 1 point from its rating per ten points of damage every time it is hit. This is in addition to the normal Armor damage of the vehicle, if applicable. The Ablative Armor loses points on every hit of ten or more points of damage, whether the attack inflicts a damage result to the vehicle or not.

ACCELERATION PROTECTION — COST = 1

Aircraft and spacecraft with this Perk have been modified to reduce the strain of acceleration on its crew, either through special cockpits, G-seats or advanced flight suits. Crew have a +1 bonus whenever they have to make a FIT roll due to sharp turns or other effects of acceleration. Only Flying and Space vehicles can take this Perk.

ADVANCED CONTROLS — COST = SPECIAL

The vehicle has a very advanced, user-friendly control interface. The great ease of its use allows the vehicle to have one extra action each combat round, regardless of the number of crewmembers aboard. Advanced Controls do not have a regular Perk cost — rather, they add one to the number of actions supplied by the crew for calculation purposes.

AIRDROPPABLE — COST = 4

This Perk is added to vehicles that will be parachuted in by airborne units. The vehicle is equipped with a parachute or an equivalent device that allows it to be dropped from high altitude onto a battlefield. The suspension and drive train have been specifically designed to absorb the shock of landing without suffering damage. See *Airdropping*, page 76.

AIRLIFT READY — COST = 1

The vehicle is equipped with quick-connect hardpoints and is reinforced in a manner that makes it easy to airlift by VTOLs. Airlifting can be used to deploy a vehicle rapidly or to allow it to cross major obstacles. An airlift-ready vehicle can be prepared for take-off in half the time normally required to do so. See *Airlifting*, page 76.

AUX
R

AIRLIFT WINCH — COST = RATING

The aircraft is equipped with a rugged system which enables it to airlift troops and/or cargo without having to land. The Perk's rating gives the maximum number of troops that can be airlifted in a single Air War round, or the maximum Size of any airlifted cargo. The Perk rating cannot be higher than half the Size of the aircraft. The vehicle has to be stationary and at altitude level 0. Only VTOL Flying vehicles can take this Perk.

AMMO/FUEL CONTAINMENT SYSTEM — COST = 4

The vehicle's ammunition and fuel bays are reinforced and equipped with blast-control panels. The system completely absorbs the first hit when an "Ammo/Fuel Hit" result is obtained on the Fire Control Damage Table — there is no further damage beyond the lost Armor points. The Perk is then destroyed. The Perk's effect can be restored by normal repair if a technician works on the vehicle after combat.

AMMO STORAGE — COST = 1 PER 20 TV POINTS OF AMMO STORED (ROUNDED UP)

The vehicle is equipped to store some or all of its spare ammunition clips in an armored compartment to protect them against damage. If there is no Manipulator Arm or ammo-reloading Tool Arm mounted on the vehicle, the crew must reload the weapon manually, at a rate of one shot per action. The clips are not counted as an AUX systems and can only be destroyed when actually in the weapon. The cost is one point per ten TV points of ammunition stored, regardless of how they are divided into clips.

AUX

AMPHIBIOUS — COST = 3

The vehicle is adapted for occasional water travel such as river crossings and aquatic assaults. The vehicle is amphibious, but is not intended for extended water activity. In the tactical game, the vehicle may travel across Water hexes, paying MP according to its normal movement type (not as a Naval vessel). This Perk does not grant the Submarine movement. The Amphibious Perk is only available to Walker and Ground vehicles.

AUX

AQUATIC SENSORS — COST = 2 (IF ONLY AQUATIC); 2 + 1/2 OF RANGE OF AQUA. SENSORS (IF NORMAL + AQUATIC)

The vehicle is equipped with underwater sensors such as sonar, magnetic anomaly detectors and specialized cameras. A vehicle may be equipped with aquatic sensors in addition to its normal sensors, or it may be equipped exclusively with aquatic sensors. The latter use the sensor range that would have been used by their "normal sensors." Vehicles with both must specify the range of both types of sensors.

In tactical terms, the vehicle ignores Water terrain Obscurement while in water itself. Some vehicles have aquatic sensors that do not need to be immersed in water to function. They must be within a minimum distance (often under a kilometer) from the body of water they wish to scan, however. If aquatic sensors can be used out of water to detect targets in water, an additional +1 is added to the cost per 100 m (2 tactical hexes) of distance this ability extends to.

AUTOPILOT — COST = 5 ▼

AUX

Autopilots are simple devices that can take over the piloting tasks. They can keep the vehicle going in a straight line, avoid large obstacles, and steer the vehicle towards a specified location. In tactical terms, an autopilot is very limited. It can be used to keep a vehicle moving in a straight line or perform 60° (one hex-facing) turns. Autopilots are not affected by Crew hits, cannot fire any weapons and dodge attacks as a level 1 pilot. An autopilot is required if the vehicle is to be remote controlled or computer operated.

BACKUP COMMUNICATIONS — COST = 2 ▼

The vehicle may ignore one Communications damage effect of the Auxiliary System Hit on the Systems Damage Table. All non-communication auxiliary systems take normal damage effects. The Perk can be restored by a normal repair if a technician works on the vehicle after combat.

BACKUP FIRE CONTROL — COST = 5 ▼

The vehicle may ignore one "Fire Control Destroyed" result on the Fire Control Damage Table. The Perk's effect can be restored by a normal repair if a technician works on the vehicle after combat.

BACKUP LIFE SUPPORT — COST = 2 ▼

The vehicle has backup life support systems that allow the vehicle to continue providing life support functions long after the primary system has been disabled. In game terms, the vehicle continues to have life support even if the vehicle has all of its auxiliary systems destroyed. The vehicle must already have a life support system to take this Perk.

BACKUP SENSORS — COST = 5 ▼

The vehicle may ignore one Sensor damage effects on the Auxiliary System Hit of the Systems Damage Table. All non-sensor auxiliary systems take normal damage effects. The Perk's effect can be restored by a normal repair if a technician works on the vehicle after combat.

BACKUP SYSTEMS — COST = 12 ▼

This is a package deal which contains one of each of the followings: Backup Communications, Backup Fire Control, Backup Life Support and Backup Sensor. The usual rules for these apply in full.

BATTLE ARM — COST = 0.2 X RATING FOR EACH ARM ▼

R

The vehicle has a rudimentary arm without manipulator. While battle arms are merely flexible projections and not very nimble, they can lift objects — provided these have been attached to the arm — whose Size score is equal to or lower than their rating. No matter the rating of a battle arm, a vehicle cannot lift an item whose Size is greater than twice its own. If a vehicle has multiple arms, half the weight lifting capacity of the weaker arms are added to the full rating of the strongest arm to determine the total lifting strength.

Battle arms can be designed to punch opponents: they end in a reinforced battering ram or other brawling weapon. This attack type has a Damage Multiplier equal to the rating of the arm. This ability modifies the Offensive Score of the vehicle (see *Offensive Score*, page 104).

CARGO BAY — COST = 1 (VOLUME IN CUBIC METERS) ENCLOSED, (SURFACE AREA IN SQUARE METERS) 10 OPEN ▼

A cargo bay is a large hollow place within the vehicle to put miscellaneous material. Cargo bays can be designed for unusual cargo: some cargo bays are meant to carry only liquids, like the tank of a fuel truck. Others are compressed gas containers, like a tank of fire fighting foam. Of course, cargo bays can always be simple hollows intended to store boxes of goods. Although specialized cargo bays often cost more to design and build, their inherent lack of flexibility cancels this — thus no extra TV points are charged for them.

Cargo bays are rated in terms of their volume in cubic meters. The intended type of content of each cargo bay must be specified at the time of construction: solid, liquid or gaseous. Cargo bays are enclosed within the vehicle. Open-topped bays are also possible, but material carried in such a bay is counted as an AUX system for damage location purposes.

It is important to note that the cargo space bought represents only the actual space dedicated inside or on the hull of the vehicle, not an increase in the power of the engine. Thus, the cargo's weight counts as "towed" material for game purposes. Cargo bays have a minimum dimension of one meter, square or cubic. Vehicles are assumed to occupy a volume roughly equal to $(Size/2 + 1)^3$, rounded up. This is doubled to include some servicing and access space around it, or multiplied by ten to get full maintenance and service capacity (including gantry, ample spare parts and fuel).

VEHICLE STORAGE

Vehicle Volume	Vehicle Bay
x1	Tightly packed, crate-style storage
x2	The vehicle can be moved, minimal repairs may be done (-2 to Tech rolls)
x5	Moderate repair facilities (-1 to Tech rolls), limited resupply stores
x10	Full repair facilities, moderate resupply stores and fuel
x20	Full repair facilities, extensive resupply stores and fuel

CATAPULT — COST = RATING ▼

AUX
R

A catapult is a powerful system designed to give a high initial velocity to an object leaving the vehicle, most often a carried aircraft or exo-armor. The catapult gives an initial acceleration equal to (rating x 150)/mass in tons of the catapulted object, in meters/second^2. This applies directly for spacecraft; for aircraft and other vehicles, refer to *Flying with Thrusters*, page 148 of the rulebook, to convert this into speed.

R

COMPUTER — COST = (RATING²) X ATTR. MULTIPLIER (FLEXIBLE); 0.5 X (RATING²) X ATTR. MULTIPLIER (HARDWIRED)

The vehicle has a built-in, general use computer in addition to the computers used to control the vehicle. While it is primarily a roleplaying tool, players can use the computer in tactical combat, using Modules such as Electronic Warfare, Fire Control and Pilot to assist the crew. The Perk's rating is the Processing Power of the computer. This is squared and multiplied by the Attribute Multiplier (see table) to get the cost. It should be rounded to the nearest whole number. Hardwired computers are designed for a specific module and module level, and their programming cannot be changed. As a result, they are cheaper.

Instead of being equipped with an ordinary computer, the vehicle may have a sentient Artificial Intelligence: it is thus capable of independent action and decision making. Each AI computer counts as a separate crew and gets its own actions and penalties. No live crew need be added. Neither type of computer is affected by "Crew" hits. See *Computers*, page 136, for the complete rules and descriptions of Modules.

ATTRIBUTE COST MULTIPLIER

•	If AvgAtt > 0, Attribute Multiplier is (AvgAtt+1)²
•	If AvgAtt = 0, Attribute Multiplier is 1
•	If AvgAtt < 0, Attribute Multiplier is 1/(AvgAtt+1)

AvgAtt is the average (rounded to the nearest whole number) of the Creativity, Knowledge, Willpower and Psyche Attributes.

AUX R

COUNTER-BATTERY SENSOR — COST = 4 × RATING

A Counter-Battery Sensor (CBS for short) is a set of specialized radar and sensors designed to locate an enemy artillery unit based on the trajectory and signature of its fire missions. When an indirect fire attack is incoming, an attempt can be made by any CBS-equipped unit within half sensor range of the target hex to locate the attack's origin, allowing effective counter-fire. Activating the CBS costs one action. The operator "attacks" the enemy unit using Electronic Warfare as the skill and the CBS as the weapon. The opponent must reveal in which range band the firing unit is located. The CBS's Base Range is equal to its rating; it has +0 Accuracy and does no damage.

A successful roll locates the last known firing position of the firing unit. Obviously, if the enemy battery moved after firing, the information is much less valuable. A failure does not yield any information. On a fumble, the operator gets a phantom echo — any counterattack automatically deviates by a number of hexes equal to the result of three dice, added together.

AUX R

DECOY SYSTEM — COST = RATING (VISUAL ONLY); RATING (SENSOR ONLY); RATING SQUARED (VISUAL AND SENSOR)

A Decoy system allows a vehicle to project phantom images of itself or another object by using inflatable decoys, holography or electronic signal imaging technologies. In tactical game terms, the Decoy system can create as many false images as its Rating. The attacker must make a Notice Skill check (if playing a purely tacical game, replace this by an Electronic Warfare Skill test) against the Rating with a modifier of -3 in order to hit the correct target. Both Sensor and active ECCM system add their Rating to this roll.

Visual decoys only affect visual detection and are automatically identified as decoys by Active Sensor rolls. It is also possible to create false sensor targets with no visual images — these are automatically identified as phantom echoes once in visual range, but have their rating boosted by the rating of active friendly ECM. More advanced decoys can imitate both the visual aspects and the sensor signature of the vehicle they emulate. Guided, Smart and Sensor-homing weapons are just as likely to go for a sensor decoy, though they won't be fooled by a visual one.

DIVING WINGS — COST = 2

Fixed wing aircraft with this Perk have their wings in a distinctive shape which enhances its ability to pull out of a dive. Any such plane gives a +1 bonus on Piloting Skill rolls for pulling out of Dives, Stalls or uncontrolled falls. Only Flying vehicles can take this Perk.

EASY TO MODIFY — COST = 2 PER SUBASSEMBLY, 9 FOR THE COMPLETE VEHICLE

Easy to modify vehicles feature standardized parts and modular aspects. While this type of design is a joy to service or modify and often lasts longer in the field, it is generally more difficult to design. They rarely have many other innate features and are usually modified whenever any new functions are needed.

One (or more) of the vehicle's subassemblies is designed in such a manner as to be easy to repair or replace. +2 is added to all technical skill rolls to modify and repair this particular subassembly of the vehicle. The subassemblies covered by this Perk are: Movement, Structure, Fire Control and Auxiliary Systems.

AUX

EJECTION SYSTEM — COST = TOTAL # OF ACTIONS DUE TO CREW (EJECTION SEATS), X 2 (ESCAPE PODS)

The vehicle is equipped with an ejection system to give the crew a chance to escape if the vehicle suffers an Overkill damage result (or before that, if desired). See *Ejection* (page 159 of the rulebook) for more details. This Perk also covers the various pieces of survival equipment such as life preservers and inflatable lifeboats on marine vehicles. Very few ground vehicles have ejection systems — if the crew is unable to crawl out of their vehicle, they are probably dead already.

An ejection seat is designed to get a crewmember away from the craft to avoid being caught in any explosion which might result. A parachute (in atmospheric operations) or a rescue beacon (in space) allow for a safe rescue, although with little control over which hands the person falls into. An ejection pod is a self-contained life boat for air and space vehicles which allows for a limited amount of maneuvering and for re-entry to a planet's atmosphere. Its naval equivalent is the inflatable life raft.

AUX R

ELECTRONIC COUNTER MEASURES — COST = RATING X 2

Electronic Counter Measures (ECM) are devices that are used to jam sensors and communication systems. ECM is especially useful to prevent forward observing and drone operations. Rules for using ECM systems can be found on page 151 of the **Jovian Chronicles** rulebook. ECM range is identical to the vehicle's Sensor range.

ELECTRONIC COUNTER COUNTER MEASURES

COST = RATING X 2

AUX

R

Electronic Counter Counter Measures (ECCM) are devices that are used to block jamming systems and/or punch through their effects. Using ECCM to prevent jamming requires one action. Rules for using ECCM systems can be found on page 151 of the **Jovian Chronicles** rulebook. ECCM range is identical to the vehicle's Sensor range.

EMERGENCY MEDICAL

COST = 1 X NUMBER OF CREW ACTIONS, 0.1 X NUMBER OF PASSENGERS

This Perk includes features like instant casts for broken limbs and stimulant/pain-killer injections to prevent loss of consciousness. In tactical game terms, this Perk cancels one "Crew Stunned" result on the Systems Damage table. In roleplaying terms, the vehicle will prevent the character from losing consciousness due to his injuries. In addition, the emergency medical features will prevent wound degeneration for up to one full day. Not all personnel need be equipped with the system.

EMERGENCY POWER SURGE

COST = (RATING)²

AUX

R

Emergency Power Surges (EPSs) systems are a rare feature. A vehicle with this Perk can, for a short time, boost its statistics by unleashing emergency capacitors, nitro injections, etc. In game terms, the EPS system "spends" its rating points to gain a set of benefits.

This allows the vehicle to increase one of the following attributes by one for a single combat round per rating point spent: Maneuver, Top speed MP, number of actions, weapon Damage Multiplier or weapon Base Range. Each attribute can be raised up by a maximum of three points (so the maximum EPS points usable during a single round is equal to 15). A vehicle could spend all of its rating points in one round for one glorious burst of power, or it could conserve the points for emergencies.

It is also possible to "overburn" the EPS system, doubling the effects but damaging the vehicle. If this option is used, each EPS point counts as two, but the system affected drops by one point afterward. If actions drop below zero, the vehicle must "buy" back the penalty before applying the action. For example, a one-man vehicle at -2 actions would have to take extra actions (and associated penalties) to act.

EPSs burn themselves out during use. Therefore, they do not regenerate their rating. EPS repairs usually require complete vehicle overhauls. EPS use must be declared during the declaration phase and does not require an action.

FIRE RESISTANT

COST = 8

The vehicle is made of fire-resistant materials and provides adequate heat protection for the crew. In game terms, the Intensity of any flame attack against the vehicle is halved before damage is determined.

FUEL EFFICIENT

COST = 2 FOR ONE AND A HALF TIMES THE RANGE, 4 FOR TWICE, 8 FOR THREE TIMES

The engine and systems of the vehicle are extremely efficient: a greater deployment range than normal is possible. As long as the vehicle remains at Combat Speed, each point of Deployment Range provides more kilometers of distance. One and a half, twice and three times the range are possible multipliers.

GLIDER

COST = 2

Aircraft with this Perk possess the abilities of a thermal glider and only lose one altitude level or MP of speed when gliding. In addition, the pilot can ride hot air currents to actually gain altitude levels, by making a Piloting roll versus a threshold of 5. Each point of Margin of Success allows the craft to gain one altitude level, without losing speed. This Perk can only be taken by Flying vehicles.

GUN PORTS

COST = 1 (ONE-THIRD OF THE CREW AND PASSENGERS), 2 (HALF THE CREW AND PASSENGERS)

The vehicle is equipped with gun ports from which the crew and passengers can fire small arms while retaining the protection of the vehicle's armor. Only small arms may be fired from gun ports, not heavy weapons. Because of the design of the gun ports, the weapon is restricted to a "Fixed" firing arc and has a -1 modifier to hit in addition to the vehicular movement modifiers.

HAYWIRE RESISTANT

COST = 10

The vehicle is specially designed to shrug off massive electrical charges through isolated circuitry and grounded structure. This Perk allows the vehicle to reduce the effects of weapons with the "Haywire" characteristic. On a Light Damage result, the second damage roll is ignored. On Heavy Damage results, the second damage roll is treated as a Light Damage roll instead of a Heavy one.

HEAT RESISTANT ARMOR

COST = RATING

AUX

The vehicle's armor is designed to deflect and dissipate the intense energy delivered by weapons like shaped-charge warheads, particle beams and lasers. Although all armored vehicles have some degree of HEAT resistance built into their armor plating, many frontline combat vehicles have an extra layer of ceramic/ablative armor to help them fend off Monroe-effect warheads and energy weapon beams.

The maximum rating is equal to half of the vehicle's base Armor rating (rounded down). This rating is added to the vehicle's base Armor rating when the vehicle is attacked by HEAT-based weapons. This Perk has no effect versus weapons that are not HEAT-based (this is determined during weapon design — see page 133).

HIGH TOWING CAPACITY

COST = 5 (DOUBLE) OR 15 (TRIPLE)

The vehicle is equipped with a high torque, heavy duty powerplant and transmission. Its towing capacity is doubled (or tripled, depending on the option chosen). If the vehicle has the "Walker" movement type, this Perk provides heavier actuators and power systems to give more power to the lower limbs. This yields higher damage in combat from kicks and stomps — add one to the kicking Damage Multiplier for double towing capacity, and two for triple towing capacity.

AUX
R

HOLOFIELD — COST = RATING X 2▼

The holofield allows a vehicle to blend in to its surroundings by using both limited scope holography and photoskin technology; it is the visual equivalent of the Stealth Perk. In tactical game terms, the holofield adds its Rating to the vehicle's Concealment at all time. It only affects visual detection and does not affect Active Sensor rolls.

HOSTILE ENVIRONMENT PROTECTION ▼

The vehicle is specially designed to survive undamaged for prolonged exposure to some hostile environmental conditions. Though this is mostly a roleplaying consideration, some tactical rules require specific environmental protections in certain types of terrain and weather (see Chapter 5 for more information). This Perk is noted "HEP: <chosen environment>" on the vehicle sheet. The following options are available.

HEP: DESERT — COST = 1

The vehicle can withstand extended exposure to desert conditions without needing special maintenance to avoid sand build-up. This Perk includes air filters, modified heat exchangers, and cloth coverings on delicate mechanisms.

HEP: EXTREME HEAT — COST = 4

The vehicle is designed to withstand exposure to scorching temperatures, often well into the hundreds of degrees Celsius, without taking severe damage. If combined with the Fire Resistance Perk, the vehicle is effectively immune to incendiary attack.

HEP: EXTREME COLD — COST = 1

The vehicle is designed to endure freezing cold temperatures, such as those found in Earth's arctic and antarctic regions, without freezing up or otherwise breaking down. Heaters, special lubricants and other modifications are part of this Perk.

HEP: HIGH GRAVITY — COST = 1

The vehicle is designed to withstand very high gravity environments (3 gees+) for extended periods. This does not, however, guarantee that the crew can do the same.

HEP: HIGH PRESSURE — COST = 4 (HIGH PRESSURE); 10 (EXTREME PRESSURE)

The vehicle is designed to endure the great pressures of locations like ocean depths and the upper layers of gas giants. A variant of this Perk (Extreme Pressure) allows the vehicle to endure even the most extreme pressures, such as those found in the deepest of ocean depths or within the atmosphere of gas giants.

R

HEP: RADIATION — COST = RATING

The vehicle is designed to withstand high radiation levels. Foamed armor, rad-absorbing gel layers and additional shielding protects the vehicle's sensitive systems (especially the crew). The rad protection level, in rads/hour, is equal to ten to the power of the rating (e.g., a rating 3 system would give 10^3 or 1000 rads/hour of protection).

HEP: UNDERWATER — COST = 2

The vehicle can withstand full submersion in water and other fluids, up to a depth equal to five times the vehicle's Armor rating in meters (multiplied by five when combined with High Pressure, multiplied by twenty with Extreme Pressure). Vehicles capable of Submarine movement automatically possess this Perk at no cost.

HEP: VACUUM — COST = 1

The vehicle is designed to withstand the lack of pressure found in vacuum environments. All hatches and access points are equipped with airlocks, the hull or crew compartment is pressurized, and so on (a life support system must still be bought separately, though). This Perk does not, however, grant a vehicle the ability to perform atmospheric re-entry (which is a separate Perk).

HEP: ALL — COST = 12

The vehicle is designed to withstand *anything* thrown at it. It can go over land, in space, underwater, etc. It possesses all the above abilities at no additional point cost, except Radiation and Extreme Pressure protections (which must be bought separately).

IMPROVED OFF-ROAD ABILITY — COST = 9▼

The vehicle is designed to handle rugged terrain even better than standard military grade ground vehicles. Ground vehicles have massive wheels or treads. Hover vehicles can vary how high they float off the ground and have improved hazard detection systems to avoid pitfalls and rough ground. Walkers have powerful legs and wide, high traction feet that allow them to run efficiently even when trudging over sand or through swamps.

In tactical game terms, the vehicle pays one less MP for any terrain type that requires more than one MP. For instance, a Ground vehicle with Improved Off-Road Ability would pay 3 MP instead of 4 MP when crossing Swamp hexes, but would still pay 1 MP per Clear or Sand hex. The Perk must be bought separately for each movement type.

IMPROVED REAR DEFENSE — COST = 10▼

It is normal for combat vehicles to have thick front plates and weaker rear plates, since most attacks will normally come from the front. Vehicles with this Perk have a well-defended rear arc, either through a superior armor design or additional sensor systems. In game terms, this reduces the defense roll penalties from Rear and Rear Flank attack by one. In other words, the Rear Flank arc of defense penalty is 0 and the Rear arc of defense penalty is -1.

• LABORATORIES

COST (PER LAB) = 5 + (10 X RATING) ▼

AUX

R

Some vehicles are equipped with "laboratories," systems that help the crew in specialized tasks. Each laboratory is dedicated towards one particular Skill or Skill specialization. Combat skills (including all Piloting/Driving and all Gunnery) may not have labs, as they are covered by other vehicular systems. Laboratories are rated upon their quality (minimum of 0). This quality rating is added as a modifier to any test performed using the laboratory's skill. Laboratories eliminate any penalty due to missing tools and proper equipment. They can be used to represent specialized rooms such as tactical command centers (Leadership), galleys (Cooking) or even theaters (Theatrics).

• LARGE DOORS

COST = 1 ▼

The vehicle's crew and passenger compartments are equipped with oversized doors and hatches that allow rapid egress and ingress. For each action spent, two crewmembers (instead of one, as usual) can exit the vehicle. A number of passengers equal to twice the Size of the vehicle may enter or exit each turn at no action cost.

• LIFE SUPPORT

COST = 1 X NUMBER OF CREW ACTIONS (LIMITED); 3 X NUMBER OF CREW ACTIONS (FULL) ▼

AUX

Life support systems provide the vehicle's crew with a sealed and self-supporting milieu, protecting them from hostile environments such as poisonous atmosphere, vacuum and underwater. If this system is destroyed while the vehicle is in a hostile environment, the entire crew immediately become casualties, eliminating the vehicle from combat. All combat vehicles have a basic overpressure system to protect them from most biochemical weapons, so Life Support should be bought only for those vehicles that truly need it.

The limited form of life support includes contingencies for breathing and limited nutritional and excretory needs, and provides support for each crewman only up to the deployment range. The full version of life support includes complete air recycling, proper waste disposal, hygienic and nutritional facilities; it lasts indefinitely for game purposes.

• LIGHTER-THAN-AIR

COST = 2 (STANDARD ENVELOPE), 4 (SELF-SEALING ENVELOPE) ▼

Aircraft with this Perk use lighter-than-air gases to stay aloft. Since this uses no Movement Points, Lighter-than-air craft do not fall when their movement systems are disabled or destroyed, though their horizontal movement will be determined by wind alone (see *Wind*, page 90). Lighter-than-air craft can gain or lose one level of altitude per round without using MPs.

Light damage to the Structure will cause a lighter-than-air craft to lose one level of altitude per round, without the possibility to gain them back. Heavy Structural damage will cause a two-level drop per round. The envelope can be designed to be self-sealing; when taking Structural damage, airships with this option will suffer the loss of altitude effect only once instead of every round.

A lighter-than-air craft occupies three times as much space as its Size (for example, a Size 10 lighter-than-air will completely fill a tactical hex). Craft with this Perk are considered VTOL craft for determining admissible Perks and Flaws. Only Flying vehicles can take this Perk.

• LOW PROFILE

COST = 2 ▼

The vehicle has a very low profile which make it easier to hide and conceal. Vehicles with this Perk tend to have sloped and compact hulls — for obvious reasons, bipedal walkers generally cannot be designed this way. The vehicle gets +1 to Concealment while in cover (hexes with Obscurement of 2 or more). If the Hull-Down rules are used, it derives an extra 5 points of protection from its position.

• LOUDSPEAKERS

COST = 1 ▼

AUX

These are powerful external loudspeakers. These can be used with sirens, audio systems, communication gear, or any other audio equipement.

• MANIPULATOR ARM

COST = 0.5 X RATING FOR EACH ARM ▼

R

The vehicle has an arm-like structure that can pick up and manipulate objects. Manipulator Arms are part of the basic layout of practically all exo-vehicles. Small Manipulator Arms can also be installed on any type of vehicle to represent "micromanipulators" used for delicate maneuvers. The arm can lift an object whose Size is equal to or lower than its rating. No matter the rating of a Manipulator Arm, a vehicle cannot lift an item whose Size is greater than twice its own Size. Lifting any mass greater than half the vehicle's own mass will prevent the vehicle from moving. Half the capacity of all weaker arms are added to the full capacity of the strongest arm to determine the lifting strength of multiple arms.

Optionally, Manipulator Arms can be reinforced to punch or crush opponents. These attacks have a Damage Multiplier equal to the rating of the arm. This option adds nothing to the Perk's cost but modifies the Offensive Score (see page 104). For roleplaying purposes, manipulators can apply pressure equal to half their Size rating, rounded up. The highest weight value for that result on the Size to Mass chart is the pressure applied in tons per square meter.

Manipulator Arms can be used for fine manipulations and tasks which require dexterity. A standard Piloting skill test is required, the threshold varying according to the task. In addition, a negative modifier equal to the difference between the object's Size and the hand's rating is applied to the roll. The Size to Mass table helps to evaluate the Size of the object being manipulated.

• MINING EQUIPMENT

COST = 5 (LIGHT DUTY); 20 (HEAVY DUTY) ▼

AUX

The vehicle is adapted to perform mining functions. Mining equipment must be specified as either light or heavy duty. Light duty mining equipment consists of one or two sampler arms, a small earth-moving blade (or a more conventional bulldozer blade) and a simple winch with a cable strong enough to move the vehicle. Heavy duty equipment is intended for commercial mining operations: in addition to the aforementioned equipment, it includes a large rock grinder, a shovel arm, one or two trenchers and a drill. Ore conveyors are also fairly common.

The mining equipment can be designed to attack opponents in melee combat. The Damage Multiplier equals half the cost of the mining equipment, rounded up. Light duty equipment has poor (-1) Accuracy and heavy duty equipment has very poor (-2) Accuracy. If selected, this ability modifies the Offensive Score of the vehicle.

NOE FLYER — COST = 7

Aircraft with this Perk are equipped with very advanced sensor-assisted flight systems, which allow the aircraft to effectively fly at altitude level zero (NOE, or "Nap-of-the-Earth" flying). This enables the aircraft to avoid most long- and medium-range radars and detection systems by using the ground's surface features to hide behind.

In game terms, the NOE flight system gives a -2 modifier to any roll on the Aircraft Control Loss Table (see p. 148 of the rulebook) if the aircraft is at altitude level zero. When flying at altitude zero, the vehicle benefits from the Obscurement of ground hexes against ground-based detection attempts and attacks (see page 150 of the rulebook). Only Flying vehicles can take this Perk.

NO FUEL REQUIRED — COST = 10 (PERMANENT POWER); 6 (POWER CAN BE CUT OFF)

The vehicle's main powerplant does not require regular fill-ups with fuel or reaction mass. It draws its energy from the environment around it (a solar-powered or sail vehicle, for example). The vehicle still has to undergo basic maintenance from time to time, though. The Deployment Range Rating represents the interval at which basic maintenance must be performed.

Solar sail and magsail vehicles use this system. The sail itself is so thin (or insubstantial, in the case of the magsail) that it causes no damage to anything that comes into contact with it. Solar sails are damaged as normal during collisions. Sails damaged by any means will reduce the vehicle's thrust by 0.01 MP for each ten points of damage suffered. If the thrust falls under half its normal value, the sail collapses and is unusable. For game purposes, solar and magsails have a diameter equal to half the Size of the vehicle, in kilometers.

PASSENGER ACCOMMODATIONS — COST = SQUARE ROOT OF (VOLUME IN CUBIC METERS)

The vehicle is equipped with proper living and sleeping quarters. This is a necessity for long range vehicles if the crew and passengers are to remain fresh and alert. There are two quality levels of accommodations available. Military grade accommodations are spartan in design and provide little privacy or comfort. Luxury accommodations occupy about twice the volume of military accomodations but include private sleeping quarters, a small private lounge, and personal hygienic facilities. A vehicle with numerous living accommodations of either type also generally includes a few common rooms such as galleys and lounges, and thus must devote more space to accomodations.

Military grade accommodations for one person start at two cubic meters in size, while civilian accommodations can be as big as a thousand cubic meters on very large vehicles. As a guideline, a minimum of 25 cubic meters per person are required for any moderately long occupations. Accommodations can also serve as makeshift cargo bays if the furniture is removed (assume that one person-minute per cubic meter are required for the conversion). The passenger accommodations' volume is added to the vehicle's to get a total volume. Passenger accommodations usually take up a lot of room, but even civilian vehicles can have military-grade accommodations to cut costs. A good example of this is the sleeping cab found behind the driver on many long-haul trucks.

PASSENGER SEATING — COST = SQUARE ROOT (3 X NUMBER OF PASSENGERS)

The vehicle has extra seats for passengers. The passengers do not confer any extra actions to the vehicle, nor can they control it. They do, however, count as crew for damage purposes (any damage should be randomized between crew and passengers). Passengers cannot use the crew's ejection system (if any); this must be purchased separately, at the same cost as for normal crew. A number of passengers equal to the Size of the vehicle may enter or exit each turn at no action cost, provided the vehicle is moving no faster than 12 kph.

PINTLE MOUNT — COST = FREE (COST OF WEAPON IS ADDED TO O.S.)

An infantry weapon installed on a swivel mount just outside a hatch is said to be pintle mounted and must be operated by one of the vehicle's crewmen. That crewman can do nothing else and is exposed to enemy fire (count as Partially Exposed Crew, unless the vehicle is already open topped). Pintle Mounts have a 180 degrees arc of fire chosen at the time of design. The weapon is not protected by the vehicle's armor and counts as an Auxiliary system. Fire Control hits neither affect pintle mounted weapons nor does the Fire Control bonus apply to them. Firing penalties are equal to -1 for more than half and up to Combat speed, and -2 for Top speed, in addition to any other modifiers.

Pintle mounts are quite simple and add little to the cost of the vehicle. Any type of infantry weapon can be mounted on them. The cost of the weapon is equal to its DM plus its Base Range plus its ROF in vehicle scale, and is added directly to the vehicle's final Offensive Score.

RAM PLATE — COST = 4

Part of the chassis of the vehicle has been specially reinforced to withstand high speed impact. Each ram plate must be assigned to a ramming arc. The vehicle takes only half the normal damage in a collision, provided the impact is in the same arc as the Ram Plate.

AUX

REENTRY SYSTEM — COST = 4 FOR SINGLE USE, 8 FOR PERMANENT FEATURE

The vehicle has been specially reinforced to withstand the high temperature and stress of atmospheric reentry. Every five turns, the pilot must make a Piloting roll against a Threshold of 2 to keep the craft correctly oriented or suffer one Fire attack as per normal reentry rules (see **Jovian Chronicles** rulebook p. 143). Modifiers due to damage apply in full.

REFUELING EQUIPMENT — COST = 2 PER REFUELING BOOM, 1 FOR INTAKE AND RECEIVING EQUIPMENT

This Perk allows a vehicle to be refueled on the move. The refueling boom consists of enough equipment to refuel one vehicle at a time. The fuel is usually carried within a cargo bay, but the refueler can use its own Deployment Range or Reaction Mass instead. Both pilots must roll their Piloting skills vs. 4; if either fails, the refueled vehicle takes on only 1d6 x 10% of the intended load. A fumble means a collision occured, and the refueling equipment on both vehicles is out of service. A refueling attempt may be made every three minutes (6 rounds). Suggested time for total refueling is one round per point of Size of the target (plus the three minutes for hook-up).

R

REINFORCED ARMOR — COST (PER ARC OF DEFENSE) = RATING

The vehicle has one or more facings (arcs of defense) with better or thicker armor than the rest of the vehicle. When the vehicle is hit in an arc that is reinforced, the rating of this Perk is added to the base Armor rating of the vehicle. Four possible arcs can be reinforced: Front, Rear, Right Rear Flank and Left Rear Flank. Up to three of these arcs can be reinforced on a single vehicle.

● REINFORCED CHASSIS — COST = 6 ▼

The frame of the vehicle is designed to absorb considerable punishment. The vehicle may ignore the first Structure hit on the Systems Damage Table, but then loses this Perk. The Perk's effect can be restored by a normal repair if a technician works on the vehicle after combat. This Perk may be taken more than once.

● REINFORCED CREW COMPARTMENT — COST = 4 ▼

The crew compartment is layered with additional armor and fitted with crash-absorbing material. The vehicle may ignore the first Crew hit on the Systems Damage Table, but then loses this Perk. Crew casualties from Structure hits are unaffected, however. The Perk can be restored by normal repair if a technician works on the vehicle after combat. This Perk may be taken more than once.

● REINFORCED LOCATION ARMOR — COST (PER LOCATION) = 0.5 X RATING, ROUNDED UP ▼ — R

One of the vehicle's locations has better armor than the rest of the vehicle. When the vehicle is hit in a reinforced location, the rating of this Perk is added to the base Armor rating of the vehicle before determining damage. This Perk cannot be taken more than twice per vehicle.

● RUGGED MOVEMENT SYSTEMS — COST = 5 ▼

The vehicle may ignore the first Movement hit on the Systems Damage Table, but then loses this Perk. This protection is due to the inherent strength of the drive system's design, or a built-in redundancy. This Perk's effect can be restored by a normal repair if a technician works on the vehicle after combat. This Perk may be taken more than once.

● SATELLITE UPLINK — COST = 10 ▼ — AUX

The vehicle has a specialized add-on to its communication system that greatly boosts its range. This allows it to patch into man-made satellites when the vehicle is on a planet, or transmit messages over great distances in space. The direct Communication range of a vehicle equipped with a Satellite Uplink is multiplied by one thousand (flight or space range factors still apply). The Satellite Uplink includes tracking and motion-correction equipment so the system can be used at up to half-Combat speed (or half-Thrust).

● SEARCHLIGHT — COST = 0.25 PER 50 M RANGE (FIXED), 0.75 PER 50 M RANGE (SWIVEL) ▼ — AUX

The vehicle has a powerful front-mounted lighting system. At night, treat the vehicle's Fixed Forward firing arc as if it were in daylight. Some searchlights are mounted on a swivel plate: at night, the vehicle's Front (or Right, Left, or Rear, as selected) firing arc is treated as if it were in daylight. Any fire directed at the vehicle is also treated as if the vehicle were in daylight, regardless of the arc.

● SICK BAY — COST = 2 X MAXIMUM NUMBER OF PATIENTS ▼

Some large vehicles have an infirmary or sick bay. These facilities have no value in the tactical game, but, in the roleplaying game are considered to be constant medical aid for healing purposes. Sick bays are rated by their maximum number of patients.

● STEALTH — COST = RATING X 3 ▼ — AUX, R

Stealth systems are features that make a vehicle difficult to detect with sensors: heat baffles, radar-absorbing skin, silent systems, etc. In tactical game terms, Stealth adds its rating to the vehicle's Concealment value when opponents use Sensors to detect it (see page 151 of the rulebook). Stealth systems have no effect upon visual detection.

● STRATOSPHERIC FLIGHT — COST = 8 ▼

An aircraft with this Perk can climb past the habitual ceiling of 12 km (altitude level 48 in Air War scale), in effect going into the stratosphere, up to an altitude of 50 km (altitude level 200 in Air War scale). It requires the Space movement mode and sufficient reaction mass in order for the vehicle to move into orbit, however. Flying vehicles in the stratosphere double their Flight MP at no cost because of the rarefied atmosphere. Only Flying vehicles can take this Perk.

● STREAMLINING — COST = 2 ▼

The vehicle is shaped to present minimal resistance to the medium through which it moves. It gets +1 MP when moving at Top Speed. Streamlining has no effect on space movement, but reduces the amount of thrust required to fly within an atmosphere (see page 148 of the rulebook). Aircraft are already considered to be streamlined, but taking this option makes them even more so.

● TARGET DESIGNATOR — COST = 5 + BASE RANGE IN HEXES ▼ — AUX

Target designators are used to lock-on guided weapons (see *Guided Weapons*, page 127). To lock-on a designator, the vehicle simply "attacks" the target, using the designator as the weapon. Its Base Range is equal to its rating. It has +0 accuracy and does no damage. Any successful attack "paints" the target for incoming guided munitions. The target remains designated until the end of the round.

● TOOL ARM — COST = 0.3 X RATING FOR EACH ARM ▼ — R

The vehicle has an arm-like structure with a specialized tool attachment, such as an earthmoving scoop or a cargo handling claw. Tool arms are very diverse and can represent forklift-like cargo loaders, a tow truck's winch arm, a crane's boom, an extendible blowtorch, a sensor boom or any other useful tool that can be imagined. The only restrictions are that the arm cannot handle objects with the finesse of a manipulator and its function must be clearly defined.

Tool Arms can lift objects whose Size is equal to or lower than their rating, provided it has been attached to or is contained by the arm. No matter what the rating of a Tool Arm, a vehicle cannot lift an item whose Size is greater than twice its own Size. Half the capacity of weaker arms are added to the full capacity of the strongest arm to determine the lifting strength of multiple arms. Optionally, Tool Arms can be reinforced to punch or crush opponents. These attacks have a Damage Multiplier equal to the lifting capacity of the arm. This option adds nothing to the Perk's cost but modifies the Offensive Score (see page 104).

▶ FLAWS

Flaws are the opposite of Perks. Flaws represent defects or shortcomings in the vehicle. Sometimes these shortcomings are planned into the vehicle as a cost cutting measure, at other times the defects are the result of design errors (either ignored by the designer or caused by a Lemon roll). Flaws, just like Perks, are rated by a "cost." Flaws are subtracted from the Perks' cost — they reduce the total cost of the vehicle.

Some Flaws have an "R" icon beside their listing. These have a Rating associated to them.

ANNOYANCE — COST = -0.2 PER ANNOYANCE

Annoyances are the tiny little things that make vehicle crew (and technicians) scream in frustration. Any design can have something infuriatingly annoying about it. Small vehicles are typically cramped and uncomfortable. Vehicles packed with electronics often have some minor subsystem on the blink now and then. Vehicles with powerful engines can have noise problems.

This type of Flaw is too insignificant to have an effect on the tactical game, but Annoyances are interesting for roleplaying purposes. They also serve to individualize the various vehicle designs, and they add significant "character" to the vehicle. Each Annoyance must be clearly identified and described, and this Flaw cannot be taken more than five times per vehicle. The gravity of the Annoyance is left entirely to the designer of the vehicle — it might even be used against the vehicle, if it significantly impair its performances.

SAMPLE ANNOYANCES

Name	Game Effect
Bad Left Turning Ability	The vehicle doesn't respond well on left side maneuvers
Cramped Crew Compartment	Limit on crew's BLD
False Alarm System	Gives false warning to crew
Instruments are hard to read	Crew has to concentrate harder
Loud Engine Noises	Engine makes worrisome noises
Minimum Skill	A minimum Skill level is required to operate the vehicle
Small entry hatches	Takes one more turn to enter/exit
Stale Smell	Ventilation system creates strange odors
Uncomfortable Seats	Reduce crew Skills after a certain number of hours

BRITTLE ARMOR — COST = -10

The vehicle's armor and superstructure are either of poor quality of just badly attached/fitted. When the vehicle is hit, large sections fall off or the molecular structure of the amor material is severely weakened. The vehicle loses twice the usual Armor points loss from damage, that is, two points at Light Damage and four at Heavy.

CANNOT GLIDE — COST = -4

The aircraft has little or no wing span, and cannot gain lift without constant thrust. Should the engines fail, or be cut off for any reason, the aircraft will automatically enter an uncontrollable fall (see page 148 of the rulebook) which cannot be escaped unless the engines are brought back on line. Only vehicles with the Flying movement can take this Perk.

R

DECREASED MANEUVER — COST = (RATING X 2)

When using one type of movement, the vehicle loses some of its natural agility. This Flaw only applies to vehicles with two or more Movement Types and must be linked with one Movement Type in particular. When this Movement Type is used, the rating of this Flaw is applied to the vehicle's Maneuver value.

R

DEFECTIVE SENSORS — COST = RATING

The vehicle's sensor system has a tendency to go on the blink in a random manner. Defective Sensors are rated from 1 to 5. In combat, one die is rolled before attempting to use Active Sensors. If the roll is equal to or less than the Defective Sensors rating, the Flaw's rating is applied as a negative modifier to the Sensor test.

R

DEFECTIVE FIRE CONTROL — COST = RATING X 2

The vehicle's Fire Control system has a tendency to go on the blink in a random manner. Defective Fire Control is rated from 1 to 5. In combat, one die is rolled before firing a weapon. If the roll is equal to or less than the Defective Fire Control rating, the Flaw's rating is applied as a negative modifier to the attack.

DIFFICULT TO MODIFY — COST = -1 PER SUBASSEMBLY, -5 FOR THE ENTIRE VEHICLE

The vehicle's innards are a nightmare of intertwined machinery and cables. Pieces must be specially machined for it, bolts and nuts are not standard, the color coding is wrong, etc. Very few vehicles with this Flaw will make it out of the factory, and even less of these will find their way to the front lines. If it happens anyway, both pilots and technical crew will spend most of their time nursing it.

As a result of the design, one (or more) of the vehicle's subassemblies is hard to repair or replace. A -1 modifier is applied to all repairs and modifications attempts on this particular subassembly of the vehicle. The subassemblies covered by this Perk are: Movement, Structure, Fire Control and Auxiliary Systems.

EXPOSED AUXILIARY SYSTEMS — COST = -5

If the vehicle has all sorts of external gizmos attached to its hull with little or no protection, then it is likely to have the Exposed Auxiliary Systems Flaw. This Flaw is particularly appropriate for vehicles with large sensors, satellite uplinks, or external ECM pods. Whenever an Auxiliary Systems effect is rolled on the Systems Damage Table, it is treated as if the damage was one stage worse (i.e. Light Damage is treated as Heavy and Heavy Damage as all Auxiliary Systems destroyed).

EXPOSED CREW COMPARTMENT — COST = -5

This Flaw is used to represent the open tops of jeeps and convertible vehicles. If only part of the crew or passengers are exposed, use the "Partially Exposed Crew" Flaw instead (see page 122). Vehicles with Exposed Crew Compartments should not be front-line combat units under any circumstances. Whenever a Crew effect is rolled on the Systems Damage Table, it is treated as if the damage was one stage worse (i.e. Light Damage is treated as Heavy and Heavy Damage as all crew killed).

EXPOSED FIRE CONTROL SYSTEMS — COST = -4

The vehicle's Fire Control mechanisms are inadequately protected. Firing sensors are exposed, barrel elevation mechanisms are unarmored, and so on. The weapon systems themselves my be temperamental, refusing to function correctly at the slightest damage. A +1 modifier is added to the die when rolling on the Fire Control Damage Table.

EXPOSED MOVEMENT SYSTEMS — COST = -5

Combat vehicles normally have well-protected movement systems. It is possible, though, that a vehicle does not. It might be because its motive systems are too large, protrude too far away from the chassis, or are completely unarmored. If the vehicle is a civilian or non-combat model, odds are that its movement system is poorly protected. Whenever a Movement systems effect is rolled on the Systems Damage Table, it is treated as if the damage was one stage worse (i.e. Light Damage is treated as Heavy and Heavy Damage as all movement systems destroyed).

EXTERNAL POWER — COST = -2 — AUX

The vehicle does not have a powerplant and does not require regular fill-ups with fuel or reaction mass. It draws its energy from wired or beamed power. The vehicle still has to undergo basic maintenance from time to time, though. This is what the Deployment Range rating represents in this case. External Power is not strictly a Flaw, but is a liability even though it reduces the vehicle's weight and cost.

External power can be beamed in, with a collector device receiving the energy and converting it for use by the vehicle's systems. The vehicle must remain in line-of-sight with the power supplier. If the collector is destroyed, the vehicle will suffer total power failure. The energy may be wire-fed instead, with the vehicle trailing a wire for power. A Piloting roll must be made every turn against the highest MP cost for the hexes traveled to avoid snagging the cable. Flying drones must test also and use the overflown ground's MP cost. Space drones are not affected. Failure means the cable is stuck and the drone must halt for the next round to free it. A fumble means the cable is severed. The cable has a Damage Point Capacity equal to the vehicle's Size, per hex.

EXTREME OVERHEATING — COST = -10

The vehicle is prone to overheating in a highly dangerous manner. The vehicle will automatically suffer a Light Damage effect if it does any of the following for two combat rounds in a row: move and fire a weapon, fire three or more weapons, or use Space movement. If it does any of those actions for three combat rounds in a row, the vehicle will suffer a Heavy Damage effect.

FRAGILE CHASSIS — COST = -5

Since the construction system assumes military designs per default, its vehicles have very tough superstructures. Civilian vehicles and some non-combat vehicles normally use lighter, less expensive chassis to help cut costs. These chassis perform just fine under everyday, normal usage, but they are more vulnerable to weapons fire and physical damage. +1 is added to the die when rolling on the Structural Damage Table.

FUEL INEFFICIENT — COST = -RATING — R

The vehicle gulps down massive amounts of fuel. Each kilometer traveled adds the rating of this Flaw for Deployment Range purposes. For example, a vehicle with this Flaw at Rating 2 will count each kilometer traveled at Top Speed as six for fuel purposes (1+2, times two for Top Speed consumption).

HAZARDOUS AMMO/FUEL STORAGE — COST = -5

The vehicle's fuel tanks and/or ammunition bays are poorly designed. They are either placed in a prominent place, lightly armored, or even both. +1 is added when rolling Light Damage on the Fire Control Damage Table, +2 when rolling Heavy Damage.

HEAT VULNERABLE — COST = -RATING — R

The armor of the vehicle cannot withstand high energy attacks such as those from lasers or shaped-charge warheads. Subtract the rating of this Flaw from the Armor rating of the vehicle when submitted to a HEAT attack.

HIGHLY FLAMMABLE — COST = -2

The vehicle is built with flammable materials, or is extremely sensitive to excessive heat. All incendiary attacks have their Intensity doubled. If the vehicle is destroyed, it will keep burning at Intensity 10 for an additional number of turns equal to its Size.

INEFFICIENT COMBAT COMPUTER — COST = -4

The vehicle's fire control computer is easily overtaxed and can only fire one weapon or set of linked weapons per turn without penalty. If more than one weapon or link is fired, a -1 modifier is applied for each weapon or link fired after the first, to all attack rolls beyond the normal modifier for extra actions spent. This Flaw can only be taken by vehicles with two or more weapons.

INEFFICIENT CONTROLS — COST = -9

The vehicle's control mechanisms are poorly organized, causing the crew to waste precious time in high-stress situations. The number of crew actions is reduced by one.

R

LARGE SENSOR PROFILE — COST = -RATING X 2

A design Flaw has made the vehicle more visible to sensors: a large structure, a high infrared signature, a poorly shielded, overly powerful electronic suite, or a significant radar trace. The Flaw's rating is subtracted from the vehicle's Concealment value versus sensors (not for Obscurement). While this has a limited effect in tactical combat, a large sensor profile is hazardous when trying to ambush enemies or evade pursuit.

R

MAXIMUM CEILING — COST = RATING X -1.5

Aircraft with this very common Flaw cannot climb past a certain altitude. The rating is subtracted, in kilometers, from a height of 12 km to give the aircraft's maximum ceiling. For example, an aircraft with a Maximum Ceiling rating of 4 cannot climb past (12 - 4 =) 8 kilometers (an altitude level of 32 in Air War scale). Rotary wing craft rarely have ceilings higher than 4 km (rating 8). Aircraft that can go higher than 12 km cannot take the Maximum Ceiling Flaw. Only Flying vehicles can take this Perk.

R

MAXIMUM CLIMBING ANGLE — COST = RATING X -3

Some aircraft lacks the lift or the engine power to rapidly ascend into the air. Aircraft with this Flaw must advance a certain number of hexes before they can climb one altitude level; the rating of the Perk gives the number of hexes. If equipped with a VTOL system, the aircraft must either move forward as above or spend an additional MP per altitude level risen. Only Flying vehicles can take this Perk.

MUSCLE-POWERED — COST = -5

The vehicle relies on muscular energy to move. Vehicles with this Perk can be animal-drawn carriages, bicycles, or even lightweight submarines or flyers. Even ion drive "space bicycles" are possible. Muscle-powered vehicles may not take the "No Engine" Flaw, even though they have no real engine, only a transmission system. They require a minimum of (vehicle's Size, squared) human crew for power. Crewmembers can be replaced by animals, though BLD must be equivalent (a single 140 kg animal equals two 70 kg men, for example).

Movement Speeds and Deployment Range are not chosen for the machine and count as zero for calculation purposes. Instead, the maximum speed in hexes (adjusted for air and space) is equal to the average Strength, plus three. The Deployment Range of such a craft is equal to the average Stamina, times two. One point is added to the average Strength and Stamina for each doubling of the team's size. Speed cannot be greater than the maximum speed of the slowest member of the team if the vehicle is directly pulled or pushed. The stats are recalculated if the vehicle takes casualties (pre-calculated performances for each casualty are recommended to save time during play).

NO COMMUNICATION — COST = -5

The vehicle is not equipped with any form of communication system. It cannot stay in contact with teammates and cannot act as forward observer for indirect fire. It may not benefit from Command Points under any circumstances. Such a vehicle has both Communication rating and range equal to zero for calculation purposes.

NO ENGINE — COST = -2

This is not a Flaw *per se*: the vehicle has simply been designed without an engine or power transmission system and must be towed or catapulted. Vehicles with this Flaw usually have compensating Perks like Glider. If flying, the vehicle cannot have a Stall Speed lower than 1, unless it also has the Lighter-than-Air Perk. Movement hits are ignored, though Armor is lost as usual.

NO SENSORS — COST = -6

The vehicle has no electronic sensors and may only detect opponents visually. The vehicle is likely to have a clear canopy or exposed crew compartment. Such a vehicle has both Sensor Rating and range equal to zero. It cannot perform an Active Sensor check and must rely entirely on the Detection rating of its crew to acquire its targets (see page 150 of the rulebook).

ONE WAY COMMUNICATION — COST = -2

The vehicle's communication system can either receive or emit, but not both. This Flaw is useful to save cost on expendable automated drone units or second-line vehicles. Only receiving Communication systems allow the unit to use Command Points, and only emitting systems allow forward observing.

OVERHEATING — COST = -5

The cooling systems have been badly designed or damaged and the vehicle is prone to overheating in a dangerous manner. The vehicle will automatically suffer a Light Damage effect if it does any of the following for three combat rounds in a row: move and fire a weapon, fire three or more weapons, or use Space movement.

PARTIALLY EXPOSED CREW — COST = -5 X (CREW EXPOSED ÷ TOTAL CREW), ROUNDED OFF

Only part of the crew is protected by the vehicle's mass and armor; the rest is exposed to enemy fire. The vehicle is considered to have the "Exposed Crew Compartment" Flaw until all exposed crewmembers have been eliminated. For example, a vehicle which has three crewmen in an enclosed cockpit and four gunners on open mounts will have the Flaw until the four gunners are casualties. The cost would be (4 ÷ 7 =) 0.571 x -5, rounded off to -3.

PROBLEM-PRONE — COST = -1 PER ADDITIONAL LEMON DIE

Tighten one bolt, and two come loose. For some unknown reason, problems seem to crop up everywhere on the new design. One die is added to the Lemon roll, regardless of the chosen production type.

● POOR OFF-ROAD ABILITY — COST = -1 ▼

All ground vehicles are given a certain amount of innate off-road ability by the basic rules. Most civilian vehicles and some military transports, however, lack the rugged suspensions and transmissions required for proper all terrain performance, and thus have this Flaw.

Whenever entering terrain that costs two or more MP (not including elevation changes), the MP cost of the hex is increased by one. The vehicle may ignore this penalty and move counting the normal MP cost, but the crew must make a Piloting Skill roll for each hex against a Threshold equal to 4 + the hex's MP cost. If failed, the vehicle suffers Light Movement damage or is stuck for 1d6 rounds. If fumbled, the vehicle suffers Heavy Movement damage or is stuck permanently and must be towed out. Use the usual damage method to decide which option ocurs. Roll a die: even number, Attacker choses, odd number, Defender choses.

● POOR TOWING CAPACITY — COST = -1 ▼

The vehicle's powerplant is too small for towing, or its transmission system is not up to the task and overheats all the time. The vehicle's towing capacity is halved. Few if any military vehicles will have this Flaw.

● RANDOM SHUTDOWN — COST = -0.5 X RATING ▼ — R

Whenever the vehicle is strained (each turn of combat or every 15 minutes of moving at Top Speed), the vehicle's Pilot must roll two dice to avoid shutting down for a number of combat turns equal to the roll of one die. The Threshold is equal to one, plus the rating of this Flaw. The vehicle may not ove or take any action while shut-down.

● REQUIRES AIRSTRIP — COST = -5 ▼

The aircraft cannot land on rough or even smooth non-asphalted ground. An airstrip or straight portion of highway (in very good condition) is required for a safe landing — this is represented by a Road (see page 88). In any other case, the pilot must make a Piloting skill roll against a Threshold equal to 3 plus the Ground MP cost of the hex to avoid crashing. Only Flying vehicles can take this Perk.

● SENSOR DEPENDENT — COST = -6 ▼

The vehicle's cockpit does not allow the pilot a direct, clear visual image of his vehicle's surroundings. In tactical game terms, the vehicle must use its sensors to detect anything. If the sensors are damaged or destroyed, the vehicle is running blind and is next to useless. It cannot attack, nor can it move. Any such attempt is automatically randomized on the board (i.e., direction and target are determined by the dice instead of the controlling player). If the environment permits, one or more crewmembers may open a hatch, negating the sensor penalty but acquiring the Partially Exposed Crew flaw.

● TRACEABLE EMISSIONS — COST = -RATING X 3 ▼ — R

The vehicle emits large amount of residual heat, smoke, radiation, etc., and is thus easily tracked down. This is not the same as Large Sensor Profile, which relates to the vehicle itself; if the vehicle is shut down, these emissions disappear. Sensor rolls to spot the vehicle have a bonus equal to the Rating of this Flaw. Guided weapons automatically lock-on without need for a designator. AIs and computers (such as autopilots) may be instructed to track these emissions.

● UNSTABLE — COST = -2 -5 FOR AIRCRAFT ▼

The vehicle is somewhat hard to control at high speed, either because it is badly designed or just top heavy. Apply a -1 modifier to all Piloting skill rolls at Top Speed or in terrain with a MP cost greater than one. This is a more serious Flaw in an atmospheric flight vehicle, where a sudden turn can result in a lost of lift, intake, or any of a dozen other serious problems. A flight vehicle suffers a -1 to Maneuver any time it travels at a speed higher than Combat Speed.

● VULNERABLE TO HAYWIRE EFFECTS — COST = -5 ▼

The vehicle is highly vulnerable to electrical attacks; fragile circuitry and ungrounded systems are prone to excessive damage. Weapons with the "Haywire" characteristic get three damage rolls instead of their normal two. In the roleplaying game, the Intensity of any electrical attack directed against the vehicle is doubled.

● WEAK FACING — COST = -(0.25 X BASE ARMOR RATING) PER DEFENSIVE ARC ▼

The vehicle has a weak facing, this may be due to incomplete armor coverage, shoddy design, or plain bad material. When the vehicle is attacked in the corresponding defense arc, its effective Armor total is halved before checking for damage. This Flaw cannot be taken more than twice per vehicle (i.e., two facings maximum).

● WEAK POINT — COST = -0.5 X RATING, ROUNDED DOWN ▼ — R

The vehicle has a weak point in the armor covering one of its locations. This may be due to incomplete armor coverage, shoddy design, or flimsy armor material. When a specific system/location is aimed at (not just randomly rolled on the System Damage Table) and successfully hit, the base Armor is reduced by the Rating of this Flaw before checking for damage. This Flaw cannot be taken more than twice per vehicle.

● WEAK UNDERBELLY — COST = -0.2 X BASE ARMOR RATING ▼

The underside of the vehicle is either unarmored or otherwise poorly protected. The vehicle's effective Armor is halved against all attacks coming in directly from below, such as minefields.

▶OFFENSIVE AND DEFENSIVE SYSTEM DESIGN

b-5

This section is titled *System Design* because it can be used to design not only weapons, but also some more specialized equipment such as grapples and shields. Like the vehicle design system, the following rules let the designer choose the *basic performance required* by the system's specific function, then modify them with special characteristics to represent virtually anything that can be imagined.

The various rules listed here should only be used to build Vehicle-scale weapons and systems. Although they can probably work pretty well for large Personal-scale systems, they have not been calibrated for that and the resulting calculations can lead to some pretty strange results. Other than this, there is no practical limit to what can be done: it is all a matter of putting the right characteristics together.

To avoid the cumbersome notation "weapon/system/etc.," every system is referred to as a weapon, because this is what most systems designed here will be.

▼STEP ONE: BASIC ATTRIBUTES

b-5-1

Starting from a concept, the basic Attributes of the new system are selected. These can and will be modified by special characteristics bought later in the design process. Each system has four basic Attributes: Damage Multiplier, Base Range, Accuracy and Rate of Fire. Although primarily intended for weaponry, the Attributes can be modified to represent other types of systems and devices, such as shields and decoy launchers.

◇SELECT DAMAGE MULTIPLIER

The weapon's Damage Multiplier (DM) is first selected. This is the basic damage caused by the weapon against the target. The effectiveness of Damage Multipliers increases exponentially, not linearly: a DM of 10 is not twice as effective as a DM of 5, it is four times as effective. The Damage Multiplier, squared, is roughly equal to the average thickness of armor-grade steel penetrated by the weapon, in millimeters, given optimum conditions.

The Damage Multiplier also serves as a measure of the basic effectiveness of a system such as a shield or a flare launcher. In these cases, a higher Damage Multiplier usually means a larger, tougher or more efficient system. This is fully explained in the relevant characteristics later on.

◇SELECT BASE RANGE

The weapon's Base Range is chosen next. This is the limit of the weapon's Short Range. The weapon's Medium, Long and Extreme Ranges are equal to 2, 4, and 8 times the Base Range, respectively. It is possible to have a weapon with an Extreme Range shorter than 8: its Base Range will then be equal to 0 for calculation purposes, but the exact range values are established by the designer (for example, 0/1/2/3). Ranges are expressed in hexes — the real combat range is equal to 50 meters per tactical hex.

The Extreme Range of the weapon, when expressed in meters, is not the true limit of the weapon's potential. A weapon can fire out five times as far (and does, when used in air combat — see rulebook, page 146). If used in space, where there is no atmosphere or gravity, the actual range is ten times greater (500-meter hexes instead of 50-meter ones — *see page 130 of* the **Jovian Chronicles** rulebook): only the difficulty of hitting at these long distances prevents true line-of-sight range. Range values (for example, 1/2/4/8) remain the same in all combat scales: only the actual physical size of the hex changes.

Weapons with no Base Range are considered to be Melee weapons and are only useful in close combat (Point Blank only — 25 meters or less). Melee weapons have their own Threat Rating formula to take this into account.

◇SELECT ACCURACY

The weapon's Accuracy is the third basic Attribute. A weapon with standard Accuracy has a score of 0. High quality systems have positive values while inaccurate systems have negative ones. Accuracy cannot go lower than -5 or higher than +5; the normal range is -2 to +2. Accuracy represents not only the weapon's quality, but also how wide the beam/spray/blade is, how easy it is to move the weapon around, and a host of other factors that determine whether or not the weapon or system will be successful in its assigned task.

◇SELECT RATE OF FIRE

The Rate-of-Fire rating indicates weapons that are capable of sustained, wide area automatic fire. In the case of Missile weapons, the ROF value determines how many missiles can be launched per firing action.

Ammo consumption increases dramatically in automatic weapons, but makes special attacks possible (see *Burst Fire*, page 156 of the rulebook). Weapons which fire only a short, tight burst (say, three bullets per shot) would not require a ROF bonus; the three rounds would be considered as one "shot" of ammunition, i.e., one firing of the weapon.

STEP TWO: CHARACTERISTICS ▼

Characteristics are what make a gun different from a missile launcher or a laser. They serve to make each weapon or system unique, much like Perks and Flaws do for vehicles. All characteristics are grouped into three categories for ease of reference: General, Weapon and Ammunition. A General characteristic applies to the weapon and its ammunition — if this option is selected, it will affect the cost of both. General characteristics are chosen primarily for the weapon itself.

Conversely, a Weapon or Ammunition characteristic need only be applied to the cost of what it affects — the weapon or the ammunition. The system always retains Weapon characteristics, no matter the kind of ammunition loaded. It is possible to buy several different types of ammunition for the weapon by simply determining the ammo's basic cost and applying the Ammunition cost multipliers for the type desired. All rounding, when applicable, should be to the nearest whole number.

Some of the ammunition types cause no damage. This is obviously negated if another characteristic is taken that cancels this effect. Weapons cannot use ammunition that duplicates their existing function(s). Likewise, effects are not cumulative — applying the same cost multiplier several times does not improve the ammunition more than once.

• ADHESIVE — AMMO COST MULTIPLIER: X 5 ▼



Adhesive ammunition is designed to stick to the target before detonating. It places a -1 modifier on the attack roll, but, if successful, the warhead becomes attached to the target. If desired, it can be detached at any time by the attacker at the cost of one action. To detach an adhesive warhead, the defender makes a Piloting Skill roll versus the attack's Margin of Success plus the DM of the weapon. If the defending vehicle has manipulator arms, a bonus equal to half the Rating of the largest arm (rounded up) is applied to the Piloting roll.

• AIRBORNE TORPEDO — AMMO COST MULTIPLIER: X 1 ▼



The Airborne Torpedo is a form of projectile that is used to attack underwater targets. It skims the surface of the water until the last possible moment when it suddenly dives into the water, striking the submerged target in the same manner as a torpedo. Airborne torpedoes allow weapons above water to attack underwater targets without penalty. They cannot otherwise be used for submarine or land fighting.

• ANTI-INFANTRY — WEAPON COST MULTIPLIER: X (1 + 0.1 X DM); AMMO COST MULTIPLIER: X 10 ▼



The weapon or warhead is specifically designed to attack infantry units and other man-sized targets. Anti-Infantry weapons can be swung around very fast and their tracking system can register fainter readings than normal. These weapons do not suffer the normal -2 modifier when attacking infantry.

• AEROSOL — AMMO COST MULTIPLIER: X 1 ▼



The warhead vaporizes a thin mist of mirrored metallic particles which diffuses any energy beam attempting to penetrate it. Any energy weapon firing in, through or out of an affected hex has its Damage Multiplier reduced by 1 for each hex crossed, including the target hex but not the attacker's hex. Likewise, target designators suffer a -1 penalty to their lock-on roll per hex crossed by the beam. The mist has an Obscurement value of 1 and dissipates at the end of the next turn. Aerosol shells have no penetration power and thus no effect against armor.

• ANTI-MISSILE — WEAPON COST MULTIPLIER: X (1 + 0.5 X DAMAGE MULTIPLIER) ▼



The weapon is specially designed to attack or counter incoming missiles, either by misleading them away from the vehicle or destroying them outright. This characteristic is used to design anti-missile systems, ECM/scrambler pods and chaff/flare/decoy launchers. The weapon does not suffer the usual -6 modifier when used for Anti-Missile fire (see page 157 of the rulebook). The AM characteristic has a two-hex minimum range against missiles, though the weapon can be fired without penalty at vehicles.

• ANTI-STRUCTURE — AMMO COST MULTIPLIER: X 1 ▼



The warhead has been specially designed to damage or destroy buildings and other man-made structures such as roads and bridges. Whenever this type of ammunition is used against something with Structural Damage Points instead of Armor, the damage inflicted is doubled. If used as direct-fire, normal munitions, Anti-Structure ammo places a -1 modifier on the attack roll.

• AREA EFFECT — WEAPON COST MULTIPLIER: X (AREA EFFECT MULTIPLIER); AMMO COST MULTIPLIER: X 15 ▼



The weapon affects a large area around the target point. This can be due to an explosive effect or a large number of scattered submunitions. Area Effect weapons always have a minimum MoS of 1 versus everything in their radius, indiscriminate of friend or foe, even if the target(s) successfully defended. These weapons are rated in Area Effect (AE), followed by the radius of hexes of their blast area (radius 0 means only the target hex is affected). Area Effects greater than 4 are expensive: the multiplier is equal to the radius in hexes plus one, squared.

Area Effect ammo delivers a high concussion blast and/or scatters lots of shrapnel around when it detonates. It gives the weapon an AE of 0, unless it already has an Area Effect, in which case it adds one to the AE radius. Mass-destruction weapons, such as nuclear warheads, have special increased Area Effect values to accurately model their destructive capabilities. See *Mass Destruction* ammunition, page 129.

AREA EFFECT MULTIPLIER

AE Radius	Area Effect Multiplier	AE Radius	Area Effect Multiplier
0 (5 m)	1.1	1 (75 m)	4
0 (10 m)	1.2	2 (125 m)	9
0 (15 m)	1.5	3 (175 m)	16
0 (25 m)	2	4 (225 m)	25

ARMOR-PIERCING

GENERAL COST MULTIPLIER: X 5



The weapon is highly efficient when penetrating armor, concentrating all its energy on a single point to enhance its force. The vehicle's base Armor rating is halved to determine damage. If the attack is successful, the target does not lose any Armor points (the entry hole is too small to affect the Armor rating), but takes system damage as usual. Targets may not be Overkilled by Armor-Piercing weapons. Any extra damage past the Overkill Armor Threshold of the target are kept by the projectile, possibly affecting something beyond. For most games, however, it is better to ignore further effects for simplicity.

ARMOR-CRUSHING

GENERAL COST MULTIPLIER: X 2



The weapon is highly efficient when destroying armor plating and structures, either because of sheer striking power or because of its nature (mechanical saws, for example). If the attack is successful, the target loses twice the usual Armor points (2 for Light Damage and 4 for Heavy Damage) in addition to the usual system damage. If the damage point total of the attack is equal or greater than half the target's Armor (but still under the Armor), the target loses one Armor point with no additional effect.

ATTENUATING DAMAGE

GENERAL COST MULTIPLIER: SPECIAL



The weapon loses a significant portion of its damage potential over distance. This is often the case with energy weapons which lose both focus and energy according to range. An AD number is subtracted from the Damage Multiplier for each range band beyond Short. For example, a x12 weapon with AD2 would be x10 at Medium, x8 at Long and x6 at Extreme range.

This characteristic does not have an associated cost multiplier. Rather, the AD number is subtracted from the Damage Multiplier for calculation purposes (the above x12 weapon with AD2 would count as a x10 weapon when calculating its cost).

BIOLOGICAL

AMMO COST MULTIPLIERS: X 12 (SEMI-LETHAL), X 15 (LETHAL)



The warhead contains a short-lived biological warfare agent, such as an airborne virus with a very short incubation period. Whether or not the agent is lethal should be decided during design. Lethal agent victims will die immediately after the battle, while semi-lethal agent victims can survive if provided with medical attention. The disease's infection sphere is assumed to cover the target hex, unless the weapon or ammunition also has an Area Effect — in that case, add one to the AE. Biological shells have no penetration power and thus no effect against armor. Enclosed vehicles and infantry in sealed suits are not affected by Biological rounds.

Infantry and vehicles with the "Exposed Crew Compartment" flaw are affected if hit (although the vehicle itself suffers no damage). For each ten points of damage, a penalty of -1 will be applied to all actions attempted by the target. This represents the fact that the enemy unit is feeling quite sick. If the penalty goes to -5 or worse, the affected unit becomes a casualty.

BOOSTED ACCURACY

AMMO COST MULTIPLIER: X 20



"Boosted Accuracy" rounds represent any high accuracy shell or warhead, such as a self-correcting missile or hyper-velocity projectile with a flatter trajectory and a short lead time. If desired, this ammunition type may also represent tracers, though these are normally included in the basic ammunition load of the weapon. These give a +1 Accuracy to the weapon when used.

BOOSTED DAMAGE

AMMO COST MULTIPLIER: X 15



Some weapon can fire enhanced ammunition such as self-forging warheads or customized armor-piercing shells. Many such munitions are small, terminally self-guided missiles that look for weak points in the armor just before striking the target. Boosted Damage ammunition adds 2 to the Damage Multiplier of the weapon.

BOOSTED RANGE

AMMO COST MULTIPLIER: X 20



The weapon can fire enhanced ammunition such as continuous acceleration rounds or multi-stage propulsion units. Many such munitions are small, often semi-guided, tube-launched missiles. Regardless of the actual technology, the projectile can continue to accelerate once launched and thus cover a much greater distance. Boosted Range ammunition increases the weapon's Base Range by 50% (round down when counting hexes).

CHEMICAL

AMMO COST MULTIPLIER: X 30



The weapon's shells are hollow and filled with a chemical agent. The most common payload is a deadly nerve gas. The gas cloud's radius is assumed to cover the target hex, unless the weapon or ammunition also has an Area Effect — in that case, add one to the AE. Chemical shells have no penetration power and thus no effect against armor. Enclosed vehicles and infantry in sealed suits are not affected by chem rounds. Other infantry are casualties (any remaining damage points are crossed out). Vehicles with the "Exposed Crew Compartment" flaw are also considered casualties if they are hit, although the vehicle itself suffers no damage.

CLUMSY

WEAPON COST MULTIPLIER: X 0.5



The weapon is extremely large or unwieldy. This causes maneuver problems for the vehicle as it cannot compensate for the increased moment arm and/or unbalanced weight. The weapon causes a -1 penalty to the Maneuver rating of the vehicle while carried. This penalty disappears once the weapon is dropped (if this is possible) or fired (in the case of a single-use, disposable weapon).

CONCEALED

WEAPON COST MULTIPLIERS: X 2 (ONE ACTION TO DEPLOY/RETRACT), X 3 (NO ACTION TO DEPLOY/RETRACT)



The weapon is normally hidden within a concealed bay in the hull of the vehicle, protected by movable (and often barely noticeable) panels. When the crew wishes to use it, the weapon extends out of its housing and is used normally. Concealed weapons are built into the vehicle for two main reasons: protection and surprise.

The weapon cannot be detected while in its retracted position, and can ignore one damage result if retracted. Such a weapon may use ammunition clips, but they can only be changed when the weapon is deployed. Unfolding or retracting a Concealed weapon requires one action for each operation, unless it has been designed to "pop-up," in which case no action are required.

DEFENSIVE — GENERAL COST MULTIPLIER: X 0.5



The system has been built with a defensive purpose in mind and makes a poor offensive tool. This is the case with items such as shields, chaff and flare launchers or anti-missile laser sensor scramblers. The DM is halved and -2 to hit is applied when using the system to attack. Defensive measures such as Parrying, Blocking and Anti-Missile fire do not count as attacks.

DISINTEGRATION — GENERAL COST MULTIPLIER: X 100



Disintegrators are highly futuristic weapons that destroy the structural integrity of an object at the atomic or subatomic level. The technology of the **Jovian Chronicles** universe does not allow this type of weapon to be built, but they may be possible in the far future as Mankind's understanding of sub-atomic physics improves.

In game terms, a disintegrator will completely destroy anything it achieves a Light Damage result against — the target is vaporised, leaving only a globe of burning gases behind. If the disintegrator fails to do Light Damage but still hits, every point of damage inflicted reduces the Armor Rating of the target by one point. Infantry squad members who receive damage from a disintegrator are considered to be casualties, even if they do not lose all their damage points. Targets other than vehicles and infantry, such as buildings and terrain features, take five times normal damage from disintegrators.

ENERGY-HOMING — GENERAL COST MULTIPLIER: X 3; AMMO COST MULTIPLIER: X 10



The weapon uses the target's electronic emissions to lock-on and destroy it. It is most often used for missiles, but special computer/sensor systems can be adapted for direct fire weapons. If the target made an Active Sensor roll, used communication or has any kind of ECM or ECCM active during the combat round where the Energy-homing attack takes place, the weapon gains a +2 to hit (only +1 for energy-homing ammunition, since it has less room for sensors).

ENTANGLE — GENERAL COST MULTIPLIER: X 2 (MELEE), X2 + 1 PER HEX OF BR), X0.5 (IF NOT DAMAGING); AMMO COST MULTIPLIER: X 10



Weapons with the Entangle characteristic can be used to immobilize an opponent. Entangling weapons can be designed as either melee or ranged weapons. Ranged weapons can be used in melee. A vehicle hit by an Entangle weapon either receives damage or is ensnared and unable to move or fight. The decision (attacker's choice) to damage or immobilize must be made before the attack, publicly. Some Entangling weapons are incapable of causing damage.

To escape an entangling attack, a Piloting Skill roll is made versus the attack's Margin of Success. This is modified by the difference between the Damage Multiplier of the weapon (half DM for Entangle ammunition) and the Size of the trapped vehicle. If the defending vehicle has arms, half the rating of the largest arm (rounded up) is applied to the Piloting roll.

FRAGMENTATION — AMMO COST MULTIPLIER: X 15



Fragmentation ammunition, often known as shotgun rounds, fires multiple small projectiles (flechettes or pellets) instead of a single large warhead or projectile. Though this reduces the damage caused by the individual hits, the sheer number of projectiles creates a "swarm" effect that makes it easier to hit or even hit multiple targets.

In game terms, the attacker adds +1 to his attack roll, halves the Damage Multiplier (round up), and adds +2 to the weapon's effective ROF. The weapon cannot walk its fire or saturate an area unless it has +1 or better ROF without the Fragmentation ammunition.

FIRE-FIGHTING — AMMO COST MULTIPLIER: X 1



The shells/warheads are filled with a stable compound which expand into a fire-fighting foam once exposed to atmosphere. The foam cancels one die's worth of Fire Intensity points per ten points (or part thereof) of "damage." Foam shells have no penetration power and thus no effect against armor. The foam is non-toxic, harmless to people and dissolves in water.

FLICKER — GENERAL COST MULTIPLIER: X 1 - (0.1 X RATING)



Some systems require so much power to function that they are alternatively turned on and off to reduce the overall energy requirements. Others have fluctuating power spikes or energy fields and only function at certain points of their cycles. Select a rating between 1 and 6. Whenever a Flicker system is used, two dice are rolled normally. If the result is higher than the system's rating, the system is powered at that particular instant and may be used (otherwise, nothing happens and the action is wasted).

GRAVITIC — GENERAL COST MULTIPLIER: X 3 (SINGLE-FUNCTION); X 5 (DUAL-FUNCTION)



Gravitic systems can manipulate gravity itself, which leads to many impressive tricks. Single-function systems can only emit or attract gravitons, and thus can either pull or push (but not both). Dual-function systems can switch between pull and push at any time. Unfortunately, although there is research on gravitons in 2210, no one has yet formally detected, much less manipulated, the elusive particles that are believed to transmit gravity.

Gravitic weapons do damage normally (in this case, by either ripping off or crushing part of the target). The Gravitic weapon can also be used to push or pull the target, or, if the attacker is lighter than the target, drag itself forward at the same rates as weapons with the Winch characteristic (page 132). A Gravitic weapon can be escaped by making a Piloting Skill check versus the MoS of the attack. This is modified by the difference between the DM of the weapon and the Size of the trapped vehicle.

GUIDED — GENERAL COST MULTIPLIER: X 3 AMMO COST MULTIPLIER: X 20



Guided weapons and ammunition have the ability to seek a target and correct their course in mid-attack, or they can use targeting information supplied by a friendly unit to improve their accuracy. Guided weapons gain a +2 modifier to their attack roll versus targets that have been "tagged" by an allied target designator (see the *Perks* section) within communication range. Guided attacks versus targets marked by a target designators do not need forward observers, they only need someone to successfully mark the target.

HAYWIRE

GENERAL COST MULTIPLIER: X 2 AMMO COST MULTIPLIER: X 15



The weapon's attack form consists of or causes a massive electrical discharge that fries circuitry, damages sensitive systems and shocks crewmembers into unconsciousness or death. This discharge courses through its target, often causing multiple systems to fail simultaneously. In tactical terms, the weapon gets two rolls on the Systems Damage Table when it scores Light or Heavy Damage on an opponent. In roleplaying terms (for example, if "Crew" is rolled on the damage table), the weapon's second damage result is treated as an electrical attack with an Intensity equal to its Damage Multiplier plus the Margin of Success. Because of power storage limitations, Haywire ammunition uses only half the weapon's normal DM to calculate damage.

HEAVY

WEAPON COST MULTIPLIER: X 0.75



The weapon is extremely heavy/cumbersome. It causes a -1 MP penalty to the Top Speed of all movement types (Combat Speeds are recalculated accordingly). This penalty disappears once the weapon is dropped (if this is possible) or fired (in the case of a single-use, disposable weapon). This characteristic is often paired with Clumsy.

ILLUMINATION

GENERAL COST MULTIPLIER: X 1.5 AMMO COST MULTIPLIER: X 1



The weapon can release an intense burst of light which can be used to blind opponents in battle. A normal attack is rolled: if successful (i.e., at least Light damage or one point of damage, in the case of infantry), the target is blinded for a number of rounds equal to the Margin of Success, but may still use Active Sensors. If the weapon has an Area Effect or a Wide Angle, the illuminated area is counted as being in daylight.

Illumination ammunition is usually reserved for dedicated flare launchers, but can be manufactured for any gun or missile. The flare will illuminate an area equal to the weapon's Area Effect plus two (so a weapon with no AE would have an AE of 1, an AE of 0 would become 2, an AE of 1 would become 3, and so on). The flare will last one turn per ten points of the weapon's Damage Multiplier, rounded up. The illuminated area is counted as being in daylight.

INCENDIARY

GENERAL COST MULTIPLIER: X 0.75 AMMO COST MULTIPLIER: X 10



Incendiary weapons are intended to ignite and burn their targets. Incendiary weapons do not do damage normally. Instead, they cause a fire whose Intensity score is equal to the weapon's Damage Multiplier plus the attack's Margin of Success. Incendiary is often used with the Persistent characteristic (page 130). Incendiary rules are described on page 85.

Incendiary ammunition is filled with an incendiary compound such as napalm or white phosphorus. It gives the weapon the Incendiary characteristic in addition to its normal damage.

INDIRECT FIRE

WEAPON COST MULTIPLIER: X 1.5



The weapon can perform indirect fire, curving its attack to hit targets that are obscured by terrain. The attacker does not need to have a direct line of sight in order to attack or otherwise affect the target, only a forward observer to tell him where to aim. Indirect fire rules are described in the *Mechanized Action* section of the rulebook, page 156.

INFINITE USE

GENERAL COST MULTIPLIERS: X 5 (RANGED WEAPONS), X 1 (MELEE WEAPONS)



Some weapon types do not require ammunition. Others are configured to draw power directly from the vehicle's powerplant or some other inexhaustible energy source instead of relying on capacitors or ammo packs. These weapons never expend ammunition, but neither can they use any of the special ammunition types.

LIMITED USE (LU)

GENERAL COST MULTIPLIERS: X LIMITED USE MULTIPLIER



The weapon can only be used for a short period of time before requiring a complete overhaul. They need not purchase ammunition — they are entirely self contained. The note "LU" is placed in the ammunition column of the record sheet to indicate the number of rounds the weapon can be used. LU weapons may be switched off to conserve energy.

LIMITED USE MULTIPLIER

Duration	Multiplier	Duration	Multiplier
1 round	x 0.3	5 rounds	x 0.7
2 rounds	x 0.4	6 rounds	x 0.8
3 rounds	x 0.5	7 rounds	x 0.9
4 rounds	x 0.6		

LIQUID

GENERAL COST MULTIPLIER: X 0.75



The weapon shoots some kind of liquid. Liquid launchers count as only half damage versus the target's Armor since the energy of the spray is not concentrated. Sprayed liquid splashes everywhere, hitting anything in its path. The spillover area is a 360° circle centered on the mid-point of the target. For each ten points of damage caused to the target (before halving), the radius of the spillover area increases by one meter. Anything in the spillover area is automatically hit, but suffers only a quarter of the weapon's original damage.

The impact of all this mass causes a fair amount of knockback. The target must make a Piloting roll against the base DM of the weapon, plus the MoS, modified by the difference between the DM and the Size of the target (e.g., a x8 water cannon vs. a Size 10 vehicle will reduce the threshold by 2). Humans with BLD of +1 or more count as Size 2 vehicles, otherwise they count as Size 1. Humans roll against their Agility.

If the roll fails, the vehicle is pushed back a number of meters equal to the MoF divided by two, rounded down. If this occurs, Walkers are automatically knocked to the ground (roll Piloting as normal to avoid falling damage). Other vehicles may be overturned. Roll one die: on a result of 1-4, the target remains upright; on a 5-6, the target is overturned.

• LOCATION-SPECIFIC

GENERAL COST MULTIPLIER: X 3 (PER LOCATION) ▼



Because of their nature and/or design, some weapons only attack one location on the vehicle rather than affecting it randomly. For example, land mines cause damage to the movement system, while EMP guns can be designed to knock out sensors and communication devices, leaving the rest of the machine relatively unharmed.

When the weapon is used, the location is not rolled on the System Damage table but is applied directly to the system listed in the weapon's description. Only one of the following may be affected: Movement, Structure, Fire Control or AUX Systems. No more than one location may be bought per weapon.

• MASS DESTRUCTION

AMMO COST MULTIPLIER: X 100,000 ▼



Mass destruction ammunition includes special items like nuclear and thermonuclear warheads, neutron bombs and antimatter death rays. All weapons of mass destruction affect huge zones, giving them a free Area Effect equal to half their unmodified Damage Multiplier. In that zone, their Damage Multiplier is ten times normal (thus, a x10 weapon would cause x100 damage). In a radius equal to the difference between half and their unmodified DM, their Damage Multiplier is five times normal. In the radius up to their unmodified DM times 1.5, their Damage Multiplier is normal. In addition, these doomsday weapons always have a MoS of at least 1, regardless of whether they "hit" their target.

For example, a x10 Mass Destruction weapon will cause x100 damage in a 5-hex radius, x50 in the radius from 5 to 10 hexes, and x10 in the radius between 10 and 15 hexes.

• MINELAYER

AMMO COST MULTIPLIER: X 1.5 ▼



Minelayer is intended to saturate an area with small multi-purpose land mines. Minelayer ammunition can be designed for almost any projectile or missile weapon. If used as direct-fire, normal munitions, Minelayer adds a -1 modifier to the firer's attack roll. If used in saturation fire, it attacks normally. In addition, the attack's saturation effects remain in that hex until the end of the battle.

• MINIMUM RANGE

WEAPON COST MULTIPLIER: X 1 + (0.1 X (MIN. RANGE ÷ BASE RANGE)) ▼



The weapon is unable to fire at a target that is close to its position. It might be a mortar or an artillery piece that fires in a high arc, or a missile that arms its warhead at a certain distance. In game terms, the weapon suffers a -1 modifier for each hex that the target is closer than the weapon's Minimum Range.

• MISSILE

GENERAL COST MULTIPLIER: X 1; AMMO COST MULTIPLIER: X 1 ▼



The weapon is a tube containing one (or more) warheads mounted on a rocket motor, with or without a guidance system. Some missiles are stored in a launcher that contains the fire control system, others are wholly self-contained and fired as a single disposable unit. The weapon uses the Missile ROF rules (see page 156 of the rulebook), but can be defended against with Anti-Missile fire.

Missile weapons have a maximum Base Range of 30 (around Mach 6 if aimed at an airborne target). If the Multi-Turn Seeking option is also selected, range is based on the Margin of Failure of the previous round's attack roll — in effect, the missile corrects its course at mid-point. A MoF of 1 is equal to Short range, a MoF of 2 is Medium range, and so on. Attacks with Margin of Failure of five or more cancel any further attempt, the missile having veered too far off-target. Multi-turn Seeking missiles always move last, regardless of initiative.

Missile ammunition can be used to represent cannon-launched missiles. The projectile is ejected out of the firing tube by a small charge, then ignites its motor to boost itself toward the target. When using this type of ammunition, the weapon uses the Missile rules and ROF cost, but can be defended against with Anti-Missile fire.

A matter to consider is the difference between the missile as a weapon versus the missile as a vehicle carrying a warhead. That is, missiles can either be built as weapons, using this rule set, or they can be built as small, automated vehicles using the normal vehicle design system. Both approaches are valid, although a vehicle-missile will undoubtedly become more cost-efficient as size, range and payload increase. Ultimately, it all depends on what the missile is meant to do: a fast, immediate combat strike (weapon), or a long range, efficient bombardment (vehicle). It should be remembered that a combat turn is 30 seconds long, and that range costs have been calculated accordingly.

• NON-LETHAL

AMMO COST MULTIPLIER: X 1 ▼



Non-lethal ammo is just that: anything that will knock out a man without killing him. This is done through electrical discharges, rubber bullets or low-velocity warheads that deploy "arms" to distribute the impact across a larger surface. Choke or irritant gasses are also possible payloads for Non-lethal ammunition.

In roleplaying, the weapon's Damage Multiplier (vehicular scale) plus the MoS of the attack acts as a Threshold for a Health roll to avoid unconsciousness. If failed, the target is incapacitated for a number of minutes equal to the MoF. Once this period has passed, another Health test may be made every turn to regain consciousness. The threshold is the same as before, but goes down by one after each failure to regain consciousness. In addition, if the roll is failed by between 5 to 8, the subject gains a Flesh wound; by between 9 to 12, a Deep wound; and by 13 or more, the target is dead.

In the tactical game, Non-lethal weapons have no penetration power; only infantry and vehicles with the "Exposed Crew Compartment" flaw can be affected. The weapon's Damage Multiplier is halved, but damage is applied as normal (vehicles are only affected on "Crew" hits). After the battle, casualties are dead on a roll of 6 instead of 4-6 as normal. On a roll of 1 or 2, they are not even harmed.

• PAINT

AMMO COST MULTIPLIER: X 1 ▼



The weapon's shells are hollow and filled with a brightly colored paint (practically any color can be ordered, but day-glo pink and orange are favored). Paint shells cause no damage and are mostly used for training. Observers have a visual spotting bonus equal to the highest MoS of any paint attack when trying to spot a vehicle which has been hit by paint ammunition (multiple hits are not cumulative). Paint ammunition hits have no effect on sensor detection.

PARRY

GENERAL COST MULTIPLIER: X 1.5 (ONLY AGAINST WEAPONS WITH EXACTLY SAME CHARACTERISTICS), X 2 (AGAINST ANYTHING)



The weapon can be used to deflect blows in melee combat. Only Melee weapons may use this option. A vehicle with a Parry system may expend one action to deflect an attack within the system's arc; the vehicle's pilot then rolls a new defense. If the roll is successful, the defender is still hit, but the weapon subtracts a number of damage points equal to its DM times the parry's MoS.

If a vehicle suffers Light Damage after having successfully parried, the parrying system's Damage Multiplier is automatically halved (rounded up). If a vehicle suffers Heavy Damage after having successfully blocked, the parrying system is automatically destroyed. In either case, no further damage is applied to the vehicle. Overkill results still destroy the vehicle. When not used to parry, the weapon takes damage as a normal weapon.

PERSISTENT

GENERAL COST MULTIPLIER: X 3



Persistent weapons cause the target to suffer the attack's effects for a number of combat rounds equal to the original Margin of Success of the attack. Damage is calculated using the original MoS, minus one for each additional turn after the first one. For example, a MoS 4 attack would use MoS 3 on the second turn to calculate damage, MoS 2 on the third and MoS 1 on the fourth and final turn.

POWER-HUNGRY

GENERAL COST MULTIPLIER: X (1/SQUARE ROOT OF PH)



The weapon requires an inordinate amount of power and/or attention before firing. The vehicle can do nothing else while preparing that single weapon for firing. A number of actions equal to "PH" must be spent to fire the weapon, with any penalties for multiple actions in a turn being applied cumulatively.

RANDOM

GENERAL COST MULTIPLIER: 1.05 + (0.05 X RATING)



The weapon has an unpredictable Accuracy, Damage or Base Range. Every time it is fired, the chosen characteristic(s) is affected by a random factor. The user must make a PSY roll against a threshold equal to the Random rating of the system. If the roll is successful, the weapon functions normally. If the roll is unsuccessful, a penalty equal to the Margin of Failure is applied to the chosen characteristic.

RECOIL

WEAPON COST MULTIPLIER: X 0.8



The weapon has enormous recoil and cannot be fired on the move; otherwise the vehicle is automatically pushed back a number of meters equal to (DM - vehicle's Size), with a minimum of one. If this occurs, Walker vehicles are knocked to the ground (roll Piloting as per normal fall to avoid damage). Other vehicles may be overturned by the recoil. Roll one die: on a result of 1-4, the vehicle remains upright; on a 5-6, the vehicle is overturned. In space combat, an acceleration equal to 0.01 g (0.1 MP) is applied *opposite* the firing direction per point of Damage Multiplier.

REDUNDANT SYSTEMS

WEAPON COST MULTIPLIER: X 1.5 (PER ICON)



The weapon is sheathed in plates of armor or has multiple redundant components. The weapon ignores the first "-1 to a Single Weapon," or "-2 to a Single Weapon," or "-1 to All Weapons," or "Single Weapon Destroyed" result on the Fire Control Damage Table. Redundant Systems is then marked off. The effect can be restored by a Fire Control repair if a technician works on the vehicle after combat. This option can be taken multiple times.

SCATTER

GENERAL COST MULTIPLIER: X 1.5



The weapon fires salvoes of smaller projectiles bound for the same target point rather than one sudden attack. The weapon can spread its salvo over a larger beaten zone if required. The weapon can increase its Area Effect by one, halving its Damage Multiplier in the process (if the weapon does not normally have an area effect, it gains an AE of 0).

SEEKING

GENERAL COST MULTIPLIER: X (1 + .2 PER ADDITIONAL ATTACK ROLL), X (NUMBER OF TURNS ACTIVE)



The weapon can try to hit a moving target more than once: missiles which turn and twist to try and collide with an enemy vehicle, or beam weapons that won't fire until locked-on. If the attack fails, the attacker may reroll it. If the target has already spent action(s) to either shoot down, parry, block or dodge the attack, it can defend itself again with the same method at no additional action cost (but normal ammo expenditure).

Such a weapon can also be designed to attack over multiple turns (a large fuel supply for seeking missiles and torpedoes, for example). Unless the weapon has been destroyed, it may attack again at no action cost, up to its maximum number of turns in use. Seeking weapons with the Missile characteristic use more special rules — see Missile, page 129.

SELF-DESTRUCT

GENERAL COST MULTIPLIER: X 0.2



The weapon is entirely self contained and is destroyed when used. Self-Destruct weapons do not have ammunition — they are a one-shot tool and are completely destroyed when used, whether the attack was successful or not. Self-Destruct weapons can use any of the special Ammunition Characteristics by dividing the Characteristic cost by 10, with a minimum cost multiplier of 1.

SHIELD

GENERAL COST MULTIPLIER: X 6



The weapon can be used to block enemy attacks and absorb some or all of the damage. A vehicle with a Shield system may expend one action to block an attack within the shield's arc; the vehicle's pilot then rolls a new defense. If the roll is successful, the vehicle is still hit, but the shield subtracts a number of damage points equal to its DM times the shield block's MoS.

If a vehicle suffers Light Damage after having successfully blocked using its shield, the shield's Damage Multiplier is automatically halved (rounded up). If a vehicle suffers Heavy Damage after having successfully blocked using its shield, the shield is automatically destroyed. In either case, no further damage is applied to the vehicle. Overkill results still destroy the vehicle. When not used to block, the shield takes damage as a normal weapon; if its total penalties reach -5, the shield is destroyed.

Vehicles may not carry shields whose DM is greater than their Size rating. When not actively blocking, the shield adds one-quarter of its DM (rounded down) to the vehicle's base Armor in the shield's arc.

SHIELD (ENERGY)

GENERAL COST MULTIPLIERS: X 2 (ONE ATTACK TYPE); X 5 (ALL ATTACKS); X 1.5 (ALLOW FOR WEAPON FIRE)



Many Jovian scientists have theorized that the screen generator concept will one day be pushed further to create the classic "force field" of science fiction. Depending on their nature, these systems could only be used against a particular form (or forms) of attack, such as energy or matter. Someone once joked that if paranormal powers really existed, a shield could probably be designed to work against them, too.

A vehicle with an Energy Shield system uses the same basic rules as a physical one. If the Energy Shield is designed to be used against only one type of attack (either matter, energy or psychic), then it cannot affect the others. Energy shields bought with an Area Effect allow other units within the AE to benefit from its protection. Active energy fields prevent weapon fire by the protected unit(s), unless the shield is designed to allow it. In the **Jovian Chronicles** universe, the shield mode of the PDS systems is a matter-only shield that allows weapon fire.

SLOW

WEAPON COST MULTIPLIER: X (0.25 + 1/R)



The weapon needs time to recharge between shots, or reloading it is a complex operation that takes a minimum of time regardless of the loading crew's skills. The weapon can only be fired once every R roleplaying turns (minimum two). Roleplaying turns are six-second time intervals; there are five RPG turns per tactical turn.

SMART

GENERAL COST MULTIPLIER: X (2 + RATING)



The weapon is equipped with a tiny computer brain that allows it to operate by itself. For example, a close-in defense gun might be self-targeting, a missile could be of the fire-and-forget variety, or a flare launcher could activate as soon as an incoming missile is detected.

The Skill level of this virtual gunner is equal to the rating of the Smart characteristic. No weapon can have a rating higher than 3. The Smart gunner has one action per turn. No crew action needs to be expended when using a Smart weapon, but a logical "program" of up to ten words must be given to each ("Fire on all incoming missiles" would be a valid program).

SMOKE

AMMO COST MULTIPLIER: X 1



The shell contains a volatile gas mixture. When it explodes, the contents vaporize into thick smoke of whatever color was chosen (usually black or light gray). The smoke covers one hex both horizontally and vertically (unless the weapon or ammunition also has an Area Effect, in which case add one to the weapon's normal AE) and has an Obscurement of 2. The mist will dissipate at the end of the next turn.

Smoke shells have no penetration power and thus no effect against armor. Only visual and passive detection are affected by the Obscurement modifier. Active Sensors are not affected by smoke.

SMOKE/BLACK FOG

AMMO COST MULTIPLIER: X 5



This heavier version of the standard smoke round is slightly more complex. The shell contains a volatile gas mixture, but also chaff, flares and electronic dummies ("noisemakers"). When the shell explodes, the contents cover one hex both horizontally and vertically (unless the weapon or ammunition also has an Area Effect, in which case add one to the weapon's normal AE), creating a zone with an Obscurement of 2. The effect will dissipate at the end of the turn after the next.

Black Fog shells have no penetration power and thus no effect against armor. All types of detection are affected by the Obscurement modifier, including Active Sensors.

STEALTH

GENERAL COST MULTIPLIER: X 1.5



The weapon has been designed with stealth in mind. It is equipped with additional systems, such as muzzle flash suppresser, silencer, counter-noise emitter, IR baffler, etc., so that it does not attract attention to the firer when it is used. The weapon does not subtract from the vehicle's Concealment when fired.

SUBROC

AMMO COST MULTIPLIER: X 1



Subrocs are missiles (or shells, or whatever) that have been specially modified to allow them to be launched from underwater firing platforms, like submarines. They are fired from watertight tubes, rapidly rise to the surface of the water and, once airborne, speed towards their target. Subrocs allow submerged vehicles to attack surface, land, or aerial targets without surfacing. They cannot otherwise be used for submarine or land fighting.

TIME DELAY

WEAPON COST MULTIPLIERS: X 0.5 (PRE-DETERMINED TIME); X 2 (REMOTELY ACTIVATED)



The system can be set to activate after a pre-determined number of turns. A more expensive version can also be activated by remote-command from a pre-designated unit. Remotely-activating a Time Delay system requires either a LOS to its location, a satellite uplink or a forward observer. An Electronic Warfare roll must be made against a threshold of 2, modified by the vehicle's Communication rating. This roll costs one action. A successful roll means immediate activation. A failed or fumbled result means the signal was not received and the device does not activate.

TRANSORBITAL

WEAPON COST MULTIPLIER: X 10



The weapon has been optimized to be able to fire out of the atmosphere. Its range is not actually boosted, it is just calibrated to take into account atmospheric conditions. Transorbital weapons allow ground and flying vehicles to attack space targets in low orbit. Range is counted as if the weapon was in space (500 meter hexes).

UNDERWATER

GENERAL COST MULTIPLIERS: X 1 (UNDERWATER ONLY); X 2 (BOTH ENVIRONMENTS)



The weapon and its ammunition (if any) are designed for an aquatic environment. The weapon can be fired from an underwater vehicle at other underwater vehicles or at vessels floating on the surface of the water. Some underwater weapons, such as torpedoes, can only be used underwater. Weapons that can function in both environments cannot shoot from one to the other, but may be used in either.

• UNRELIABLE

WEAPON COST MULTIPLIER: X (1 + (0.03 X RATING))▼



Some weapons are badly designed or built with low quality material; others are highly experimental and not quite ready yet for general distribution. The weapon overheats, jams or otherwise fails, often with deadly consequences.

Whenever the weapon is fired, the user must first beat the rating with two dice to avoid weapon problem; -1 is applied to the roll for each point of ROF used. For example, a weapon with a Rating of 3 will require a roll of 4 or more to avoid a problem. If a problem does occur, check the Margin of Failure on the Weapon Trouble table below.

An overheated weapon can be fired while overheated, but immediately rolls against its Rating with a -2 modifier. If the weapon jams or otherwise fails, it cannot be fired until cleared or reset. Clearing the weapon requires one action and allows another roll; if the roll fails, the weapon remains jammed. A fumble results in a permanently jammed/fused weapon (a technician will be able to clear it after the battle, though). Obviously, a weapon that exploded is useless as well.

WEAPON TROUBLE

MoF	Problem
0	Weapon overheats for one Turn
1	Weapon overheats for two Turn
2	Weapon jams
3	Weapon jams
4	Weapon jams; lose 1d6 shots of ammunition in clearing it
5	Weapon damaged; -1 Accuracy or add one to Unreliability rating
6 or more	Weapon explodes; DM times (MoF-5) vs. half vehicle's Armor (rounded down)

• WIDE ANGLE

GENERAL COST MULTIPLIER: X WIDE ANGLE MULTIPLIER▼



The weapon's attack covers a wide area, attacking multiple targets at once. A single attack roll is made, but any unit within the affected area and within range must defend against it, friend and foe alike. Solid terrain features like hills and structures will absorb part of direct fire wide angle attacks (see *Hull Down Positions*, page 85), but not indirect fire ones. An angle of 10 degrees will cover a path one hex wide along the entire length of the beam — not entirely accurate, but a good game representation. A 60-degree angle has the same shape as a "Fixed" weapon arc. The 180- and 360-degree angles are identical to the "F" and "T" fire arcs, respectively.

WIDE ANGLE MULTIPLIER

Angle	Multiplier	Angle	Multiplier
10	2	180	8
60	4	360	16

• WINCH

GENERAL COST MULTIPLIER: X 2▼



Winch weapons are attached to a high-strength cable, which is itself attached to a winch. The maximum weight that can be handled by the cable is equal to the Damage Multiplier expressed in Size capacity. For example, a x3 winch could drag a weight equivalent to Size 3, or 1.1 tons. Several cables can be used together to pull more weight. Thus, two x3 cables could drag up to 2.2 tons together. More weight will cause the cable to snap. The cable itself can take up to the DM in Damage Points before being severed. Ranged attacks have a -3 penalty to hit because the cable is so small. Point-blank attacks on the cable have no such penalty.

The target will be dragged towards the winch at a rate of (Size of target/Min. Size of winch) tactical hex/turn if the target has a smaller Size rating than the firing unit. The winch vehicle will be dragged towards the target at a rate of (Min. Size of winch/Size of target) tactical hex/turn if the target has larger Size rating. If one of the two is braced, it counts as being one and a half times its actual Size. A target actively resisting being dragged adds its towing capacity to its weight.

▼STEP THREE: WEAPON AND AMMUNITION COST

Each weapon has a Base Weapon Cost that is calculated using one of the following formulas. The weapon's Base Cost is rounded to the nearest whole number. The actual Accuracy value is not used in the formula: check the Accuracy Multiplier table for the proper number.

FORMULAS

If ROF = 0, ROF cost = 0
If ROF ≥ 1, ROF cost = (0.5 x (Damage Multiplier + ROF bonus))^2
* For Ranged Weapons (range 50 meters or more):
Base Weapon Cost = Accuracy Multiplier* x ((Damage Multiplier)^2 + (Base Range in hexes)^2 + ROF cost)
* For Melee Weapons (range less than 50 meters):
Base Weapon Cost = Accuracy Multiplier* x ((Damage Multiplier ÷ 2)^2 + ROF cost)

ACCURACY MULTIPLIER TABLE

Accuracy Score	Multiplier	Accuracy Score	Multiplier
+5	180	-1	0.667
+4	36	-2	0.5
+3	9	-3	0.4
+2	3	-4	0.333
+1	1.5	-5	0.286
0	1		

BASIC AMMUNITION COST ◇

The cost of each shot is calculated separately, allowing vehicle and weapon designers to customize the offensive payload according to their needs. Point-wise, the rules do not differentiate between the various types of ammunition: missile, shell, capacitor, etc. All that counts is the actual game effect: the weapon attacks once.

Weapons with the Unlimited Use , Limited Use or Self-Destruct characteristics need not include ammunition.

BASE COST

Base Cost per shot = (Base Weapon Rating w/o ROF bonus ÷ 250)

MODIFIED COSTS ◇

The Base Cost that was just calculated for the weapon will be modified by the "General" and "Weapon" Characteristics chosen for it (if any). The basic weapon cost is multiplied by the cost multiplier of each selected Characteristic. Weapons with lots of characteristics are going to cost a great deal more than specialized weaponry.

Like the weapon's cost, the basic cost of the weapon's ammunition (if applicable) will be modified by the characteristics chosen for it. The basic ammunition cost is multiplied by each applicable "General" or "Ammunition" Characteristic cost multiplier. It may be necessary to do this several times if more than one type of ammunition is made available for the weapon. Cross-weapon compatibility, such as caliber, may be freely decided by the designer.

STEP FOUR: FINISHING TOUCHES ▼

The weapon or system is now well defined, but a few more things are needed to make it complete. The first is to find out the weapon's Minimum Size requirement — it is hard to mount a tank gun on a bike — then select the ammunition feed system, provided that one is required. Special design features, like multi-function weapons or mated assembly, are also determined at this design stage.

MINIMUM SIZE ◇

This is the minimum Size of vehicle that can accept the weapon. It may be due to mass, volume, recoil or energy requirements, but the weapon cannot be used by a vehicle smaller than this. This value may increase according to the ammunition carried internally (see *Ammunition Feed*, further on).

Vehicle weapons are divided into two categories: normal and HEAT (High Energy Anti-Tank — not the usual military acronym, and tank here implies armor more than anything else). HEAT weapons rely on heat and energy rather than impact to damage their target, so they do not have to withstand high barrel pressure or take heavy recoil into account. HEAT weapons thus take less space and are lighter, but they can be counteracted by special armor and defense systems, lowering their overall efficiency. Minimum Size rounds to the nearest whole value.

The Minimum Size required to mount the weapon may be reduced through the use of higher technology to miniaturize the weapon's components. Inversely, a lower technology setting might force the adoption of large systems, thereby increasing the required size. Miniaturizing a weapon affects its cost, but enlarging it does not.

WEAPON MINIMUM SIZE

Minimum Size = cube root (Weapon Rating/2)	if normal weapon
Minimum Size = (cube root (Weapon Rating/2)) x 0.75	if HEAT-based weapon
Final Threat Value = (Current Threat Rating x Old Required Size) ÷ New Smaller Size	

◇ AMMUNITION VOLUME AND WEIGHT

It is assumed that the engineers will have planned enough space to fit the ammunition called for by the design. It might be necessary, however, to know how much space and weight are required when transporting ammunition as cargo. These numbers include weight and volume of the container.

A weight is assigned to the weapon system to give a basic idea of the weight of the ammunition. The weapon's Minimum Size is used as the weapon's Size in the Size-to-Mass table; the lowest mass is used, divided by ten.

FORMULAS

•	**Weapon's Mass = lowest mass in equivalent Size bracket, divided by 10**
•	**Ammunition Mass (per shot) = (Weapon's Mass) divided by 100***
•	**Ammunition Volume (per shot) = (Ammunition Mass) squared**

*Divide by 10 if the weapon has the Missile characteristic.

◇ AMMUNITION FEED

Weapons with ammunition can be fed through an internal magazine (fixed internal belt-feeding, auto-loader, etc.) or by "clips" (actual ammo clips, single shots, external belt, removable battery packs, energy crystals, etc.). Ammunition stored in magazines is entirely internal to the vehicle and is fed to the weapon through the inside. Because of this, extra ammunition will increase the required Minimum Size of the weapon, and make it bulkier and more massive. Multiple ammunition types can be stored within the weapon's bay, but switching between types requires one action.

The Maximum Ammunition Load table shows how many shots can be carried for each weapon. Cross-index the Weapon's Min. Size with the difference between it and the vehicle's actual Size: that's the maximum number of shots permissible. Transporting yet more ammunition for the gun makes it bigger and heavier, so the vehicle Size must increase (or the Min.Size decrease). For example, a Size 6 vehicle cannot carry more than 160 shots (of any type) for a Min. Size 4 weapon. Each weapon gets its own ammunition bin, so the above vehicle could carry two Size 4 weapons with 160 shots each.

MAXIMUM AMMUNITION LOAD

Weapon's Base	Difference between vehicle's Size and Weapon's Minimum Size					
Minimum Size	0	1	2	3	4	5
1	625	2500	10,000	40,000	160,000	640,000
2	80	320	1280	5120	20,480	81,920
3	25	100	400	1600	6400	25,600
4	10	40	160	640	2560	10,240
5	5	20	80	320	1280	5120
6	3	12	48	192	768	3072
7	2	8	32	128	512	2048
8 to 9	1	4	16	64	256	1024
10 to 19	1	3	9	27	81	243
20+	1	2	4	8	16	32

◇ CLIPS

Clips, being external to the weapon, do not increase the Minimum Size required to mount it on a vehicle. Rather, the ammunition clips are mounted on the exterior hull of the vehicle. This makes the clips vulnerable to damage. Each clip counts as an AUX system — Light Damage destroys one clip, Heavy Damage destroys one die's worth. Destroyed clips explode, causing damage equal to the DM of the ammunition directly to the hull. It is possible to protect the clips or transport them internally, however: see the Ammo Storage Perk, page 112.

Clips can also be damaged while in the weapon. When rolling a Fire Control damage result (sub-table A), it is also possible to read "Clip Destroyed" instead of the first two results of the table. The usual procedure (see *Damage*, page 158 of the rulebook) is used to decide which option is applied.

Changing clips requires one action and the presence of either a Manipulator Arm or a dedicated ammo-loading Tool Arm (either of which must have a rating of at least half the weapon's Minimum Size). The number of shots stored in each clip is left entirely to the designer's discretion, but is subject to the same rules as internal ammo bays (see table above). Large clips last longer, but more ammunition is lost if they are destroyed.

Any type of ammunition can be stored within a single clip, but the order in which the ammo types are loaded must be noted and then followed. It is often simpler to place one ammo type per clip and get multiple clips.

HAND-HELD WEAPONRY ◇

If one or more Manipulator Arms are present, any weapon can be designed as "hand-held" in a rifle-like mount. Rifles are somewhat more fragile, since they depend on the arm carrying them, but they are also more flexible tactically. Weapons in rifles use the arm's Size rating for Minimum Size determination. Each arm can handle up to one and a half (rounded down) its Size rating in weapon's Min. Size (this includes increases in size due to ammunition). For example, a Size 6 arm can bear two Min. Size 4 weapons, but not two Min. Size 5. Most rifles are clip fed.

Rifles can be picked up or put away at the cost of one action, as long as the manipulator is still functional. It costs no action to drop a rifle. If the Manipulator Arm is destroyed, or if the rifle is dropped, the rifle can be picked up by another manipulator-equipped unit with a free hand.

MULTI-FUNCTION WEAPONS ◇

Multi-function weapons are systems that can perform more than one function; for example, a laser rifle can fire powerful single shots or switch to a wide-angle beam sprayer by readjusting its focal array. The advantage of this is versatility with greatly reduced cost and space. On the down side, if the weapon is damaged, all functions are equally affected.

Each function is designed as a separate weapon. The cost is equal to the full price of the most expensive function, plus half the cost of the second most expensive function, plus a quarter of the cost of any other functions. The space required is equal to the Min. Size requirement of the largest function of the weapon. Switching between functions is instantaneous and costs no action, except when playing with the Roleplaying scale (6-second turns) where one action is required.

MULTI-FUNCTION COST ◘

- Cost = Full price of first one + half price of second + quarter of any subsequent
- Min. Size = Min. Size of largest weapon

MATED WEAPONS ◇

These are weapons that share some of their components, e.g. double-barreled shotguns. This reduces the overall cost and weight somewhat, and the weapons automatically count as linked for action purposes. Because they share some components, however, both takes damage if the vehicle is hit.

MATING COST ◫

- Cost = Full price of first one + three-quarter price of second + half price of any subsequent
- Min. Size = average Min. Size of all weapons, rounded down

SPLIT WEAPONS ◇

Split weapons are systems that only work when all components are present. These components do not need to be carried by the same vehicle. The "overall" weapon is designed as normal; Min. Size and mass must be determined. The mass is then split between the vehicles as desired, with Threat Value costs being assigned proportionally. The Min. Size for each component is reverse-engineered from their masses (see page 136).

To fire the weapon, all vehicles carrying components must end their movement in the same hex and each must spend an action. Components are damaged like normal weapons, and any damage affects the whole weapon (e.g. if three components had -1, -1 and -2 Acc damage, then the combined weapon would have -4 Acc). If any component is destroyed or does not combine with the others, the weapon cannot function.

Ammo adds to the Min. Size of components at the original Min. Size costs. For example, if a weapon with Min. Size of 6 is split into two Min. Size 4 components, then ammunition adds to them at Size 6 rates (see table on page 136). If a component can be fired as an individual weapon, it is designed normally and uses its mass as the component's mass. The Threat Value is the largest TV (component or individual), plus half the other.

STEP FIVE: RECORDING DATA ▼

The new weapon or system is now complete. All Threat Ratings should be rounded to two significant numbers: only the two leftmost numbers are kept, the rest being replaced by zeros. For example, a weapon with a cost of 756 would become 760. Ammunition costs are affected too: for example, ammunition with a cost of 0.079 would become 0.1 per shot. This simplifies vehicle TV calculations and still reflects the weapon's combat capabilities.

All that is left to do is enter its game stats on the relevant vehicle sheet. If the weapon is to be used on several different designs, the stats can be written down on a standard index card for future reference.

▶ COMPUTERS

6.6

The technological development of computers reached a new level in the early twenty-first century with the introduction of cheap and efficient neural network-based architecture. The advent of expert systems, capable of learning from their mistakes and of re-programming themselves, had a tremendous impact on artificial intelligence research (see *Artificial Intelligences* on the next page) and on the capabilities of personal computers.

Computers and other data-processing circuits are a standard component of modern technology. Many computer systems of the twenty-third century can be considered to be "artificially intelligent," though this does not imply sentience. Whereas computers used to be simple overgrown calculators, they now exhibit surprising resourcefulness. They use very complex sets of heuristic subroutines to interpret their operator's wishes and discover solutions that best fit the problem at hand. These computers (and the programs they use) are fairly unregulated and in most places can be bought by anyone who has the money for them.

▼ STANDARD COMPUTERS

6.6.1

Computers are described in Silhouette with the following attributes: Creativity, Knowledge, Processing Power and a series of programs called Modules, similar in effect to a character's Skills. Creativity and Knowledge are used in essentially the same way as for characters, and represent the computer's abilities to find new solutions (CRE) as well as relying on past experience and pre-programmed routines (KNO) to solve problems and accomplish tasks, using the proper Modules (Skills). Most standard computers will have decent KNO scores but abysmal CRE scores, reflecting their limited capacity for extrapolation and problem-solving.

This Processing Power gives the number of dice the computer can use to accomplish various tasks at the same time. For example, a computer with a Processing Power of 1 can only do one thing at the time, using one die. A computer with a Processing Power of five, on the other hand, could do five tasks at the same time, giving one die to each, or concentrate on only one task using five dice, do three one-die task and one two-dice task, etc. In the same manner as humans, only the highest die counts, with additional sixes each adding one to the total; the Attribute bonus related to the Module used is added to the final roll.

All active Modules must be allocated at least one die; inactive Modules take one combat round to boot-up, while active Modules can be interrupted instantly. The same Module can be loaded more than once. It is assumed that the basic functions of the computer, like those related to the maintenance of the vehicle or location in which they are installed, always succeed as long as at least one die is maintained for the proper Module. A number of Modules equal to the square of the Processing Power may be carried in the immediate access memory of the computer. A number of modules equal to the cube of the PP may be stored, but require one minute to be loaded.

Computers have one action per active module, regardless of the number of dice assigned to it. Helping an operator with a task takes an action. Only Artificial Intelligence (see p. 137) can opt to take extra actions like human beings. When they do, they get the same negative modifiers.

A computer can never put more than five dice on any particular task. Unused dice can be put into any currently running Module, instantly and at any time. A computer fumbles only if it rolls ones on all of its Processing Power dice. If a particular task would indicate a possible fumble, immediately roll for all other currently running Modules (except Backup System Modules, if any is present). If all die rolls are fumbles (unlikely, but possible), the computer crashes. Unless it was running the Backup Systems Module (see below), it takes a number of 6-second combat rounds equal to its Processing Power to reboot, without any Modules loaded.

Large mainframe computers are made up of smaller units which break up a problem into smaller ones and work on them in parallel. This is practical for Academic problems, which involves a lot of cross-referencing and number-crunching. Computers working in parallel may pool all their dice and use the highest applicable Attribute. They require one additional 6-second turn to compile the information before producing a result.

The cost of commercial computers depends on their Attributes. For computers with Processing Powers of eight or less, cost is equal to (PP squared) in thousand of credits, plus Modules and peripherals. The base cost is multiplied by two for each Attributes (CRE or KNO) higher than +3. Computers with PPs higher than eight cost a number of credits equal to (PP cubed), multiplied by 1,000. While computer with Attributes higher than +4 can exist, they are likely to be very uncommon and fairly large (most of them will be megacomputers used to run entire colony cylinders).

All computers are assumed to come with standard communication links (generally very thin but sturdy optic fiber cables), hardware and operating software, as well as advanced encryption systems. Other peripherals (see page 140) must generally be bought separately. The cost of computers installed in a vehicle is already included in the vehicle's Final Cost. A computer's physical size is determined by its Processing Power: one kilo for every point of PP. A computer can be physically smaller than this, at a proportionately increased cost. For example, a computer with a PP of 4 (a normal four kilos) that would weigh only two kilos would cost twice as much. Note, however, that the size and final price of the machine can be further adjusted depending on the technological level of the computer's manufacturer.

ARTIFICIAL INTELLIGENCES ▼

6.9.2

Artificial intelligences (shortened to AIs) are similar in essence to standard computers, save for one very important aspect: they are sentient (as far as any psychological test can determine), have "personalities," and sometimes give the illusion of experiencing emotions. The requirements of the Edicts have imposed strict regulations on the development of artificial intelligences. Modern computer programs are equipped with safeguards that prevent them from evolving outside of certain parameters, and thus all artificial intelligences have been intentionally designed (or allowed) to evolve under strict supervision. No AI may be installed within a mobile shell or connected to a network. They have built-in limitation subroutines to "chain" them and prevent them from running amok, and the few experimental AIs in existence have been carefully developed with benevolent, subservient personalities.

In game terms, Artificial Intelligences are considered to have Psyche and Willpower Attributes in addition to the usual Creativity and Knowledge. Their Processing Power is determined separately, though it will never be below five. Willpower is mostly used as a substitute Attribute for Computer Security Modules (see *Computer Security* below) and for virtual combat between two AIs, while Psyche determine the mental stability of the construct.

AIs can allocate up to seven dice to any particular task, and they never fumble. Being at the apex of neural network architecture, AIs tend to learn much faster than other types of expert systems; they can even acquire new Modules by experience. If an AI attempts to solve a problem or accomplish a task for which it does not have the appropriate Module, it must put two dice into the task, using CRE for the ability bonus; the result is equal to the lowest die rolled. Each time it succeeds at a task with a Threshold of *at least* 5 without having the necessary Module, a CRE roll is made against a Threshold of 12, adding to the roll the previous success at a similar task (i.e. that would use the same Module). If it succeeds, it is considered to have acquired the new Module, and from now on can load it at any time.

Because they are so much more powerful than non-sentient computers, the sale of AIs is generally tightly controlled. Their market cost is usually ten to a hundred times more than a commercial computer of the same Processing Power.

MODULES ▼

6.9.3

Modules can either be bought or developed by a AI's own expert system; neither hold an advantage over the other, except that ready-made Modules are usually available when you need them. Modules are divided into three basic types: Academic, Hardware and Vehicular (a fourth type, Computer Security, is detailed in the *Computer Security* section, page 140). Each Module has a certain sophistication, reflected in the maximum number of Processing Power which can be used to run them. For example, a Drive 2 Module may not have more than two dice allocated to it, even if the computer has a higher PP.

Academic Modules are used for tasks which are oriented towards the gathering and analysis of factual information; these Modules are designed to assist research and execute routine tasks such as bookkeeping and archiving. A computer with an Academic Module help a human operator by giving him more dice to roll. First, a Module roll is made against a Threshold equal to the operator's Skill level plus the related stat bonus (for example, a person with Skill level 2 with an Attribute of +2 would result in a Threshold of 4). If successful, the operator gets a number of additional dice equal to the Margin of Success, up to a maximum of 5. The operator must have the Skill affected by the Module in order to get a bonus, otherwise the Module is useless. AIs use Academic Modules as if they were the equivalent human Skills.

Hardware Modules are tied to specific pieces of equipment, such as sensors or communication equipment. These are often automated systems; human operators have no real effect on the computer's performance when it activates these Modules. Most are event-driven, which means that a roll is required only when a particular event happens (i.e. an object coming into the sensors' range, etc.). The cost for hardware Modules includes the appropriate interface but not the hardware itself.

Vehicular Modules are similar to Hardware Modules, insofar as they control hardware components, more specifically as part of vehicular equipment. They are usually not as automatic as hardware Modules, often requiring an operator (or an AI) to correctly function; refer to each specific Module for a more thorough description of the Module's effects. The cost for vehicular Modules includes the appropriate interface but not the vehicle itself. Modules have no effect on Threat Values — their cost is subsided into the computer's own TV cost.

The following Modules are addition to the list found on page 180 of the **Jovian Chronicles** rulebook. Additional Modules may also be developped from the list of Skills by the Gamemaster as he sees fit.

ADMINISTRATION (KNO) ◫

Type:	**Academic**
Frequency of roll:	**On request or Quarterly**
Cost:	**500 per die**

This Module is used to assist managers, clerks and accountants in the daily operations surrounding the administration of a company or other organization, or boost the operator's Bureaucracy or Business Skill. They can also manage automatic bookkeeping systems: roll once every three months of game time. The Margin of Success or Failure with this quarterly roll indicates a percentage in profit gain or loss for those three months.

LAW (KNO)

Type:	Academic
Frequency of roll:	On request
Cost:	1,500 per die

The Law Module is designed to help lawyers and judiciary personnel deal with research and the more arcane aspects of civil and criminal law. Each Module deals with the law of a particular world, and is generally not compatible with the law codes of other worlds.

NAVIGATION — NAVAL (KNO)

Type:	Vehicular
Frequency of roll:	Once per trip
Cost:	1,900 per die

This Module greatly simplifies the job of sea and ocean navigation for all kinds of watercraft. It improves the navigator's Skill and compensates for currents, winds and other potential navigational predicaments. The computer receives a +1 bonus to the Skill roll if the vehicle is equipped with a Satellite Uplink and there are navigation satellite available. If combined with the Autopilot Module, it can actually steer a ship by itself (roll normally for both Modules).

SOCIAL SCIENCE (KNO)

Type:	Academic
Frequency of roll:	On request
Cost:	1,200 per die

This category of purely Academic Modules is used by sociologists and other humanities professionals to enhance their Skill. It includes powerful statistics tools as well as comprehensive filing systems.

BACKUP SYSTEMS (CRE)

Type:	Special
Frequency of roll:	Whenever the computer crashes
Cost:	500 per die

This special Module is used to prevent system crashes on non-AI computers. Whenever a computer crashes, either from a general fumble or security breaches, it can recuperate some of its processes if at least one die had been allocated to the Backup Systems Module; a Module check is rolled, against a Threshold equal to the number of Modules that are currently running on the computer (including Backup Systems).

The Margin of Success indicates how many processes continue uninterrupted, from the smallest to the largest; the others must be re-loaded, at the rate of one per combat round. A failure means that all processes were lost, but the computer did not crash, and does not need to reboot; a fumble indicates that the computer crashed, and must be rebooted (see *Standard Computer Operations*, p. 136).

DEMOLITION (CRE)

Type:	Academic
Frequency of roll:	On request
Cost:	1,700 per die

This rather unusual Academic Module is used by demolition expert to assist them in the preparation, placement and deactivation of explosive charges. It only serves to boost the operator's Demolition Skill, and does not have any automatic system options.

GUEST (CRE)

Type:	Vehicular
Frequency of roll:	Special
Cost:	5000 per die

The rare Guest Module is used to give a human operator sensorimotor control of a vehicle by pirating its interface. The program allows the operator to "be" inside the robot or vehicle (the vehicle must be designed for remote piloting — see page 86), input and output being carried through high-speed digital communications lines (i.e., both computers must have access to a functional Communication system).

Successful use of the Module is rolled for only once, when the Guest attempts to connect. The resisting computer rolls its own CRE or WIL to resist. If the takeover is successful, one die of Processing Power must be put in the Guest Module for every Module to be run by the remote, but the Guest computer can use all of the remote's unused Processing Power and Modules (only with the Guest's own stats, however).

INVESTIGATION (CRE)

Type:	Academic
Frequency of roll:	On request
Cost:	3,000 per die

This rare and powerful Module is used mostly by law-enforcement agencies, as it is designed to assist with all stages of an investigation. It is a powerful analytic tool which can greatly help an investigator to explore any hypothesis, analyze evidence and connect seemingly unrelated elements to form a bigger picture. The normal rules for Academic Modules are used; this Module cannot act independently of an operator, nor is it designed to take care of routine tasks.

MANIPULATOR (CRE)

Type:	Hardware
Frequency of roll:	Event-driven
Cost:	900 per die

This is a catch-all Module that deals with all aspects of robotic manipulation and movement. Roll whenever the computer performs an action that would normally require an Attribute check, with the computer's CRE counting as its Agility, with a modifier of -2 to +1 depending on the actual manipulator or movement system.

PSYCHOLOGY (CRE)

Type:	Academic
Frequency of roll:	On request
Cost:	5,000 per die

This rare and expensive Module is most often used for psychological analysis and lie detection. It can only assist an operator, and has no capabilities for managing routine systems. AIs often use this kind of Module when they deal with living beings.

TACTICS (CRE)

Type:	Academic
Frequency of roll:	On request
Cost:	2,000 per die

Mostly found among the military and special intervention squads, this Module can help officers gain a tactical advantage over their adversaries. Due to the particular uncertainty related to tactical situations, this particular Module only gives half the normal number of bonus dice, rounded down (i.e. a particular use of the Module which would normally give three dice instead gives just one).

SAMPLE COMPUTER OPERATION

A freetrader spaceship has a main computer with a CRE of +1 and a KNO of +1 along with a total Processing Power of 4, or four dice (needless to say, this is a unusually powerful computer for a trader ship). The computer runs the Sensors and Navigation (Space) Modules at all times, putting one dice in each, keeping two extra dice in case of emergencies.

Meanwhile, two hundred kilometers away, two pirate ships are heading for the trader. The Gamemaster judges that detecting them at this distance is a Threshold 5 Skill roll. He rolls secretly the one die affected to sensors: a 5, +1 for the KNO bonus (Sensors is a KNO Module), for a total of 6. The computer detects the ships, but the GM judges the Margin of Success is too small for complete identification, so it tells the crew that two unidentified ships are heading their way. The captain tells the computer to activate the Fire Control and Defense Systems Modules, just in case, putting one die in attack and one in defense. It takes two combat rounds to load both Modules. Now all of the computer's Processing Power has been allocated.

The captain decides that the best defense is a good offense. At this range, it's better to have some assistance from the computer. The weapon officer has Skill Level 2 in Gunnery (space), with +1 PER. The computer rolls against a Threshold of 3 (level 2 Skill +1 attribute = 3) with its single die, +1 for its CRE attribute. It gets a 5, for a MoS of 2. The gunner thus gets two extra dice for one shot, and easily blows up one of the pirates. The gunner is on his own for the next shot, however — he still has actions to fire, but has already used up the available computer power. The surviving pirate ship opens fire on the vessel with a volley of missiles. The pilot uses the Defense Systems module to plot an evasive path. He could also have asked it to activate a defensive system on its own, such as an anti-missile system.

By the next round, the pirate is well within visual range. The captain decides to reallocate the computing power and puts three dice in Fire Control and one in Defensive Systems. Since the modules are already active, there is no delay. Sensors and Navigation are deactivated (they would need at least one die to remain active) and will have to be rebooted. The gunner is busy arguing with the captain and tells the computer to fire on his own. The Fire Control Module uses its single action to fire the ship's main gun with three dice, resulting in a hit and the utter destruction of the enemy vessel.

▼PERIPHERALS

The following peripherals are usually added to personal or home computers; they are not necessary for the computer to function, but can be essential in making it usable by a human operator. Computers that are built into vehicles always come with the proper interface peripherals as part of their basic cost. They'll have a screen (often a window in the onboard instrument screen), a data input device and a communication link (provided the vehicle has a communication system).

Prices and weight are given for average quality, 2210-era components; older technologies will generally be heavier and bulkier, while new ones are lighter, cheaper (for the equivalent processing power) and more powerful. Price and weight of vehicular computers are included in the vehicle's own statistics.

◇COMMUNICATION LINKS

All computers come equipped with a data communication link device, except those which are built into a specific device and don't need to access any type of network. Modern computers have the PAN network protocol installed as standard, though local networks may use other types of protocols (Gamemaster's discretion).

◇INPUT DEVICES

Common input devices include the voice command interface, the dataglove and the stylus, all of them analog-to-digital interfaces which transform the voice or the movements of the user's hand (or body) into computer-readable information. They are usually quite cheap (about 40 credits for voice command module, 20 credits for a dataglove and 15 credits for a stylus) and easy to use.

Keyboards, still very much in use, have always had a number of dedicated followers; data entry is often much faster when done by a trained typist. Keyboards usually cost between 10 and 25 credits.

◇PHOTOPRINTER

This device provides photo-quality color printouts on normal or synthetic paper (also known as polysheet). The latter is made of special polymers which can be easily recycled, and is thus much more common than the expensive wood-based paper. It can also scan images and store them in digital format. It normally weighs between 0.5 and 1.5 kilos and costs 250-1000 credits. Smaller, more portable versions are available at higher prices. They look like small bars of plastic with four slots, two to feed in originals and paper and the others to eject the material.

◇REMOVABLE DATA STORAGE

The memocard system has been the most popular form of data storage for decades. It can store up to two levels of Modules (one level 2 or two level 1) on one plastic card approximately 5 x 8 cm in size. The read/write unit costs about 100 credits and weighs a quarter of a kilo. Memocards cost 1 credit each. Memocards with increased memory are available for correspondingly increased prices.

◇SCREEN

Screens, whether old-fashioned monitors or ultraflat, foldable LCD weaves that can display millions of colors with high resolution, are among the cheapest and most widely available display peripherals for computers and other kinds of audio-video equipment. They usually weigh less than half a kilo, and cost around 75-150 credits. Holographic displays are also available, but cost three times as much and only function within the front 180° arc.

◇VR SET

VR goggles display the data in RealTone™ (billions of colors) with high resolution on a tiny surface that fits over the user's eyes. Tiny speakers are inserted in each ear for sound. The entire set usually weighs less than a third of a kilo, and costs around 200-300 credits. With their liquid crystal surfaces, the goggles can act as a Head Up Display (allowing normal vision) or as a full immersive environment.

▼COMPUTER SECURITY

Computers have permeated all aspects of life, including the shadier ones. From personal diaries to state secrets, a lot of the information now stored in computers has always attracted all sorts of data thieves, con people and spies. Fortunately, the encryption theories have successfully withstood the passage of time, and most stored data can only be accessed by its rightful owner (or anyone else who has his or her private key); even the fastest and brightest AIs can only decipher encrypted material with considerable time and effort. Decryption algorithms, as advanced as they are, cannot cheat the theoretical limits that make encrypted material hard to unlock.

►COMPUTER SECURITY CONTINUED

While these developments might have slowed down the computer espionage business a little, it did not end it by any means; destroying information and "bugging" the enemy's computers, though publicly considered treacherous, is always a possibility. Obtaining personal encryption keys through guile and intrigue has also permitted computer espionage to survive, ironically enough, by using the ancient weapons of deception, seduction and blackmail.

As far as the actual game mechanics of computer security are concerned, there always needs to be at least two computers, the attacker and the defender. Unless the attacker has access to correct security codes and protocols, it will have to "hack" its way in. It either tries to breach security measures, corrupt them or simply "bug" them to get up-to-date reports of their nature and status. The defender tries to prevent the attacker from entering and to trace the attack, so it can either organize a counterattack or notify the authorities; sometimes a defending computer will act as if it did not notice the intrusion and feed false information to the invader. Whenever two computers clash in such a manner, an opposed Skill test between the attacker's attack Module and the defender's defense Modules is made, each with a number of dice corresponding to the amount of Processing Power put into them.

The presence of a human operator can help either computer fare better against its opponent, in a manner similar to the effects of an Academic Module, but reversed. This time, the operator must roll his Computer Operation Skill against a Threshold equal to the total number of dice allocated by the enemy computer for its attack or defense; each point of Margin of Success adds a die to the computer's, while each point of Margin of Failure subtracts one, to a minimum of one. A fumble dooms the attacking or defending attempt, which automatically fails due to human error.

ATTACK MODULE: "BATTERING RAM" (CRE OR WIL)

Type:	Computer Security, attack
Frequency of roll:	Event-driven
Cost:	2,800 per die

This hit-and-run Module is used for its raw breaching power, not its discretion. A Battering RAM Module tries to penetrate a computer's defense by assaulting them with a lot of computer noise, peppered with a few weakening viruses. Once defenses are down, it immediately tries to confer to its computer a superuser access to all of the invaded system's files and Modules. It does not try to avoid alarm Modules, decoys or tracers, and as such can be rather useless against larger systems.

DEFENSE MODULE: "LABYRINTH" (CRE OR WIL)

Type:	Computer Security, defense
Frequency of roll:	Event-driven
Cost:	1,500 per die

This simple defense Module simply tries to stop intrusions by filtering all information flow through a complex series of encryption/decryption process, destroying any superfluous code and stalling more aggressive attack programs. When it successfully defends against attacking programs, the Margin of Success count as the number of combat turns lost by the attacker. The Labyrinth defense Module is often combined with alarm and decoy Modules.

SAMPLE COMPUTER ATTACK AND DEFENSE ▼

Yukia, an enterprising young computer saboteur, has decided to break into a local company's computer network to wreak some havoc. She has the Skill Computer Operation at level 3, and her KNO Attribute is +2. Her computer, a brand new portable model with +1 CRE, -1 KNO, Processing Power of 4, has just been equipped with a Battering RAM attack Module she got from Venusian friends. Yukia has learned from an inside source that the company's gateway computer is a powerful machine with +4 CRE, +3 KNO, and a Processing Power of 7. According to the manuals she pilfered from a visit at the company's headquarters (under the cover story of a school trip), she knows that it runs a Communications Module with two dice, a tracer Module with one die and a Labyrinth defense Module with four dice.

Yukia opens the communication channels and decides to intrude with four dice, to give herself all the chances she needs. She also prepares a few contengency sub-routines, just in case, and rolls her Computer Operation Skill. This results in a 6. The number of dice affected to defense by the company's gateway computer is 5, so Yukia succeeds by (6-5) one point, adding one die to her computer's attack roll. The attacking computer rolls five dice, but only gets a 5, which added to its +1 CRE bonus gives a 6 as the attacking roll; the defender's five dice yield a result of 5, plus the computer's +4 CRE bonus, for a total defense roll of 9. The company's computer has successfully defended, trapping the attacking program for (9 - 6 =) 3 combat rounds, as specified in the Labyrinth defense Module. Yukia watches as her programs try to give her further access, but are stalled by the defense routines for long seconds. She seriously consider pulling the plug, wondering as to whether or not this will be enough time for the tracer program to unmask her and inform the authorities of her location...

▶ FUTURE AND FANTASTIC TECHNOLOGIES

This section covers some of the most unusual options available to users of the vehicle construction process. These options are items that are not yet possible in the **Jovian Chronicles** universe, don't quite fit within the standard design procedures, or items that affect the performance of the whole vehicle rather than just one ability. Some are also well-outside the "hard science" scope of the game. For this reason, these systems and their related rules are grouped here under the header "Future and Fantastic Technologies." Even in 2210, they are considered science-fiction.

The future and fantastic technologies are included here to allow Gamemasters to customize their campaign according to the Players' tastes. Some would like to see giant monsters, other would like to transform the solar system-spanning story into an even more grandiose one with the entire galaxy as a background. Obviously, this requires a few additional rules. This includes technologies such as Faster-than-Light drives, teleporters or just plain weird "special effects," like combining vehicles or morphable machines. They are presented in alphabetical order for simplicity and ease of reference. All are optional and do not have to be used in a campaign.

This section also features some pieces of equipment that have no tactical utility whatsoever, but can be great fun in a roleplaying environment. These do not affect the vehicle's Threat Value but are added to its overall monetary cost. See the listing on *Extras* on page 148.

▼ ADVANCED TECHNOLOGY

The game system has been calibrated to handle the capabilities of most technological items within a few hundred years' timespan. Extremely long-lived campagins, however, might find cost and size spiralling upward as Gamemasters try to adjust game stats to reflect a rapidly improving technology base. One solution is to use Technical Levels. Each construct or piece of equipment can be assigned an abstract numerical value that represent how sophisticated the item is. Abstract, because none can predict the future's capabilities. In general, only major conflicts or several centuries of slow development will warrant moving to a higher level. Because they are hard to properly evaluate, Tech Levels are suggested only as a Gamemaster tool for individual long-term campaigns, and will remain an optional rule.

Items of the same technological level are built and used with the standard rules. If pitted against a lower or higher Tech Level, however, the difference between the two is applied to all dice rolls. If using Threat Value and cost to choose units, each Tech Level multiply the cost by ten. Sensor and Comm ranges can also be multiplied by ten when used against systems of lower levels. Non-technological items, such as structures and natural formations, are TL 0 for comparison purposes.

For example, a 2210-era exo-armor can be determined to be a Tech Level 2 vehicle. If pitted against a late 1990 jet fighter (say, TL 1), the exo will gain an automatic bonus of +1 to all die rolls, and both its Sensor and Comm ranges will be multiplied by ten. If the very same exo-armor was found and used by rebels in the year 13,508 to be pitted against TL 7 grav-spheres, the latter would have a +5 modifier to all dice rolls.

▼ BIO-CONSTRUCTS

Bio-constructs are vehicles, machines and robots made of living flesh rather than mechanical components. They may be engineered or naturally bred, and their characteristics may vary wildly. They are somewhat rare, since most applications are easily done by more resilient machines.

For game simplicity, bio-constructs are build just like any other vehicles or machines. In this case, "Crew" indicates not only any onboard crew (if applicable) but also the state of the creature's nervous system (pain and damage will cause actions to be lost). Especially tough or resilient creatures might well have several levels of the Perk "Reinforced Crew" (in this case, it would read as "Tough Nervous System"). Most living beings will also have Self-Repair Systems (see page 148) to simulate their ability to heal naturally.

▼ BIO-ENERGY

Although most machines are equipped with a powerplant, a few weird ones might feature an energy converter that uses the pilot's (or crewmen's) own psychic or life energy for power. Often (but not always), the more emotional the pilot, the more powerful the machine! This unusual perk allows for a great reduction in the cost and size of a machine (since it does not require a large powerplant). This benefit is more than offset by the sub-standard performance of the machine and the extremely limited deployment range of such craft.

When this option is chosen, Movement Speeds and Deployment Range are not chosen for the machine and count as zero for Threat Value calculations. Instead, the maximum speed in hexes (adjusted for air and spacecraft) is equal to twice the pilot's WIL scores (the weak-minded fool who tries to steal the prototype will find that it just does not seem to work for him for some reason). A bonus equal to the absolute value of the PSY Attribute is added to the WIL before multiplying (hence, a -3 PSY would count as a +3). The Deployment Range of such a craft is equal to the Stamina of the pilot times ten. The rating of the Perk is added to the Willpower of the pilot for speed calculation purposes. The Perk Cost of this option is equal to 8 + (rating squared).

COMBINER VEHICLES ▼

b-7-4

Combiners are vehicles that are fully operable on their own but also possess the ability to connect — "combine" — with other specially designed machines to form a greater and usually more powerful vehicle. The component vehicles don't just dock together, either, they literally merge into the new unit: each sub-vehicle is equipped with additional systems that allows it to act as part of the whole, effectively allowing the greater vehicle to be more than the sum of its parts. To combine, all vehicles must end their movement in the same hex (if in space,their velocity should be within two points) and spend one action each. The connection is instantaneous (though special effects, panning camera shots and battle cries may make it seems like longer) and the combiner is ready to act on the next turn.

The combiner and the combined machines are designed separately. They need not have the same form, armament or additional systems such as Perks and Flaws; for example, two minitanks could combine to become a large hovervehicle. The weight of the combined machine should be equal to the total weights of the vehicles that constitute its body, however, unless the campaign is firmly set in the fantasy genre. Crew must be accounted for in both combiners and combined forms, that is, any combiner crew that is not used in the combined machine must be given passenger seating or be dropped off before combining.

Each combiner vehicle must be assigned to one of the five following locations on the larger combined unit: Fire Control, Structure, Crew, Movement and Auxiliary Systems. Each location must be assigned at least one combiner (combiner vehicles can be part of more than one location). Whenever one of these locations takes Light damage, one point of Armor is removed from the vehicle assigned to that section (in case of Heavy damage, two points). If more than one combiner vehicle is available in a given location, the damage is assigned randomly. Roll a die: even, attacker chooses, odd, defender chooses. If the combined vehicle receives an Overkill result, it "decombines" into its constituent vehicles, all of which take an immediate Heavy damage result. Until repaired, the combiner vehicles cannot recombine.

The Threat Value and cost are equal to the Threat Value of the combined machine or the total Threat Value cost of all component machines, whichever is greater.

OVERLAY ARMOR ▼

b-7-5

Overlay armor is a removable outer shell that is layered on a vehicle. Overlay armor normally increases the equipment available to a vehicle by adding extra armor and weapons. Occasionally, other devices are embedded into overlay armor. In game terms, a vehicle with Overlay Armor is effectively a different vehicle than the same vehicle without it. New values must be selected for most Attributes when the vehicle is equiped with the Overlay Armor. In addition to choosing new base statistics, new Perks and Flaws may be added to a vehicle. The following table summarizes the information.

OVERLAY ARMOR DESIGN GUIDELINES

New Statistic	Restriction
Movement Systems	none, but often keep the same one(s)
Speed	none, but speed often decreases slightly
Maneuverability	none, but Maneuver may decreases slightly
Armor Rating	cannot decrease; usually increases by 10% or more
Weapons	may add new weapons; may prevent existing weapons from firing (in effect, removing them)
Sensors	none; may be increased or decreased, depending on design
Fire Control	none; may be increased or decreased, depending on design
Communications	none; may be increased or decreased, depending on design
Deployment Range	none, but Deployment Range often decreases slightly
Reaction Mass	none; may be increased or decreased, depending on design

OVERLAY ARMOR PERKS AND FLAWS

Perks	Perks	Flaws
• Airdroppable	• Improved Rear Defense	• Annoyance
• Airlift Ready	• Mining Equipment	• Defective Active Sensors
• Aquatic Sensors	• Reentry System	• Defective Fire Control
• Arm (any type)	• Reinforced Armor/Location (any)	• Highly Flammable
• ECM	• Satellite Uplink	• Large Sensor Profile
• ECCM	• Searchlight (any)	• No Sensors
• HEAT Resistant Armor	• Stealth	• Sensor Dependent
• Hostile Environment Protection (any)	• Target Designator	

◇ OVERLAY ARMOR COST

Once the vehicle's stats while clad in Overlay Armor are chosen, Steps 11 to 16 of the Vehicle Design Process (Threat, Size, Cost, Production Type, Lemon rolls and Final Cost) are done separately for the vehicle with and without Overlay Armor. The following minimum values are applied to the Overlayed version. If its values are not high enough, they automatically become the minimum acceptable amount. A vehicle with Overlay Armor gets the Lemon dice from the base model in addition to its own Lemon dice.

A vehicle may shed (but not put on) its Overlay Armor at any time by expending one action. In addition, any Heavy Damage result to the Structure automatically blows off a vehicle's Overlay Armor, reducing the vehicle to its normal statistics. All damage effects inflicted upon a vehicle with Overlay armor is not transfered to the vehicle and is removed when it sheds its Overlay Armor. Crew casualties, however, remain casualties.

◫ OVERLAY ARMOR THREAT VALUE AND COST

- A Perk Cost of 2 points is applied to both the base version and to the version with overlay;
- Overlayed Version's Threat Value cannot be less than Base Model Threat Value;
- Overlayed Version's Size cannot be less than Base Model's Size;
- Overlayed Version's Final Cost must equal to at least (1.1 x Base Model Final Cost);
- Cost of the Overlay Armor itself is the difference between the Overlayed vehicle cost and the base vehicle cost.

6.7.6

▼ TELEPORTER DEVICES

Teleporters, or devices that allow the transportation of matter over distance without actually traveling it, are not possible according to the current human understanding of physics. The amount of information and energy required to breakdown and recreate the pattern of the object(s) to teleport would be literally cosmic, unless one could "magically" swap two locations in space. A teleporter would also have to correct the incertitude introduced by the Heisenberg principle, which amounts to changing one of the universe's basic laws. Still, teleporters remain a staple of science fiction and these rules would not be complete without suggestions for their use.

Teleport Self: this system allows the vehicle to move to any tactical hex within a radius equal to or less than the rating of the Perk instead of using its normal movement, regardless of intervening matter. Teleporting costs two actions, one to prepare and one to do it — teleporting is a pretty complex act, and most people do not want to end up materializing within another object by being hasty. The Player also has control over which direction his vehicle is facing when it appears. The Perk Cost of this option is equal to 2 x (rating squared).

Teleport Others: this system allows the vehicle to move any other item (person, object or vehicle) within a radius equal to the rating of the Perk to any other hex in range. The item to be moved must have a Size rating less than or equal to the rating of the Perk. The teleporter can also send the object a thousand times further, provided it first spends an action to lock on the target location and remains immobile during the transfer (or do not expend any thrust). It must have no energy shield in action, unless they are permeable to weapon fire (see *Shield, Energy*, page 131).

If the item materializes in the same hex as another unit, the transported item must make an Agility or Piloting roll against a Threshold equal to the sum of the Size of all units present in the hex, divided by five, or collide with a random occupant in the hex. If the item materializes in the same hex as a huge immovable object (such as a space station or a boulder), it automatically suffers an Overkill result unless the large object is hollow (in which case the result is left to the Gamemaster's discretion). The Perk Cost of this option is equal to 5 x (rating squared).

6.7.7

▼ THOUGHT INTERFACE

Very advanced mind-machine interfaces have been in the work for many years. Their development is complicated by the fact that human beings do not seem to control specific actions with equally specific parts of their brain, but rather use different "circuits" every time. Perhaps examining signals coming out of the motor nerves would allow a viable interface. If one of these could be perfected, it would allow the crew to react at the speed of thought rather than lose precious fractions of a second waiting for the order to go throught their arms and hands to the controls. The interface may be a brainwave scanner or a surgically implanted jack, but the end result is the same: the crewmember's will is directly transmitted to the vehicle. Its great reaction speed allows the vehicle to have extra actions each combat round.

The primary effect of the interface is to give additional actions; improvements on the vehicle's Maneuverability or Fire Control are represented by the regular stats. The number of actions gained is equal to the number of actions the crew which is interfaced would normally receive. This is in addition to the natural number of actions whitch the entire crew has. For example, a corvette's crew of 36 has six actions. The captain and his three personal aides are then all hooked up to a Thought Interface system, granting the ship two more actions, for a total of eight actions per turn. The cost of the Perk is equal to 10 plus the number of extra actions gained.

FEEDBACK ◇

Thought-control interfaces often put undue strain on the pilot and his central nervous system. Certain interfaces are more primitive than the perfect control option listed on the previous page. Some cannot filter the feedback signals they send back, others require absolute mental concentration for the entire battle. The following are variants on the thought-control systems that put some limitations on the crew. This, of course, reduces the cost of the interface system; whenever one of the option call for an interface cost, it refers to the Thought-Interface Perk cost on the previous page.

Invasive Interface: the computer gives hints and plot out the paths of targets directly into the crew's minds, giving them a tactical edge. A PSY roll must be performed when the system is activated. If failed, the information totally overrides the crew's mind, causing them to lapse into catatonia in a number of rounds equal to the roll of one die. If fumbled, the interface is too much and the crew is knocked out. The cost of the interface is reduced by the PSY Threshold.

Mind Link: the nervous reflexes of the crew are directly transferred to the vehicle, which effectively becomes an extension of the crew's body and mind. A WIL roll is made every round the system is used: if it is failed, the system confers no action bonus for that round. If fumbled, the system picks up a stray thought and acts on it (GM's call). The cost of the interface is reduced by the WIL Threshold.

Unshielded: damage can surge back into the minds of the crew, possibly causing severe mental wounds. Such a system costs only half the normal point cost, but requires a Knockout test (see rulebook page 117) every time the vehicle receives damage. Light damage to the vehicle causes a -1 penalty to the test, while Heavy damage causes a -2. There is a -1 penalty for each consecutive test during a single turn.

Sentient: the main control computer has been patterned after an animalistic mind. It must be dominated with a WILL roll during the first interface, or it will refuse to obey the crew. If the machine is damaged or the crew emotionally strained (GM's call), a WIL rolls is required or the mecha goes Berserk against its attacker. It will move directly toward it and attempt to engage it in hand-to-hand combat. It may not take any kind of defensive action, but gains a +1 modifier to melee attacks. The cost of the interface is reduced by the WIL Threshold.

TRANSFORMABLE VEHICLES ▼

Transformable vehicles (also refered to as variable platforms) are vehicles that can modify their outer shape and structure to respond to multiple environmental and mission requirements. They are extremely versatile machines, but pay for this by their increased complexity, cost and vulnerability to battle damage.

A transformable vehicle is, for game purposes, two (or more) vehicles that can "swap places" during a battle. Doing things this way allows to create very different forms, each with its own strengths and weaknesses. Fantastic campaigns can even allow the vehicle's modes to be of different Sizes.

Each mode is designed as if it was a separate vehicle. All modes should have the same Size and Crew ratings, however. All other ratings and values can change — deployed antennae can boost the Communication rating or range, wings can unfold to give Flight movement, etc. Here is a quick example: an exo-armor that transforms into a fighter plane and vice-versa. In plane mode, two heavy lasers are located in the plane's nose. These lasers cannot fire when the vehicle is in its exo-armor form because the muzzles are covered by moving parts that support the legs. The plane's sheet will list lasers, but the exo's sheet will not. If the two forms are very similar, it is usually possible to note only the changes in the "Notes" box of a single vehicle sheet. Weapons can have a letter before their name to show the mode(s) in which they can be used.

The total cost of the vehicle is equal to the full price of the most expensive form (called the primary form), plus half of the second most expensive form (the secondary form), plus a quarter of the cost of each subsequent form. The primary form is always the most expensive one, regardless of its actual nature. Even if you are designing an exo-armor that can turn into a fighter plane, if the latter is more expensive it is the primary form (with the exo-armor mode the secondary form).

In each combat turn, the vehicle can transform once at no cost. Extra transformations are possible but cost one action each. Damage to systems is carried over from one form to the other(s), unless the perk Private System (see below) has been bought. Armor damage and crew casualties are always carried over.

PRIVATE SYSTEM ◇

This perk allows a transformable vehicle to avoid damage being carried over to all its forms. The perk must be bought separately for any or all four main sub-systems of the vehicle: Fire Control, Structure, Movement and Auxiliary Systems. When damage is received on a system protected by this perk, the damage does not transfer to the other forms. The cost of the Perk is equal to 2 per system or 7 for all four of them.

▼FASTER-THAN-LIGHT DRIVES

6.7.9

Faster-Than-Light movement seems to go against everything that is presently known about physics. One has to wait centuries as the ship travel the vastness of space at sublight speed, but FTL drives would make the exploration and colonization of the galaxy possible. Practically any spaceworthy vehicle can be equipped with a FTL drive, provided the scientific background of its world of origin allows it. Some technologies allow only kilometer-long ships to travel between the stars; others enable even the smallest one-man fighter to leap across light-years with disconcerting ease. To get around this problem, the Threat Value and cost of the vehicle are modified solely according to the speed and range of the FTL drive, regardless of the vehicle's physical size and attributes. For example, a Size 6 fighter and a Size 45 warship will both have the same cost multiplier if they have the same FTL speed and range.

The FTL speeds are expressed here in C, whereas C is the speed of light. The range multiplier is expressed in Light Year (LY). For simplicity, only a certain set of speed and range are listed. If the vehicle's stats falls between two values, the closest value is used, rounding up. The Activation Delay is the time required for the system's activation to occur once the controls are set; during that time, the vehicle can do nothing. The cost is equal to the vehicle's Final TV times the FTL Multiplier(s) below.

▣FTL MULTIPLIERS

Speed	Multiplier	Range	Multiplier
1C	x2	1 LY	x1
10 C	x4	10 LY	x2
100 C	x16	100 LY	x4
1000 C	x64	1000 LY	x8
10,000 C	x256	10,000 LY	x16
100,000 C	x1024	100,000 LY	x32

◫FTL MULTIPLIERS

Act. Delay	Multiplier	Limitation	Multiplier
6 seconds	x2	Must be in a specific location	x0.5
30 seconds	x1	Requires special fuel	x0.5
1 minute	x0.9	Requires rare fuel	x0.3
10 minutes	x0.75		
1 hour	x0.5		
1 day	x0.2		

▼DIMENSIONAL TECHNOLOGY

6.7.10

Dimensional Technology is a catch-all name for the systems that allow access to other realities. If possible, this feat would permit a variety of special functions, such as the ability to store items or additional mass in a nearby pocket dimension for later use. It would also allow, by the same token, voyages to parallel universes or even other times.

◇DIMENSIONAL MASS

R

Some vehicles have the strange ability to grow or shrink in size, putting on or shedding mass without any visible means. This can be done through dimensional storage of additional mass, variable-sized molecular structure or atmospheric processing, but the game effect remains the same.

The game effect of this Perk allows a vehicle to add or subtract from its Size a maximum number of levels equal to the rating of the Perk (particularly useful when the snub-fighter grows to the size of a battleship just before impact on a ramming run). A maximum of five Size levels can be shed or gained per round, regardless of the overall capability of the vehicle. The cost of the Perk is equal to its Rating squared.

◇DIMENSIONAL STORAGE

R

This often happens in animation: vehicles and mecha suddenly pull out additional weapons or pieces of equipment that just were not there a second ago, or they sprout additional pieces that could not possibly fit within their mechanisms/structure. Although the reasoning behind it might vary, this is called Dimensional Storage: the ability to pull useful gimmicks out of nowhere. This Perk allows the vehicle access to some prepared equipment from an extra-dimensional space with a volume limited by the rating of the dimensional storage. The amount of "cargo" volume supplied is equal to the Rating squared, in cubic meters, with the cost of the Perk equal to its Rating. Vehicles that "extrude" new systems should be designed as Transformables (see page 144).

DIMENSION JUMPING ▼

6.7.11

Dimension Jumping is very similar to Faster-Than-Light flight, game-wise, but instead of going to other star systems, the vehicle can hop across parallel dimensions (or across time). Practically any vehicle can be equipped with a Dimension Jump drive, provided the scientific background of your alternate campaign allows it. The Threat Value of the vehicle is modified solely according to the versatility of the drive, regardless of the vehicle's physical size. For simplicity's sake, only a certain set of parameters are listed. If the vehicle's stats fall between two values, use the closest one, rounding up. If this system represents a time-traveling device, use the # of Accessible Dimensions below as the possible range in years. The Activation Delay is the time required for the system's activation to occur once the controls are set; during that time, the vehicle can do nothing. The total cost (both in TV and money) is the vehicle's Final TV and cost times the Dimensional Multiplier(s) below.

DIMENSIONAL MULTIPLIERS ◘

# of Accessible Dimensions/Range in Years	Multiplier	Act. Delay	Multiplier
1	x1	6 seconds	x2
10	x2	30 seconds	x1
100	x4	1 minute	x0.9
1000	x8	10 minutes	x0.75
10,000	x16	1 hour	x0.5
100,000	x32	1 day	x0.2

DIMENSIONAL MULTIPLIERS

Limitation	Multiplier
Must be in a specific location	x0.5
Requires special fuel	x0.5
Requires rare fuel	x0.3

NANOTECHNOLOGY ▼

6.7.12

Nanotechnology was once thought to be the great salvation of Mankind. Its molecular-sized machines would keep human bodies young and healthy, create objects seemingly out of thin air and disassemble bullets in flight before they could harm the target. Unfortunately, the laws of physics and chemistry blew apart those fantastic dreams. Still, if things had worked out as hoped, nanomachines would have allowed some pretty impressive tricks...

MATERIAL ABSORPTION ◇

R

A vehicle can be equipped with a specialized kind of nanomachines that can be injected into any material that the vehicle happens to touch. They then modify the structure of the material and attach it to the vehicle, shaping it into a form that will be more useful to the host. This allows the vehicle to gain mass or equipment that it would not normally have.

The system can absorb up to (Rating x 10%) of the vehicle's weight every turn, spending one actions to do so. Any mechanical or electronic system can be used as is if undamaged. If the vehicle is merging with larger objects, it can "take over" with the computer Guest Module and control them. The cost of the Perk is equal to 10 plus the Rating squared.

MORPHABLE MATERIAL ◇

Morphable material is composed of many millions of nanomachines holding together to create a seemingly solid surface. By moving the nanomachines around, the material is capable of altering its shape like putty, shifting around to take on new shapes almost at will. The machine may spread its Size points across great distance, as long as there is at least one point per hex. The machine can even split into two or more parts (using the Combiner rules).

Morphable vehicles are effectively a "super-transformable," in that they can take many shapes. All forms must have the same Size and mass, but all other characteristics may be different. When calculating the TV costs, use the highest possible Armor, overall speed (disregard movement systems), Maneuver, and Perks. The resulting high cost is compensated by the machine's versatility and its ability to shrug off system damage.

When a morphable machine is damaged, only lost Armor points and crew casualties (if applicable) are carried over between forms. One action is required to change shape (or, it can "morph" to the same shape, effectively repairing the damage). If the vehicle cannot reproduce complex moving parts (wheels or projectile weapons, for example), its total Threat Value cost is halved (rounded up).

◇ SELF-REPAIR SYSTEMS

Either because it is alive or it is equipped with an automatic repair system, the vehicle can "heal" itself and perform its own maintenance. Any and all systems can be healed if given sufficient time and building material. When combined with the No Fuel Required Perk, the vehicle practically never needs to stop!

Each self-repair system generates (Rating x 5) Repair Points per round. Each attempt to repair a damage effect requires a number of Repair Points equal to the vehicle's Size plus a modifier from the Damage Effect Modifier Table. To successfully repair a damage effect, the Player must assign enough Repair Points to cover the cost. Once the required points are expended, the system must succeed a Skill roll, using its rating as its Skill level. The thresholds for the various types of repairs are found in the Repair Threshold table. Failed or draw results fail to produce any result and the Repair Points are wasted. Fumble results produce a Light damage result on the vehicle in addition to failing to produce any repair. Multiply the vehicle's final TV and cost by the Rating of the system to get its final cost and Threat Value.

◫ DAMAGE EFFECT MODIFIERS

Damage Effect	Repair Point Modifier	Damage Effect	Repair Point Modifier
Armor Rating Loss	+1 per point	Fire Control Destroyed	+6
MP Loss	+1 per MP	Power Transfer Failure	+5
Maneuverability Loss	+2 per point	Catastrophic Crew Compartment Failure	+10
Weapon Accuracy Loss	+1 per point/weapon	Complete Structural Failure	+vehicle Size
Weapon Destroyed	+5	Auxiliary Systems Perk	+Perk cost

◫ REPAIR THRESHOLD

Damage Effect	Repair Threshold	Damage Effect	Repair Threshold
Armor Rating Loss	1 per point	Fire Control Destroyed	6
MP Loss	1+1 per MP	Power Transfer Failure	5
Maneuverability Loss	2+2 per point	Catastrophic Crew Compartment Failure	7
Weapon Accuracy Loss	2+1 per point/weapon	Complete Structural Failure	8
Weapon Destroyed	5	Auxiliary Systems Perk	3+ 10% of Perk cost (round down)

▼ EXTRAS

6.7.11

Extras are all those little features that make a vehicle so much more useful to its crew. These features have absolutely no tactical game effect, and so they do not modify the vehicle's Threat Value. They do, however, have a price tag attached. Their price is added to the vehicle's Pre-production Cost.

Access Lift: All vehicles are assumed to be equipped with some way to get aboard: handholds or footsteps, for example. An access lift is a bit better. It lifts the crew, passengers and any luggage to the crew area rapidly and in comfort. Its cost is 10 Cr per kilogram of lifting ability, up to a maximum of 1000 kg.

Cockpit Decorations: Furry dice, full color pin-ups, plastic dolls or good luck tokens — no matter how cheesy, you too can have one! Great for morale. Most trinkets cost about 2 Cr per item.

Funny Horn: Why be satisfied with the boring standard "honk" noise? Make your own customized horn to reflect your personality! This system emits one (or more) very loud noises from hidden speakers on the vehicle, for 50 Cr per sound.

Hi-Fi Stereo: Sure, you've got a multi-channel military communication array, but what good is it to listen to the latest neon rock CD? This audio system is fully digital and can serve as a passable radio receiver (-5 Comm) or play back standard datadisks. It also includes large speakers capable of high decibel output. All this for only 1000 Cr.

Plush Seat(s): To fight battles in the best comfort possible. A variety of different coverings is available in a wide range of color. The average cost is about 200 Cr per seat, depending on size and covering.

Refrigerator: A must for keeping your lunch cool for that after-battle rest. Also come in freezer variants, if you have a taste for ice cream. It costs 150 Cr per cubic foot of storage space (roughly 30x30x30 centimeters).

Security System: All vehicles are assumed to be at least equipped with a key lock on their starter. Even bicycles will come with a chain and padlock so you can secure them somewhere! Sometimes, however, a simple mechanical lock just won't do. Security systems prevent thiefs (or disgrunted ex-lovers, or young siblings) from getting away with your precious machine. The rating of the system must be beaten with an Electronic skill roll, else the system doesn't allow access. On a fumble, the alarm goes off. The cost of the system is equal to its Rating squared, times 100 Cr.

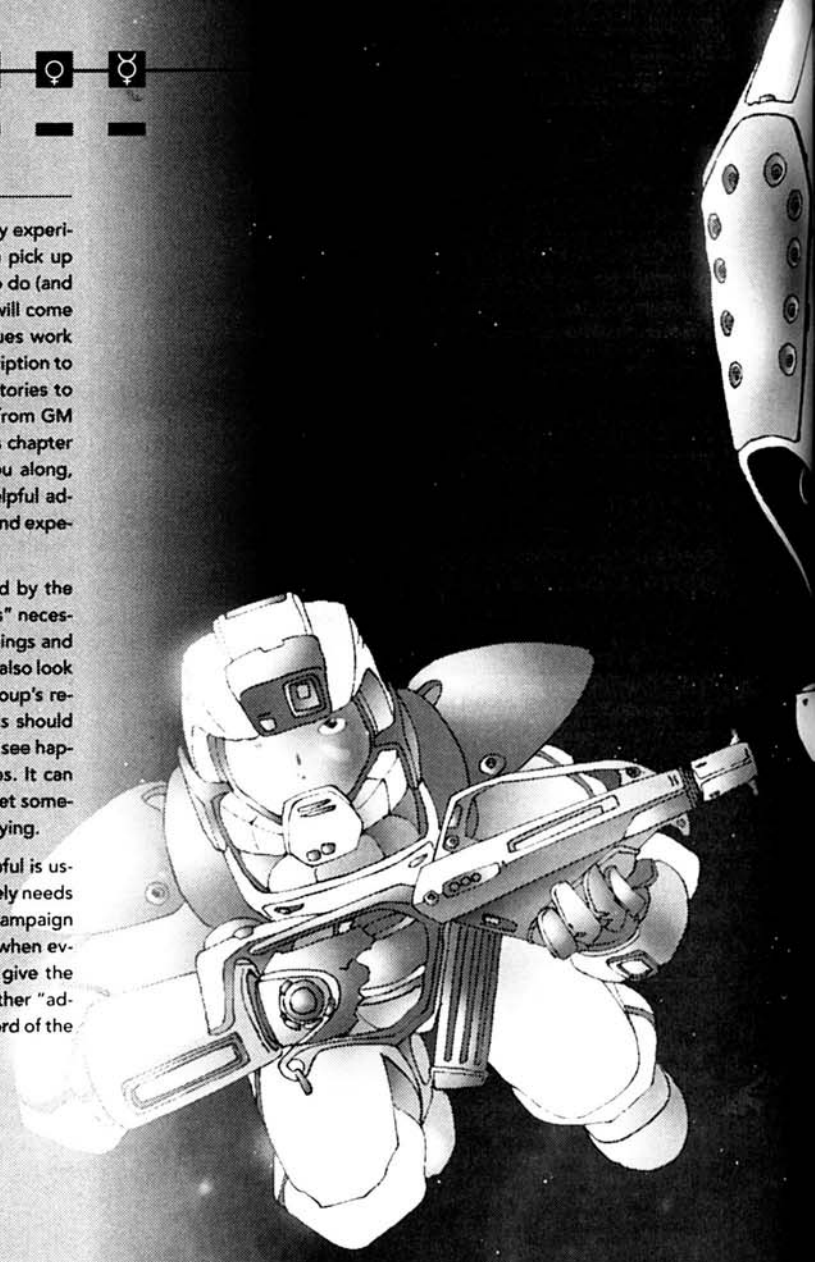
Wet Bar: Perfect for celebrating your final victory. The wet bar contains several drinks, a water dispenser and an ice-maker to mix any cocktails you can imagine. The Wet Bar contains a number of liters of drink equal to its Rating, and as many different flavors as chosen. The cost of the bar is equal to its Rating squared, times 200 Cr.

▶ TELLING A STORY

The art and craft of Gamemastering is best learnt by experience and observation. By playing an RPG you can pick up hints from your own Gamemaster and learn what to do (and sometimes, what not to do). Most of the learning will come by actually doing it and discovering what techniques work best for your own style of play. The amount of description to provide, how often to roll the dice, what kind of stories to create; the answers to these questions all change from GM to GM and from player group to player group. This chapter provides several pages of good advice to help you along, however. The basic steps are laid out and some helpful advice is provided, which can be useful for beginners and experienced GMs alike.

Newcomers to roleplaying should not feel daunted by the prospect of GMing. The only "mysterious principles" necessary to understand are telling a story, describing things and having fun with your friends. Beginning GMs should also look to their Players for help. It is the whole playing group's responsibility to have fun and tell a good story. GMs should not be afraid to ask Players what they would like to see happen or for help running combat or designing props. It can even be fun to trade places for a few sessions and let someone else Gamemaster while you have the joy of playing.

A particular place in which Players can be very helpful is using the rules system. Although only the GM absolutely needs to know the rules, try to train the Players as the campaign grows. Combat in particular becomes much easier when everyone can calculate their own modifiers and just give the final results of die rolls. Players can also help with other "administrative" parts of GMing, such as keeping a record of the campaign or helping to define minor characters.



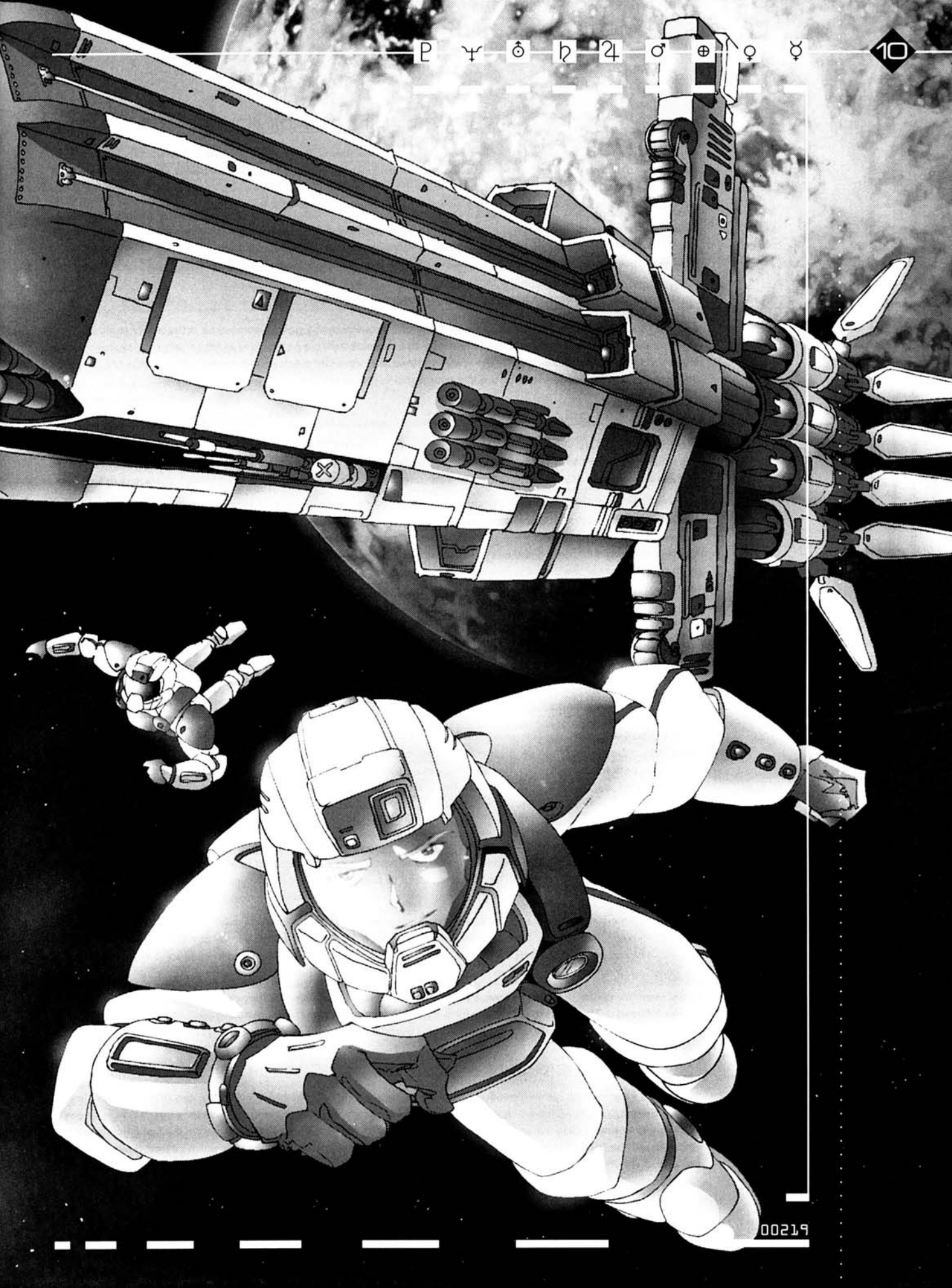
Advertisement 5467-11-210J
Date: November 26, 2210
Location: Jovian System
Organization: Jovian Armed Forces
Source: Jovian Public Access Network

Once we lived safely and securely, carving out a life for ourselves on the edges of the solar system. Acting out of aggression and spite, the new Terran leaders attacked us without provocation. Only through the sacrifice and bravery of the members of the Jovian Armed Forces were we able to push back the attackers.

Our confederation is in need. Gleaming new fighters, exo-armors and warships stand ready to defend us from the tides of war. But they are lacking the most important component:

You.

Join the Jovian Armed Forces.



▶CREATING A JOVIAN CHRONICLES CAMPAIGN

10.1

A **Jovian Chronicles** campaign is different from most other roleplaying campaigns because the characters will probably spend most of it in space or on other planets. While most people have swung a make-believe sword, very few have stepped outside the boundaries of Earth's atmosphere. This will challenge the Gamemaster's descriptive skills, since he has a few more factors to take into consideration (lack of gravity and pressure differentials, for example).

Of course, it is also possible to play the game as the typical science fiction or anime show, which usually take a much lighter approach to the scientific aspects of space flight. This style also presents a few peculiarities and requires a few specific rules, all of which are covered in this chapter.

▼PRELIMINARY WORK

10.1.1

Campaigns should not be improvised, although one of the qualities of a good Gamemaster is the ability to do just that when all else fails. Some preliminary work is essential to a successful campaign, much of which actually requires far less time than most Gamemasters invest into it. The following steps can help a GM cut down in preparation time, while still providing the tools that will be needed later during the campaign.

◇BRAINSTORMING

The first step in any story development is to come up with story ideas. This need not be done in any organized manner, but it is usually preferable to write them down as they come. Clever GMs carry little notebooks with them in which they can scribble their ideas at any time. Those concepts can later be organized and developed into stories, characters or locations.

Gamemasters should not be afraid to borrow ideas from other sources. For one thing, roleplaying is usually done to have fun and reliving a version of a favorite movie or book can be just that. Sometimes, a new twist on an old story can be as enjoyable as an original tale. One potentially great (and inexpensive) source of story bits is the local TV guide. All the movies are briefly summarized and can provide a story seed which a GM may find relevant to his or her campaign.

◇CREATING AN OUTLINE

Once concepts are set on paper, the Gamemaster has a vague idea of what will happen in the campaign, but not necessarily in what order. At that point, the GM should work out some sequence of events, in either a linear or a tree organization, to see which scenes or concepts readily fit within that framework. Most likely, not everything will fit, but that should not be a concern. It is always a good idea to have backup scenes to plug in at unexpected times or when things get dull.

◇PREPARING THE BASICS

Once the outline is ready, the Gamemaster will realize there are many elements in the game which he will need on a regular basis: little character biographies, locations, vehicles, etc. Without spending too much time on each, a clever GM should create little packages of Skills and Attributes for various professions, and call upon these when he needs to create an NPC on the fly. This way, he can quickly conjure up a new character by choosing a few personality traits and selecting an appropriate profession. That is usually enough to last one game session. The Gamemaster can spend some time after the game to fully flesh out or even completely redesign the character.

Another viable option is to select an archetype among those provided within this book, quickly modify one or two Attributes, and add a few Skills. This ensures that the Gamemaster does not get carried away during the game and provide an inordinate amount of Skills to his NPCs. It is also useful to prepare some typical groups of opponents for combat. That requires a bit more time when preparing the campaign, but speeds up the scenario design process.

A prudent Gamemaster should also prepare a set of typical locations which his Players may visit frequently. In the case of a military campaign, for instance, he should design the local bar, the briefing room, the hangar bay, the engine room, the sick bay, some typical personal quarters and the ship's bridge (if appropriate). There is no need to be fancy — even a rough map will generally br sufficient. This way, no matter what happens, the GM has something to work with.

Lastly, Gamemasters should always have a series of generic sub-plots handy that they can throw into a game to keep the Players interested. This can take almost any form, from romance to mechanical failure during combat, as long as it comes as unexpected to the PCs. Usually, at most a dozen plot twists are enough to start a stimulating campaign.

▼THE BEGINNING

10.1.2

Campaigns have to start somewhere. Surprisingly enough, the simplest way to know how to start one is to know how it ends. Gamemasters should have a clear picture of what kind of campaign they have in mind, so they can decide more easily what kind of approach they will use. The next step is to focus on the actual start of the campaign: the first gaming session, which we call the "pilot." Through that first game, the GM will discover many story threads which interest their players and the kind of storytelling that appeals to them.

HOW TO APPROACH THE CAMPAIGN ◇

The early sessions of a campaign often set the tone for the games to come. It is important to have an interesting angle with which to approach the story since it gives the whole campaign a very characteristic flavor. There are two approaches often used in storytelling. The first one is "Ongoing Involvement," where characters are already immersed in a situation and keep doing what they do best, such as piloting exo-armors. This leads to more "action" scenarios and a storyline that circumvents cumbersome mind games. The second angle is the "Ascension," where the characters start very small (socially, or economically) and get involved in something much larger than themselves. This leads to less action but provides many opportunities for character growth. The first approach is better for players who are already experienced with the game and the world, while the second one allows a GM to gradually introduce new players.

THE PILOT ◇

A campaign plan is akin to a sales pitch for a television series. The first game, also called the pilot, is probably the most important one. Gamemasters should put some extra effort into it and give each character some importance in the storyline. A player who feels his or her character belongs in the series will come back for more, while one who has been neglected will hesitate to play again. The pilot should give everyone a taste of things to come and have enough appeal and mystery that players (the "viewers") will be hooked.

Always remember that the PCs are the heroes and should be at center stage. Nothing kills a campaign faster than players who have no interest in playing. On the other hand, a game where players "just can't wait until next session" is very successful. In television lingo, it means having high ratings.

OPENING THREADS ◇

One of the important responsibilities of the Gamemaster during the first few games is to open story threads that parallel or reinforce the main storyline. Despite the prevalence of the main story during the gaming sessions, a sharp GM will open new subplots which will only interest a limited group of Player Characters, perhaps even only one. There should be enough threads that everyone can take part in something other than the main story and feel they have their "own little thing going on the side." For some Players, it can be something as simple as their characters going out on a date. For others, it can mean that their character is involved in some seedy, underground affair which they do not want anyone to know about. The possibilities are endless. Some subplots may have a larger campaign significance as well. Characters may realize that they are pawns in a political chess game and they may want to do something about it.

Gamemasters should pay close attention to these threads — Players certainly will. Whenever a Player voluntarily pays attention to a NPC or a current event, the Gamemaster should make note of it and see how it could be expanded nto an interesting story. If they become important enough, some of these threads may eventually turn into complete sessions. Be careful not to have sessions that concern only one Player, however.

THE MIDDLE ▼

This is the meat of the campaign. Most of the games should have something to do with a main storyline which the Gamemaster has prepared from the beginning, but there should also be a number of limited-access or solo sessions for some of the characters who wish to delve deeper into a subplot. The Gamemaster should not feel limited by the main storyline he or she has built and allow the Players to contribute to it by exploring tangents of their own. Both Players and GM should remember that roleplaying has more to do with interactive storytelling than with competition.

E.T.01

PREPARING A SCENARIO ◇

Most Gamemasters do not have a lot of time to prepare a session. They should write a general outline of how they expect the adventure to run, plus which NPCs they imagine will show up and what equipment will be featured. It is also useful to have one or two potential complications to spice up the scenario if the game runs stale. Some of those complications can stem from subplots introduced earlier during the campaign, or they can be very short-term ones that only apply to the actual scenario. It is crucial to design a scenario which will keep the Players on their toes, either through very dynamic and fast-paced action, or through intricate and involved storytelling.

HANDLING THE UNEXPECTED ◇

If there is one law to Gamemastering, it is that Player Characters are unpredictable. This fact is little known by beginning GMs and has caused many a campaign to fold. Many Gamemasters react badly to unpredictable Players who do not follow the path they have prepared with their scenario. They are unconsciously offended that they would deviate from their well-orchestrated story and would take a tangent for which they have no contingency plans. Unfortunately, there is only one way to deal with Players who go off the beaten path: GMs must cope. They must improvise until a time when they can subtly orient the characters back on track.

HANDLING THE UNEXPECTED CONTINUED

It is vital *not* to railroad the characters into what the Gamemaster believes is the best scenario. In order to fully enjoy themselves, Players must be left as free as possible. Many of them enjoy coming up with surprises for the GM, and there is nothing wrong with that. Too many Gamemasters adopt a confrontational attitude with their Players. Rather, they should let the Players get away with it and concentrate on what to do next to make the scenario enjoyable. This is why it is useful to have enough threads and background NPCs to bring into the game at a moment's notice.

◇ IMPACT OF PLAYER CHARACTERS

Like heroes in movies, Players often expect their characters to have an impact on the world around them. Nothing makes a game more pointless than having an NPC come in to save the day, or to feel that even if the characters had not been there to take action, the crisis would have resolved itself in the same way. Players who feel they have affected the world around them usually show more loyalty to the game and adopt a less confrontational attitude toward the Gamemaster. Roleplaying is a collaborative effort, not a competition. Much as the Player Characters are expected to work with one another to solve the puzzles before them, the Players and Gamemaster should work hand in hand to make a great story.

▼ THE ENDING

Most Gamemasters start a campaign without the ending in mind. They assume they have plenty of time to prepare for it. This is not so. The ending of the story should receive as much attention as the beginning, and not just during the few last game sessions. A good ending can leave the players with such a good impression of the campaign that they will talk about it for years. Much like movies, campaigns with a pat ending leave everyone feeling they have been cheated.

◇ FORESHADOWING THE FINALE

The first important rule about the finale is that it should be foreseable, though not necessarily predictable. The storyline should feature multiple discreet hints that it is coming, and how it will come, without ever saying it outright. Gamemaster can also feature minor events that make little or no sense until the characters understand the "grand design" at the end. In order to do this, however, Gamemasters have to know what the "grand design" will be.

Near the end of the campaign, there should be a substantial increase in tension. Players should easily feel something important and final is about to happen. Failing to build up to a finale will have very negative effects on the impact it would normally have. Gamemasters should make it clear that the conclusion is near by making their villains more vicious or desperate, or by creating rumors that "something big is gonna happen any time now."

◇ ENDING THE THREAT

That last confrontation is undoubtedly the most important moment in the campaign. Everything has built up to it and everyone has to be involved in some way. If the Gamemaster has a group of Players who are not all at the same place at the same time, he must tread very carefully and make sure to split the whole game session into small scenes that concern each of the characters. This is used in movies with great effect: whenever the tension in a scene is at its height, the Gamemaster should shift to someone else's scene and proceed similarly. The GM then returns to the first Player, finishes the scene, builds up the tension again, and goes on until the game ends. Needless to say, this requires a great deal of preparation and inventiveness, but if this is the conclusion of a year-long campaign, it is definitely worth it. After coming so far and working so hard, why not go the extra mile and make the campaign end with a bang?

If all the Players happen to be together during the ending, it is still good to try and build up consecutive waves of tension, alternating between the actions of the Player Characters and those of some important NPCs caught somewhere else in a difficult situation of their own. This requires the Gamemaster to narrate events to which the Players are not normally privvy, but at this point in the campaign, it does not really matter. The important factor is to make the finale enjoyable for the Players (who can act as viewers during those narrative "cut-scenes").

The villains should be difficult to defeat during the final battle, if there is one. They should fight with teeth and claw, throwing everything they have at the Players and going for the kill. If players die at this point, it should be through some kind of meaningful death scene. Few Players will object to their character dying a heroic death at the end of a campaign; they will be very disappointed if all they get is a "You're dead. Next?"

◇ SOUND THE TRUMPETS

Victory at last. Now that the Player Characters have earned their victory, they should get some recognition from their peers (and the population, if the fight was a public one). There should be a reward of some kind, although it does not have to be money. In some cases, a medal or a handshake from a former enemy might suffice. It is also important to have a denouement for all of the subplots in which the Player Characters took part. After the climax of the campaign, there should be a sense of achievement and closure. It does not mean that the ending must always be happy, just satisfying. The heroes should be able to walk away with their heads high, and move into the next campaign (a sequel, perhaps?) with some pride.

CAMPAIGN STYLE ◄

10.2

Movie characters often succeed at outrageously difficult tasks that would be impossible for real folks. For example, Rambo® can blow up a heavily armored Mi-24 *Hind* gunship with a bow and a single explosive tip arrow — never mind the fact that *Hinds* have been known to survive direct impacts from anti-tank missiles...

In reality, elite troops and world-class professionals are impressive but they still have their failings. Even U.S. Green Berets and Russian Spetsnaz die like mayflies when they are outnumbered ten to one. Even geniuses like Einstein make mistakes. But in the movies and on television, a single Green Beret can take down legions of enemy troops. A lone villain can create doomsday devices on a weekly basis. The **Silhouette** game engine allows players to choose how heroic their version of reality is by allowing them to select their game's Reality Distortion Level (RDL).

REALITY DISTORTION LEVELS ▼

10.2.1

There are three Reality Distortion Levels. The lowest is **Gritty**: at this level, firefights are very dangerous and heroes are just brave people taking great risks. While not a perfect simulation of plain old everyday Real Life™, this is as close as it gets.

The middle level is the **Adventurous** reality. This is recommended as the default Reality Distortion Level for most games and is the one used in the various Silhouette books. Heroes and villains will tend to stand out just a bit more than Joe Average and death is easier to avoid.

The highest Reality Distortion Level is called **Cinematic**. This is anime-like adventuring where the laws of physics are temporarily on vacation, heroes and villains are larger than life and puny screen extras are mere cannon fodder for the lead characters. The odds are heavily skewed in favor of powerful characters, and even the most outrageous action has a chance of succeeding as long as it looks good.

Every rule in this book is written with Adventurous reality in mind. Gritty or Cinematic reality only alters a result when it is clearly stated in the rules. In roleplaying situations, the Gamemaster is encouraged to enhance the grimness of the Gritty game and the zany risk-taking of the Cinematic one by modifying his descriptions and his props (music, etc.) accordingly.

In a tactical game, the Adventurous reality level is assumed to be the default setting unless all players agree *prior to the game* to use another RDL. In the case of any disagreement, Adventurous reality should be used. In the roleplaying game, the Gamemaster should select the Reality Distortion Factor of the campaign after consulting with his players.

REALITY DISTORTION AND SKILL TESTS ▼

10.2.2

One of the main effects of the Reality Distortion Level is to change the way the dice are read. At the Gritty level, the maximum die result is six (6). Additional sixes do not add +1 — one can only get *so* good in real life. The only exception to this is when Emergency dice are used, as they (and only they) can bring the total above six.

Adventurous games read the dice normally — each additional six gives +1 to the die roll. The Cinematic reality level works the same way, except that additional fives also count as +1 for the Player Characters and the main villains! Hence, if three dice are rolled and turn up 5, 5 and 6, the total result is now 8. If 4, 5 and 5 are rolled, the result would be 6, and so on. The table below summarizes the Reality Distorsion Levels and their effects on dice rolls.

REALITY DISTORSION LEVELS AND DICE ◫

Reality Level	Die Roll
Gritty	Extra sixes (6) do not add +1 to the total
Adventurous	Additional sixes (6) give +1 to the total
Cinematic	Additional fives (5) or sixes (6) give +1 to the total*
*Player Characters and Main Villains only	

REALITY DISTORTION AND ARMOR DEGRADATION ▼

10.2.3

To allow different game styles and backgrounds, Armor degradation is subject to an optional Reality Distortion effect. This simulates the armor-piercing power of modern weaponry or the "go out with a bang" movie effect. The following table should be consulted for Armor loss due to combat damage.

ARMOR LOSS TABLE ◫

Reality Level	Light Damage	Heavy Damage
Gritty	0	-1
Adventurous	-1	-2
Cinematic	-2	-4

▼REALITY DISTORTION OPTIONAL RULES

The different Reality Distortion Levels will make for very different gaming styles. Not all game styles require a slavish adherance to the rules. Likewise, bookkeeping is one of the tasks that will be most affected by the chosen RDL.

In a Gritty game, everything should be written down. In space, the slightest mistake can be fatal — characters are likely to spend as much time worrying about fuel, orbit and oxygen as the enemy.

In an Adventurous game, Players should keep track of ammunition and fuel, but not worry so much about "mundane" things like orbital mechanics (that is what navigation computers are for, after all).

In a Cinematic game, all bets are off. Unless it fits the plot, the Players never have to worry about fuel or maintenance. They always have a ready supply of adhesive patches to plug the stylish gash in their spacesuit, and their radio is never jammed by solar flares.

◇SCRIPT IMMUNITY

Script Immunity (SI) is an optional rule designed to be used in Cinematic games. It simulates screen heroes' incredible luck when faced with the worst possible situations and allows Gamemasters to save doomed characters without fudging the rules. At the group's choice, it can also be used at the other RDLs.

Characters with Script Immunity may try to cancel the result of an opponent's die roll. The defender rolls a number of dice equal to his current SI level against a threshold of 3. If he succeeds, the attacker's die roll is reduced to zero, presumably cancelling the attack or losing an Opposed Skill Test. Regardless of the test result, the SI level automatically drops by one.

The following table lists the various SI levels along with a description. Threat Value Multipliers are provided to play pure tactical games with a movie feel.

◫SCRIPT IMMUNITY LEVELS

Level	TV Multiplier	Description
4	x 2	Main Villain
3	x 1.75	Main Hero (PCs)
2	x 1.5	Recurring Character, Henchmen
1	x 1.25	"This Is My Only Line"
None	x 1	If they don't speak, they don't get SI

◇THE WOO FACTOR

The WOO Factor (Weapons Out of Ordinance) is designed to simulate the endless shoot-outs of Hollywood movies. Ammunition magically appears in the gun's receiver, allowing both heroes and villains to put a ludicrous amount of lead in the air. This rule can only be used for Cinematic games.

With the WOO factor, a die roll replaces the usual ammunition expenditure procedure — as long as the roll is successful, the weapon keeps firing. Weapon systems are assigned an Ammunition Threshold, which is rolled against with two dice (Emergency Dice may be added to this). If the die roll fails, the weapon is out of ammunition or is jammed, and must be reload/cleared at the cost of one action (spare ammunition is assumed to be readily available).

All weapons start with an Ammunition Threshold of eight (8). This is decreased by one for each full five shots or two missiles the weapon can hold in its ammunition bay, with a minimum Threshold of two (2). Firing a single shot adds +3 to the die roll. Using ROF adds -1 to the die roll per point of ROF used.

WOO Factor applies to both character and vehicular weapons.

◇EXISTENTIAL ANGST

Cinematic characters, especially in anime, are often subject to traumatic events — the death of a loved one, the destruction of their home, etc. In reaction, they become driven fighters, to inflict their revenge or make the situation right again. In game terms, this is represented by exchanging PSY points for boosted Attributes or Skills after a particularly traumatic event. Existential Angst *must* be approved by the Gamemaster and requires strong roleplaying. If properly played, it can be used at any RDL.

If the character is subjected to a very traumatic event, the player may shift points from the PSY Attribute to either AGI, PER or a combat-related skill on a one-to-one basis. The new numbers should be marked down in pencil beside the current values. As soon as the traumatic situation is resolved (revenge achieved, true love found, etc.), the bonus disappears. If the Player wishes the improvement to be permanent, he will have to buy the improved statistic with Experience Points as per the usual procedure (see page 124).

CHALLENGING OPPOSITION ◄

10.3

Conflict is the bread and butter of a campaign. Without conflict, there is little that will allow a character to grow and a game to move forward. While the term roleplaying can apply to characters having tea in a salon, such activities hardly make for challenging or exciting roleplaying. Having conflict means giving some opposition to the Players. One problem often found in entertainment is that of challenging opposition. Too often, villains are given little attention and only serve to demonstrate the Hollywoodian principle that the good guys always win. In gaming, however, this need not be the case. Opposition should be what it is, not what it needs to be for box office success. The Players will have a greater sense of achievement if they encounter adversaries which make sense and do not give them a break just "because it's convenient and it's the script."

VILLAINS FIGHT TO WIN ▼

10.3.1

In many campaigns, villains are treated as incompetent and harmless. This is often due to the Gamemaster's inability to give them successful combat tactics similar to those used by Player Characters. The simplest solution is for the Gamemaster to give his bad guys stronger attributes, skills and equipment than the Players, but this leads to a warping of reality and tends to annoy the players. Here are a few techniques to make the villains more threatening and to ensure that the Players feel they really have earned their victory.

FOOLS RUSH IN ◇

Offense is *not* the best defense. Most villains do not wish to die and act accordingly to avoid that fate. A smart enemy will use ranged weapons at first to weaken his adversary, and will use weapons with an area of effect if at all possible before his opponent is upon him. Also, he will not move in close range and risk being shot in the back. Rather, he will stay far from the enemy until it is absolutely necessary to get into short range.

SEND IN THE GRUNTS ◇

Smart villains seldom engage their adversaries without first sending in their weaker but more numerous allies, which are more expendable and serve to soften up the opposition. This is a tremendous advantage for the villains, and one which is often neglected by Gamemasters. The enemy does not always have to be very powerful, but if there is a lot of them, the Players have a run for their money.

COORDINATE WITH YOUR TEAMMATES ◇

Experienced pilots have learned the value of teamwork. They know a dead opponent does not hit back. Consequently, they much prefer to strike one enemy hard and kill it than wound or damage several opponents and face their gunfire seconds later. A clever Gamemaster will aim multiple shots at one target and hopefully cause more damage (perhaps even a kill). To avoid killing off PCs mercilessly, it is preferable to demonstrate the effectiveness of this tactic on a friendly NPC as a warning to those who are not expecting a serious opposition.

HE WHO RUNS AWAY TODAY... ◇

Running away is *always* an option. Often enough, heroic sacrifices where the villains fight to the end occur during the final confrontations between the Players and the "bad guys." Most enemies will realize when their chances of winning have become ridiculously low, and will try to flee. This way, they can come back later and avenge the deaths of their comrades. Many Players reluctantly enjoy the sight of the familiar markings on that enemy exo-armor coming back game after game.

VILLAINS WITH MOTIVATIONS ▼

10.3.2

Confrontation usually stems from conflicting interests. Sadly, Gamemasters tend to rely on motivations that are too cliché to be entertaining. Gamemasters are encouraged to spend a bit more time delving into the interests of their villains and finding out what makes them tick. It is acceptable to have a master villain who just wants to kill the Player Characters because he is a psycho, but it is far more dramatic and interesting if he does it because his family is held captive by a group of terrorists and will be killed if he fails to obey. While there are people who are inherently "evil," most of the opposition in **Jovian Chronicles** is composed of individuals with very specific, human (and often selfish) motivations.

THE OPPOSITION'S WEAKNESS ◇

In order to make for more interesting storytelling, no "bad guy" should be without flaws. As with PCs, it is the weaknesses of a villain which make him interesting and different, not his strengths. All master villains are, by definition, superlative in Skills and Attributes. Providing them with flaws is a good way to keep them vulnerable and to make them feel more "human." It also gives the Players an opportunity which they can use to defeat the villain, or provides the Gamemaster with a valid reason not to kill the Player Characters in certain situations.

▶SETTING UP A CAMPAIGN

10.4

There are several ways to use this book. **Jovian Chronicles** provides a detailed setting, and Gamemasters are strongly encouraged to make use of it. It is designed in such a way that it should save them hours of design time. Not everyone, however, enjoys playing a pre-generated campaign. This section aims at providing GMs with the necessary guidelines and design instructions to set up his own series of adventures.

The text below features several abbreviations between parentheses to indicate designs which the Gamemaster should take care of before starting the campaign. These abbreviations are: LEAD for Lead Character; CAST for Supporting Cast; EXTR for Extras, henchmen and miscellaneous Non-Player Characters; MAP for any location layout; MCHX for mechanical designs (ships, fighters or exo-armors); PROP for all personal weapons, equipment or various props; ORG for any group or organization; and PLOT for the various story threads which are part of a particular campaign style.

▼ SPACE EXPLORATION

10.4.1

The characters work as solar explorers for the military or for a private corporation. Their job is to find new minerals to mine or new resources to exploit on various moons, asteroids or outer planets. Unfortunately, they are not the only ones doing this kind of work, and may find their efforts hampered by their competitors or enemies. This campaign style provides a good blend of intrigue, action and roleplaying which may help introduce new Players to the game.

◇ PRELIMINARY WORK

The characters are likely to be part of the exploration group (ORG). This requires some scientific personnel (CAST) as well as some professional protection (CAST, MCHX). The group should travel aboard a ship (MCHX, MAP) accompanied with a small escort (MCHX). Using their various sensors and planetary exploration vehicles (MCHX, PROP), they race against their competitors (LEAD, CAST, EXTR) or fight them for supremacy. Traditionally, there should be some level of internal strife or sabotage (PLOT, CAST) that would impede their progress and make their victory more difficult.

▼ INTRIGUE/ESPIONAGE

10.4.2

The characters may be politicians, spies, private detectives or journalists trying to uncover some deep, dark secret, such as a conspiracy of some sort. They may work for some private or public organization, or simply follow an agenda all their own. Each truth hides another truth and three more lies. Over the course of the campaign, the investigators encounter increasingly tough opposition, until they meet the mastermind behind it all. This is a campaign style best suited for Players already very familiar with the intricacies of the world and for those who prefer pure, raw roleplaying to action-packed games.

◇ PRELIMINARY WORK

These campaigns often start with a "McGuffin" (PLOT), an event which only exists to trigger or justify the real action which follows. More often than not, the PCs work for a party or an agency (ORG) who has a vested interested in finding out the truth about an event (PLOT) or an individual (LEAD or CAST). The characters will uncover several mysteries (PLOT), only to find out that several more opponents (EXTR) and mysteries (PLOT) lie before them. Depending on their profession and who they work for, characters use various equipment (PROP) and have some form of meeting place (MAP). Most likely, the mastermind behind it all (LEAD) eventually notices their nosing around and sends his lieutenants (CAST) and their henchmen (EXTR) to harass them and their families (CAST).

▼ POLICE/SECURITY

10.4.3

The characters are members of the police force for a particular city, station or organization. They maintain order, investigate various crimes, handle anti-terrorist situations and intervene for crowd control during riots. Such a campaign has a more episodic flavor. After some time, a long-term plot can emerge, involving internal corruption or a local crime lord who is gathering too much power. The heroes decide that enough is enough, and go on a quest to fix the problem. A Police/Security campaign is best suited for Players who want a stronger emphasis on action than on roleplaying, although it provides numerous opportunities for non-combat situations.

◇ PRELIMINARY WORK

The Player Characters work for some local police or security force (ORG) operating from conveniently located headquarters (MAP). Their superior officer (LEAD) assigns them and their coworkers (CAST) various tasks and missions (PLOT) which they must fulfill adequately. They use their various gear (PROP) to apprehend some two-bit criminals (EXTR) until the story gets in full swing. They then start facing increasingly competent opposition (EXTR, CAST), slowly learning of a greater enemy (LEAD) behind it all who is about to hatch some kind of master plan (PLOT). As that enemy hears of the PCs' interference, he will try to discourage them from investigating him by kidnapping or killing their friends and families (EXTR, CAST). The story ends in a frantic chase and a final confrontation.

REBELLION/TERRORISM ▼

10.4.4

The world is a harsh place and the heroes are taking steps to change that. They are part of a resistance cell, itself often part of some larger group, and take the law into their own hands to break the status quo. They commit various acts of terrorism and violence, and may occasionally hurt the innocent in the name of a greater cause. As the rebels get closer to their goal, the opposing forces of law and order become increasingly determined. They may lay traps and send undercover mole agents to hinder the heroes, until one side or the other wins. This is a perfect campaign style for Players who just want to blow it all up after a hard day's work. It requires little thought and a lot of enthusiasm, and sets the Gamemaster in charge of pointing the storyline in the right direction. Such a campaign may appear black and white in the beginning, but shades of gray may appear over time.

PRELIMINARY WORK ◇

The heroes are part of a small cell (ORG) working for a greater group of rebels or terrorists (ORG). They usually operate from their hideout (MAP) and have their own equipment (PROP, MCHX). The leader of the group (PC or CAST) is in contact with a member of a higher cell (LEAD) who hands them down their targets and missions (PLOT). Those missions are usually part of a greater plan (PLOT) that may become clear over time, should the Players investigate it. Each mission may come with its complement of opponents (EXTR, CAST), who become gradually tougher and better equipped (PROP, MCHX). If the group leader is an NPC, the GM may opt to make him a traitor and eventually have the Player Characters find out and replace him. It is possible that through some twist of fate (PLOT), the PCs discover they are fighting the wrong fight and decide to strike back against those who mislead them.

MERCENARIES/TROUBLESHOOTERS ▼

10.4.5

The characters are independent adventurers or specialists who perform special missions (sometimes seemingly impossible ones), either at the request of a client or to promote their own interests. They may have fixed headquarters or a mobile base of operations. Depending on the task at hand and the specialties required, certain individuals may participate or not. These groups may have recurring opponents or competitors to make their lives more difficult. Such a campaign has the marked advantage of blending action and careful planning, and does not require all the Players to attend each single gaming session. The episodic format also does not require a long-term campaign, which gives everyone more flexibility and simplifies scheduling problems.

PRELIMINARY WORK ◇

The Player Characters form a tightly knit group, with one of them being the leader. They either work as an independent operation for their client base (multiple ORG) or to further their own interests. They may have contacts (EXTR) who work for them and provide them with the information they need, but no member of their group is an NPC. They have their own equipment and vehicles (MCHX, PROP) and usually have their own headquarters (MAP). Their missions tend to be fairly difficult (PLOT) and require a great deal of planning and preparation — which is why they are paid so well to do what they do. Although the opposition can be constitued of almost anyone, their typical nemesis should be some rebel/terrorist group, an oppressive government or a corporate target (ORG).

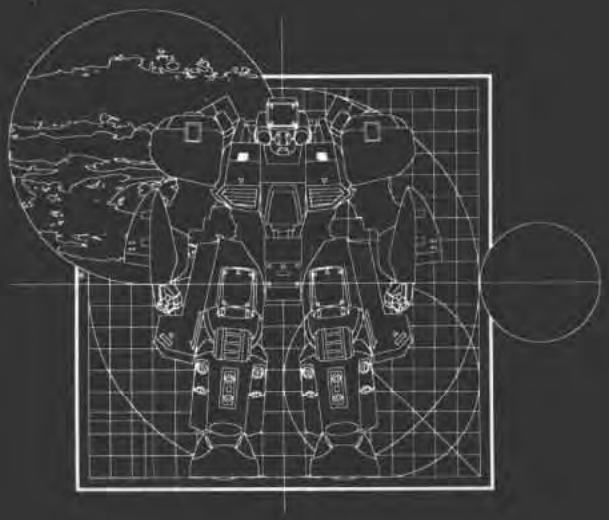
ACE PILOTS ▼

10.4.6

Fighting for a military force has its rewards and none knows it better than the group of heroic and patriotic ace pilots from the space navy. This is a broad genre popularized by countless aircraft fighter movies. One or more recruit pilots face one challenge after the other, fighting a war they do not understand (or even approve of), and finally gain insight as to the politics and corruption which led to a conflict that could have been easily avoided. As they see more and more of their friends die in combat, the heroes decide to take action. A campaign such as this one is very heroic and can appeal to Players who wish to be under the spotlight. It provides excitement, glamour and dynamic storytelling.

PRELIMINARY WORK ◇

The characters may be part of a regular unit (ORG) or a special squadron (ORG) within the military (ORG). The Players and their teammates (CAST) are usually highly skilled pilots for some type of combat vehicle (MCHX). Operating from a military base (MAP) or a space ship (MAP, MCHX), they go through a series of simple missions (PLOT), fighting their counterparts (EXTR, CAST, MCHX) during some conflict. The story may be either very episodic or follow a specific arc. A typical variation on that theme is that of the unit stranded far behind enemy lines and trying to make it back home. They can be on their own or led by some authority figure (LEAD) who may be right or wrong (PLOT) about how best to return.



"It's not exactly like those old western movies, but living on the frontier of this untamed land almost makes me want to carry a six-shooter."

- Theo Meinz, Martian Terraformer

ARTIFICIAL ENVIRONMENTS ◄

2.1

It is not known how unique the Earth is throughout the galaxy, but its position amongst the planets and moons of the Solar System is unique and assured. No other environment can compare. No other body offers anything but unremitting hostility to human life. Nevertheless, in search of profit, adventure and freedom, humans have opened many of these worlds, and the void that lies between, to habitation. Some challenges remain to be conquered, beckoning further generations to press the borders of the possible further still, but the accomplishments of Humanity in the early twenty-third century are not to be taken lightly. Earth may still have the vast preponderance of Humanity's population, but Mars and Venus are both being terraformed, and hundreds of millions of people now live on colony cylinders, entire worldlets taken from the void.



ENCLOSED SPACES ▼

2.1.1

When humans wanted to explore beyond the Moon's orbit, however, a solution was needed to provide sufficient atmosphere for the whole journey. That solution was to reduce the total pressure of the atmospheric gases people breathed from 1000 kilopascals to 34 kilopascals. The lower pressure atmosphere maintained the sea-level partial pressure of oxygen at 24 kilopascals with nitrogen occupying the remaining 10 kilopascals. This atmosphere has remained a standard for artificial environments since that time. Not only does it decrease the resources dedicated to sustaining the atmosphere, but it also solves numerous other problems: spacesuits can operate on this standard, thus eliminating the need to pre-breathe oxygen before EVAs, and structures can be more lightly-built since they do not need to contain higher atmospheric pressure.

Those that live in artificial environments would not normally experience seasonal changes in their environment; however, it was proven long ago that the lack of seasonal change has a detrimental affect on the human mind. To counteract this problem, the environment is often modified in small steps to simulate that changing conditions of an Earth-type seasonal round. Since there are numerous Earth-based variations to choose from, many artificial environments will cycle between two or three preferred choices, with each varied randomly by the environmental control systems. It is not uncommon for the population to vote for an extension of a particular seasonal cycle, or to change the choice of a seasonal cycle. Temperature, humidity, and hours of "daylight" are the most commonly modified environmental variables, but some environments do have the ability to provide some light precipitation. It is also common for a night not to be completely dark, but maintain a minimum level of lighting. Within colony cylinders, the effect of dawn and dusk is achieved by progressively modifying lighting levels from one end of the cylinder to the other.

COST OF LIVING ▼

2.1.2

The four major expenses are food, clothing, shelter and taxation. The latter is tied to the third by the maintenance, improvement and expansion of the artificial environments that people live within. Taxation is the first deduction from a person's monthly wages. Shelter is not really necessary within the controlled artificial environments many people live in; it is more an issue of having a personal private space. Food is no simple matter where the agricultural methods and species of Earth are ill-adapted to the restrictions of space. Though the human race is considered to have advanced greatly in the last few centuries, clothing is still a requirement.

AVERAGE TAXATION RATES ◘

Nation	Rate*	Nation	Rate*	Nation	Rate*
Mercury	10%	Venus	12%	Earth	35%
Orbitals	30%	Moon	25%	Mars Republic	5%
Mars Federation	50%	Jupiter	15%	Saturn	6%

* Percentage of annual income. Rates will vary by +/- 5 to 10% depending on income level and special cases.

end of section 2.1 artificial environments

▶ LIVING QUARTERS

2.2

Most locations in the Solar System have only a limited amount of space for living quarters. As a result, the design and arrangement of living quarters has become quite standardized, regardless of location. Nomad colonies and space stations are the least flexible in terms of the facilities available; living quarters are allocated based on position and number of occupants. These quarters are only of the most simple type (see *Basic Quarters* below). Normally, quarters do not have food preparation or personal hygiene facilities attached; it is much more space-efficient to have common food and hygiene facilities. Other locales offer a few more options (see *Expanded Quarters* below). It is entirely up to the owner's personal taste and means to decide how much space and additional amenities they want to pay for. Since living quarters are not usually designed to be modular, there are often waiting lists to get into a specific living arrangement.

Most living quarters are only available for a monthly rental rate. The only quarters available for permanent ownership are higher-end quarters such as certain expanded quarters or those built and owned by wealthy individuals. The rates vary not only with the size, but also by the location and the quality of the common facilities available at that location. Relatively speaking, renting quarters is very reasonably priced under the rent control laws enacted by most local governments. The cost of utilities (electricity, water, PAN access) is often included with the rental fee, except in Nomad colonies and other out-of-the-way places, where the value of electricity and water results in steep charges. All living quarters are grouped together to centralize access to resources.

▼ MINIMAL QUARTERS

2.2.1

Minimal quarters are the often only thing available to people with low wages, or those wishing to save some credits. A minimal living assignment is often part of the employment agreement for those that work some of the bottom-rung positions (such as unskilled labor). This actually saves the company money, since it can rent a large number of minimal living-space assignments at a significant discount compared to the cost of paying the workers additional wages for living-space rental. Minimal quarters are available in two flavors: "coffin rooms" and "square holes."

Coffin rooms: more properly know as sleeping tubes, are one-meter-diameter cylinders approximately two and a half meters long. This is little more than enough room for one person and a few belongings. The far end of the tube is small storage cabinet for a few personal effects like clothing and personal hygiene items. The mattress is a foam pad with a cloth cover and sheet for bedding. The bedding is changed after each occupant leaves; the occupant can also arrange for bedding changes every few days. The tube has a PAN adapter, but no access terminal is provided. There are also environmental controls for the tube: light, temperature and humidity.

Square Holes: more properly known as box quarters, have a double door entrance and are one and a half meters high and one and a half meters wide by three meters deep. These larger quarters are much more suitable for long-term habitation for those with a lower income. It is possible for two people to cohabitate in box quarters. Box quarters have features similar to sleeping tubes: foam mattress, bedding exchange, PAN adapter and environmental controls. There is, however, significantly more storage space at the back of the quarters for personal items.

Access to a sleeping tube or box quarters is granted when the user enters their identification or credit card. Sleeping tubes are rented on a monthly basis for 200 to 300 credits; nightly rates will vary from 8 to 12 credits. Because box quarters are considered low-cost, long-term quarters, they are rented on monthly basis for 300 to 400 credits.

◨ PLAYER CHARACTER LIFESTYLES

HOOKS AND TIPS

Player Characters need someplace to live when they are not out and about in the Solar System. Most PCs will have basic quarters, but this will not necessarily be the case for every PC. If the Player Character has the income to support more extensive lodgings, they can certainly live in something quite luxurious. Characters may also decide to maintain multiple residences for differing purposes. For those involved in covert operations and espionage, extra residences can act as safe houses or used as a base. For those with multiple identities, a residence is used to establish cover identities. For individuals that travel extensively, access to multiple residences means they always have someplace to stay.

COMMON FACILITIES

Without a kitchen to prepare food, a bathroom for waste disposal, or showers for cleaning one's person, most people use the common facilities made available within the building their quarters are located in. Since most buildings have multiple floors of the same housing type, the floor layouts will be similar with bathroom and shower facilities located at different points on the floor. Essentially, each bathroom and shower unit is assigned to quarters closest to the facilities. Each unit has enough room to accommodate at least one-third of the assigned people at a single time. Access is granted by fingerprint scan to prevent problems such as surprise encounters, but anyone living on the floor can use any unit if it is not in use already. Mess halls or cafeterias are normally located on the lower floors of the building and can seat a majority of the building's residents at any one time. It is expected that those who arrive early will vacate their seat before the latecomers are ready to sit down.

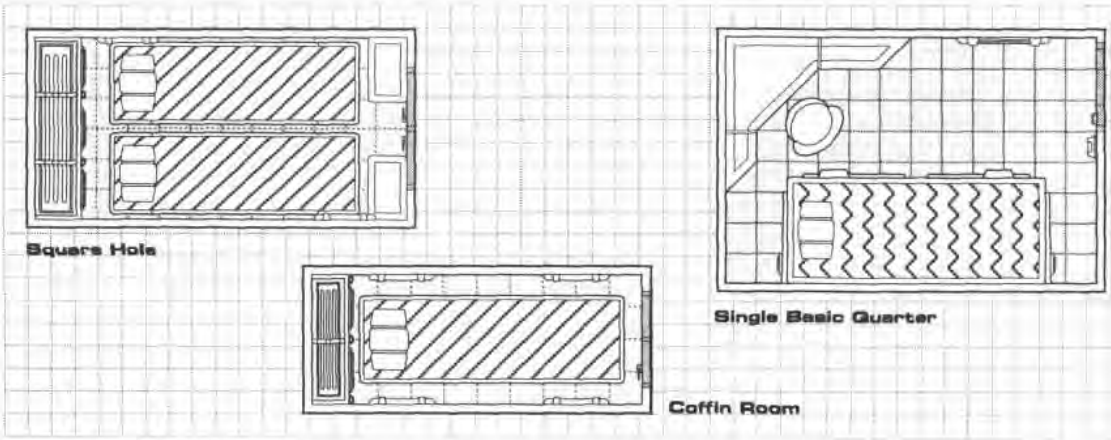
BASIC QUARTERS ▼

Basic quarters are available for both single and double occupancy. Single basic quarters are rectangular rooms two meters wide by three meters long and two meters high. Double basic quarters are rectangular rooms three meters wide by four meters long and two meters high. These quarters are extremely functional and compact. Common to all living quarters, whatever the room size, is a storable bed that folds up against one of the room's walls. The bottom of the bed contains a fold-down desktop and storage areas for small personal effects. Standard to all quarters is a chair (or two), PAN access terminal, voice and video communications, video wall screen and a fairly significant amount of storage space for such a small area. People rarely use more storage space than what they receive with their quarters. Additional storage space is rented at a rate of 5 credits per month per cubic meter. The room has polymer panels that can be replaced — for a fee equal to 50% of one month's rent — to change the wall colors and textures. Environmental controls for light, temperature and humidity are standard. Monthly rent for single-occupancy quarters is 600 to 800 credits, while double-occupancy quarters rent for 900 to 1200 credits. If the quarters have a window to the exterior, the monthly rent is usually increased by about 200 credits.

HOTELS

Hotels offer both minimal and basic quarters to travelers or others who require temporary lodging. By far, the most common hotel accommodations are the so-called "coffin hotels" that feature several corridors of sleeping tubes. Hotels offering box and basic quarters are much less common, since anyone requiring these kinds of facilities is likely to rent one on a longer term from a rental agent. If hotels do have either box or basic quarters available, the single-night rates range from approximately 20 credits for box quarters to 35-75 credits for basic quarters (single to double occupancy). In many cases, hotels offering these accommodations are simply normal quarters left vacant for rentals by daily use. All businesses offering daily rates will accept reservations for quarters. Although a few luxury hotels (like Joshua's Station's famed Parnassus Hotel) can be found here and there, they are very rare and very expensive (starting from several hundred credits per night).

BASIC ROOM FLOOR PLANS



▶ EXPANDED QUARTERS

2.2.3

Expanded quarters are, quite simply, basic single- or double-occupancy quarters with additional living areas attached. The interior of most buildings cannot be reconfigured, but there are some that are modular in design and can accommodate a modified floor plan. Other buildings are built with a variety of floor plans beyond the basic quarters. If the renter is not taking possession of an existing set of quarters, there is a reconfiguration fee equal to 10% of a single year's rent for the new floor plan. Not all of the expansion options in the table are available in every location; that is more a function of which options the building was designed to accept. All options have the same ceiling height as the rest of the quarters; two meters is standard.

◫ EXPANSION OPTIONS

ADDITIONAL AREA	ADDS	SIZE	COST/MONTH
Bathroom I	toilet, sink	1 meter by 1 meter	200 credits
Bathroom II	toilet, sink, shower	1 meter by 2 meters	500 credits
Bathroom III	toilet, sink, bathtub w/shower	2 meters by 2 meters	1200 credits
Kitchen I	small-size fridge, two-element stove, cupboards	1 meter by 2 meters	350 credits
Kitchen II	average-size fridge, four element stove and oven, cupboards	2 meters by 2 meters	800 credits
Dining Area I	4-person seating	2 meters by 2 meters	450 credits
Dining Area II	8-person seating	3 meters by 3 meters	800 credits
"Living Room" I	two love seats, video wall screen	2 meters by 3 meters	600 credits
"Living Room" II	two couches, video wall screen	3 meters by 3 meters	900 credits
Extra Bedroom I	single bed	1.5 meters by 2 meters	400 credits
Extra Bedroom II	double bed	2 meters by 2 meters	500 credits
Entranceway	extra space at quarter's entrance	1 meter by 1.5 meters	300 credits
Storage Area	closet-type area	1 meter by 1 meter	200 credits
Private Study	desk w/terminal, chair, video wall screen, shelves	2 meters by 2 meters	750 credits

▶ WEALTHY QUARTERS

2.2.4

For those who have the money for something beyond the usual living quarters, there are no restrictions to what credits can buy. The quarters of the wealthy are always custom-built, but opportunities for construction are limited to new buildings and existing buildings being rebuilt or renovated. Since most of the wealthy who want to build quarters will have the money to either finance a new building or purchase an old one, it is not uncommon for this kind of thing to happen based on the individual's desire to set up new quarters. Some buildings are specifically designed with the goal of providing the space for a wealthy individual to design their quarters. Being very modular, the only real limitation to setting up the floor plan is an existing set of living quarters being in the way.

One of the greatest distinctions between wealthy quarters and other quarters is the finishing. Floors are covered in carpet, hardwood or tile. The walls have a textured finish or wood paneling. Rugs and tapestries are commonly added to rooms. Moldings and finishing are done in wood or stone. More open space gives the quarters an entirely different feel; very common to the quarters of the wealthy are numerous windows providing a view to the outside of the building. Combined with three-meter high ceilings, these types of quarters are cathedral-like in comparison to lesser living spaces.

Free-standing, dedicated-use furniture is another feature of wealthy quarters; there are no storable beds or folding tables. Couches, chairs, tables, desks, potted plants, beds and other such items of furniture are found throughout. Kitchens and bathrooms are two more amenities standard to these quarters. Though the wealthy would likely not cook themselves, many will have a chef do the cooking for them. The other option for those quarters lacking a kitchen is to have catered meals delivered. Given this, a dining room is a standard feature for enjoying one's meal; the dining room will usually seat anywhere from eight to twenty-four people, sometimes more. The last common feature is at least one full bath; on a space station where water rationing is always strict, a bath is often seen as the most excessive symbol of wealth.

Given the widely varying nature of these quarters, and the fact that most are purpose built, they are not available for rent, except on an individual basis. The purchase price for these kinds of quarters can range from 500,000 to 3,000,000 credits. Because they are not a rental property, wealthy quarters are subject to an annual property tax by the local government. The tax rate can vary widely from 10% to 30% of the evaluated price of the property.

FOOD AND DRINK ▼

For most of the population in the Solar System, meals are taken in a common area. This practice saves resources in a number of areas — space, energy and waste. The meals available are highly nutritious and well balanced, so that even those performing a minimum level of daily activity will remain relatively healthy. The reason for such nutritious food is the nature of that food: everything is made with specially produced and processed ingredients to optimize the health benefits. Typical meals are pre-prepared and packaged with a variety of choices. Most of the meal's protein comes from high-density aquaculture and soy, and other ingredients are provided from high-yield, high-density crops of grains and rice. Specialty crops of fruits and vegetables are grown with hydroponics or private gardens (see below). All of these are combined to provide quick, nutritional food for the most people with the minimum required resources.

Cafeterias and mess halls are normally located on the ground floor of a living quarters complex, and serve only processed foods. Since there are normally people working or doing business at all hours, the facility does not have the room to seat everyone, and those that arrive early are expected to finish their meals by the time the late arrivals need a place to sit down. Business complexes have a cafeteria to serve lunches and other meals. People have the choice to purchase meals either as singles or part of a meal plan. Meal plans provide a limited choice of menu, but offer a 10% discount over purchasing single meals. Naturally produced and prepared foods are only available in restaurants, and are considered a treat by most. A typical restaurant meal will cost double the pre-packaged equivalent, but there is a wider variety of specialty foods like beef, large crustaceans and fish. Vegetables and fruits are prepared in a traditional manner that is firmly geared toward creating something that tastes different from the normal packaged equivalents. The skill of the preparation varies widely, however, and many say that good chefs are most abundant on Venus and Mars.

Microgravity makes eating an entirely different experience. Food that gets loose in microgravity makes a large mess that can escape in any direction. Those people with plenty of microgravity experience can get away with eating from open containers, but the traditional squeeze bulbs and dry foods of the early Space Age are still available for the rest. Since most ships have some way of producing at least minimal gravity for the long voyages they undertake, microgravity foods are normally reserved for when acceleration is not available, or when there is an emergency situation. While everyone seems to enjoy complaining about the quality of these foods, no one seems to complain too loudly when they are truly hungry.

UNIQUE TASTES ★

One would not think of Mars as the premier producer of fine wine in the Solar System. However, genetic manipulation has adapted Earth grapevines to Martian conditions. The independent wineries of Mars reproduce many of the great vintages of past, in addition to new wines unique to Mars — like the Martian Red, Green and Blue. These can have virtually any combination of qualities and flavors. The former wine-producing areas of the Kingdom of France are either engaged in sustenance agriculture or environmental recovery projects. The small quantity of French wine is reserved for consumption by the nobility.

Most people who live in an artificial environment would agree that garden-grown vegetables are the best-tasting of foods. The roofs of many colony cylinder buildings are flat and are covered in soil or hydroponics gardens. Except for the smallest buildings, employees or residents usually spend time tending these gardens for a portion of the harvest. Underground settlements on the Moon and Mercury use potted plants — again, fruits and vegetables — to brighten the surroundings. If the plant is located in a public area, it is considered extremely rude to take a sample unless first offered a taste by the owner or caretaker.

FOOD AND DRINK ◘

PROCESSED FOODS	COST	FRESH FOODS	COST	UNIQUE TASTES	COST
Soy burger	3 cr	Fresh fruit	10 cr	Mars Classic Earth Wines	50-300 cr
Bottled water (1L)	1 cr	Fruit drink (1L)	5-10 cr	Mars Red Wine	20-60 cr
Packaged breakfast	4-6 cr	Dairy milk (1L)	15 cr	Mars Green Wine	40-120 cr
Packaged lunch	7-10 cr	Seafood meal	25-120 cr	Mars Blue Wine	75-200 cr
Package dinner	9-12 cr	Steak meal	30-150 cr		
Energy bar	1 cr				
Soy milk	2 cr				

Note: fresh foods are often less expensive on planets and farming-oriented colonies, and more expensive in isolated areas.

▶ CLOTHING

For most people living in space, clothing choice is often a tradeoff between aesthetics and functionality. In some cases functionality is paramount, while for others it is the opposite. In the end, the most common feature is the synthetic fabrics used to manufacture clothing. Only Earth has the space and resources for the production of natural fibers, and most of this clothing remains on Earth; in fact, most spacers think that producing natural fiber clothing is an unnecessary waste of resources.

People avoid wearing loose or baggy clothes almost entirely; clothes with drape have a tendency to catch on things and cause accidents, especially in low gravity and confined spaces. This aversion to flamboyance also grew out of the need to conserve resources. Even people who live and work in relatively spacious environments wear fitted clothes. It is only on singular occasions of great celebration, such as marriage, that this unwritten rule of fashion is ignored, and then not always.

Work clothing fits into one of two categories: office and everything else. Functionality and durability are the two qualities most people seek in their work clothes. For people in technical occupations, the work coverall is most common work outfit; the spacesuit is second. Work coveralls have a multitude of pockets, both large and small, and numerous loops and straps for attaching tools and more pockets. Top-quality coveralls use fire retardant cloth that effectively reduces a fire's Intensity by two. Office clothing is designed to be sharp, clean looking and comfortable.

Casual clothing is meant to be comfortable above all else. After spending the day in the tight confines of a spacesuit, people like something relaxing to wear. Stylish coveralls and one-piece body suits made with supple fabrics are the most common casual clothing. Slacks and shirts of all cuts are also common. Zero-gravity clothing is usually body-hugging, but loose clothing will have elasticized cuffs to keep sleeves and pants legs in place.

Where there is gravity, there are still tuxedos and gowns to be worn. Most people don't have the storage space for formal clothing, so rentals are common. One popular fashion trend has incorporated micro-actuators with a small processor and power source to create "living" clothing. The variations in style and motion encompass everything from the curious to the provocative. Also popular are video or holographic membranes, that can be used to display virtually any image within the limits of social convention and legality.

▣ CLOTHING

ITEM	COST	ITEM	COST
Work Coverall	75 cr	Casual Pants	30-80 cr
Fire-Retardant Coverall	125 cr	Casual Shirt	20-50 cr
Business Suit	200-400 cr	Evening Gown	200-800 cr
Casual Business Clothes	100-200 cr	Tuxedo	400 cr, rental 30 cr/day
Casual Coverall	50-100 cr	Fashionable Clothing	500-2500 cr



UNIFORMS ▼

2-4-1

Uniforms are not just for the military and paramilitary services, though these uniforms are the most recognizable as such. The principal purpose of a uniform is identification of the person's affiliation to an organization. Whether the uniform has any functionality related to the performance of a person's duties is dependent upon said duties. Military uniforms are divided into two classes: duty and dress. Duty uniforms are day-to-day personal wear and are oriented toward functionality. For example, a technician's duty uniform has large pockets and is reinforced at the knees, shoulders and elbows. Dress uniforms are reserved for more formal occasions such as inspections or military receptions. They are much more formal, displaying rank, decorations, and unit affiliations. (See **Jovian Chronicles Companion**, pages 47 to 53 for insignias and decorations.)

MILITARY UNIFORM COLORS

NATION	DUTY UNIFORM	DRESS UNIFORM
Jovian	White and gray with yellow piping	White long jacket with gold piping
CEGA	Light olive	Black long coat with silver piping
Venusian	Charcoal	Gray and gold ceremonial armor, cape with corporate colors
Mercurian	Light blue	Dark blue jacket and pants with red piping
Mars Federation	Rust red with black mottle	Crimson jacket with gold piping, black pants
Mars Free Republic	Rust red with dark gray mottle with green spots	Dark green desert cloak with gold clasps and buckles

COMMUNICATIONS ◄

2-5

With the huge volumes of information being transferred on a daily basis, the infrastructure to support that transfer requires constant maintenance, improvement and expansion. As such, there are user fees associated with using voice and video communications as well as for accessing the SysInstruum through a public access network (PAN). There are two types of communication connections a user can establish: internal and external. Internal connections are made between two access points within a single station, colony cylinder or settlement. External connections are made between two access points in two different stations, cylinders or settlements within a local area of space or planetary surface. For security reasons, any direct access to external SysInstruum nodes is forbidden. (i.e. no external access via PAN connection.) A user can make a special request for access to specific information and searches.

INTERPLANETARY COMMUNICATIONS ▼

2-5-1

Interplanetary communication is not an instantaneous occurrence between the planets. Even the closest planets require almost an hour for a message to make the trip there and back. The different orbital periods and distances require that multiple communication arrays are aligned with different points in space, including relay satellites when line-of-sight is blocked. The cost is calculated using the square root of the distance expressed as millions of kilometers. For example, a message transmitted 160 million kilometers will cost 12.6 credits per minute (square root of 160 = 12.6). A table of closest, average and farthest orbital distances between the planets can be found on pages 168 and 169 of the **Jovian Chronicles** rulebook.

COMMUNICATION ACCESS FEES

LOCATION/METHOD	INTERNAL ACCESS FEE	EXTERNAL ACCESS FEE
Personal Quarters		
Voice	Free	0.1 credit/minute
Video	0.1 credit/minute	0.2 credit/minute
PAN Access	0.1credit/minute	5 credits/minute*
Public Comm Terminal		
Voice	0.2 credit/minute	0.3 credit/minute
Video	0.3 credit/minute	0.7 credit/minute
PAN Access	0.5 credit/minute	10 credits/minute*
Remote Access		
C-Link	0.1 credit/minute	n/a
PAN Access	1 credit/minute	15 credits/minute*

* Additional fees for special requests and information transmission

▶ GETTING AROUND

2-6

The cities of pre-Fall Earth were often choked with ground vehicles operating on millions of kilometers of roadways. The pollution, noise, maintenance costs and resources this system required make duplicating this kind of transportation system impossible elsewhere. As a result, highly efficient public transportation systems were necessary to handle the large populations of colony cylinders and other large facilities. Operations research specialists are continually working on improving the efficiency of public transportation systems. This has coincided with improved efficiency through advanced technology in developing transportation infrastructure. There are numerous payment options for the use of public transportation, with the cost varying little between locations. A six hour, unlimited-use pass costs one credit. Monthly passes are 40 credits, and annual passes are 400 credits.

Monorails form the basis of any colony cylinder's transportation infrastructure — extensive road systems require too much space and are too inefficient. The system places the monorail between quadrant boundaries with terminals located at the intersection of quadrants and the mid-point between intersections. Vivarium cylinders also have a monorail "subway" line that runs the length of the sunline for access to zero-gravity facilities and cargo transfer areas. Monorail cars are computer-controlled from an onboard system that coordinates monorail operations with a central computer. The system is has several redundancies that allow direct network operation through inter-car communications when the central computer is down; on the other hand, the central computer can take remote control of a car if the onboard system malfunctions.

Transit buses that run on fuel cells or superconducting batteries operate within the quadrants between the monorail lines of the colony cylinder. They usually run in circular routes that move people to and from the monorail stations. Varying in capacity from twenty to forty passengers, the buses allow quick access to areas that don't have immediate access to the monorail stations. The bus service also provides mobility to the elderly and disabled within the quadrant where they live. Within the largest space stations, or even smaller stations and surface habitats, small open cars that offer standing room only for ten to twenty passengers operate within the limited space available while still providing quick and efficient travel.

The Moon and Mars are the only two locations in the Solar System, other than Earth, that have **permanent surface transportation systems**; the nature of Venus' surface requires that all public transportation be airborne. Both have monorail systems that provide regularly scheduled service between major settlements. Numerous private companies provide schedules and charter travel services between smaller regional settlements using wheeled or tracked vehicles. On the Moon, modified OTVs called hoppers launch themselves into low-altitude ballistic trajectories between destinations.

▼ INTER-CYLINDER SHUTTLE

2-6-1

Regularly scheduled shuttle flights move people and goods between the clusters of colony cylinders throughout the Solar System. There are few people who commute between cylinders and stations for work, so it is sufficient to limit cargo capacity on some flights to accommodate extra passengers. If a shuttle is not carrying passengers, it is carrying cargo. Within a cluster, the round-trip fee is 15 credits per person or 100 kg of cargo, 10 if one-way. For service between clusters, the fee goes up to 35 credits (25 for one-way trips).

Shuttle passengers who reserve a seat at least twelve hours in advance are guaranteed a spot and receive a 15% discount. Passenger reservations after this deadline up to the departure time must pay the full fare and risk losing their seat to cargo shipments; after the deadline, cargo is given equal priority for passage.

▼ PERSONAL TRANSPORTATION

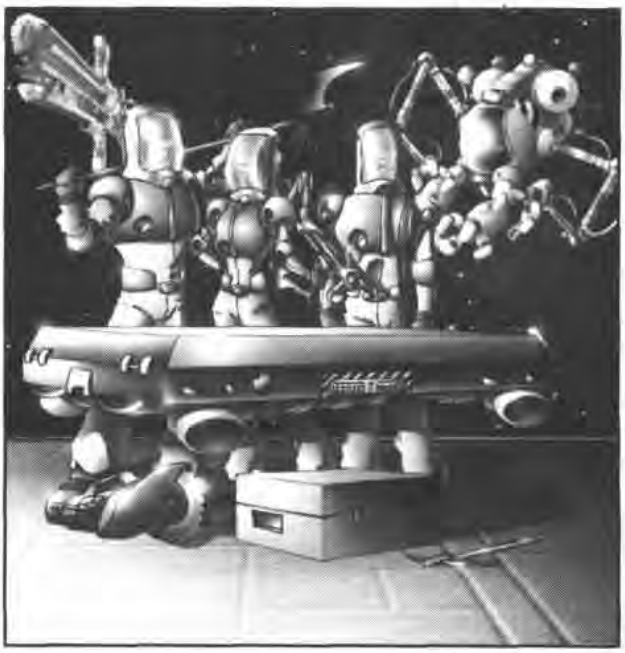
2-6-2

Ownership of a personal vehicle — beyond a bicycle or scooter — is very rare throughout the artificial environments people occupy in the Solar System; within space stations, the only personal transportation systems available are one's own legs. This does not mean there are not vehicles, but the majority of them are service and cargo vehicles. Colony commuters are compact reverse-tricycle or four-wheel vehicles that carry two to four people. The cost of owning, operating and parking these vehicles is very high compared to public transportation. Bicycles are a popular and inexpensive transportation choice. Designated bike lanes allow for quick travel with fewer worries about pedestrians and other hazards. Some colony cylinder administrations greatly favor bicycle riders by also provide public bicycle stations where a person can use their public transit pass to check out a bicycle. The person can then return the bicycle to any bicycle station, whether it be the same one or a station halfway across the cylinder.

EMERGENCIES ◄

When in space, one's life is constantly dependent on the condition of a mere few centimeters' thickness of hull plates, bulkheads and other synthetic materials. While there will always be accidents, spacers are particularly serious about taking the necessary precautions to limit the loss of life due to hazards such as decompression and fire. Whether these events occur as the result of combat, natural or intentional causes, decompression and fire have the greatest potential for causing casualties and fatalities within the artificial environments that humans call home in the Solar System.

Children learn and practice emergency procedures from the day they are old enough to understand the lessons. They learn to trigger alarms, summon help and seek shelter in cases of fire or severe drops in pressure. As they grow older, they learn basic firefighting and hull-repair techniques, and are also drilled to care for children younger than themselves. Ironically, children are the ones who often keep the adults well reminded of the need to practice safety, since the constant lessons make them happy to point out when adults are doing something incorrectly or in an unsafe manner. Smaller emergency spacesuits for children are located toward the floor in most lockers, should a child find need of a suit when an adult is not present.



DECOMPRESSION ▼

2.7.1

While experiencing a decompression emergency can be terrifying, it is actually one of the most survivable of spaceborne mishaps. Contrary to popular belief, the human body can actually survive unprotected exposure in space for longer than a minute, though the victim will suffer increasingly severe physiological damage. Because preventing and containing rapid decompression is important for preserving valuable atmosphere and structural integrity, a great amount of energy and resources are devoted to developing methods for dealing with this type of emergency. Aboard military vessels during combat, all military personnel wear full spacesuits, and the vessel's atmosphere is lowered to near-vacuum conditions. This reduces damage and the loss of volatiles due to battle damage.

If a compartment undergoes decompression, remaining in the structure is the primary concern. Doing so allows rescue and damage control personnel to quickly find and assist personnel at the site of the incident (since a lengthy search decreases the odds of survival almost exponentially). In the case of rapid decompression — also know as a "blow out" — it is unlikely that personnel can make it through exit hatches before the hatches close to seal the area anyway, so staying in the structure provides the best chance for survival. Slow decompression, either due to a minute puncture or a faulty seal, is less dramatic (though still very serious) and allow for a greater number of options. The first is to exit the area before hatches and blast doors close to seal the area. An automated voice informs occupants of the time available to exercise this option. If there is insufficient time to exit the area, personnel must use an emergency spacesuit or survival bubble before they lose consciousness. The second option is to attempt to plug the leak or at least slow it down enough for help to arrive. The third option, a rather unpleasant and terrifying maneuver, is to hyperventilate to charge the bloodstream with oxygen and then attempt a "naked" spacewalk to another pressurized area such as an airlock (obviously, this option is not always available, and require serious nerve to commit to).

After personnel have seen to their own safety, and assisted others, the next action is to contact the designated emergency response authority to advise them of the situation. Personnel trained in damage control procedures can assess the situation for possible temporary repairs and begin the necessary work if the correct equipment for doing so is available. All personnel are to remain in the decompressed area until they are escorted from the area by rescue or damage control personnel; alternatively, personnel must follow evacuation procedures if contact with personnel outside the decompressed cannot be established. Under no circumstances are personnel to open sealed hatches and blast doors, as this could compromise the integrity of the entire vessel and the safety of other spacers.

☆DECOMPRESSION AND THE HUMAN BODY

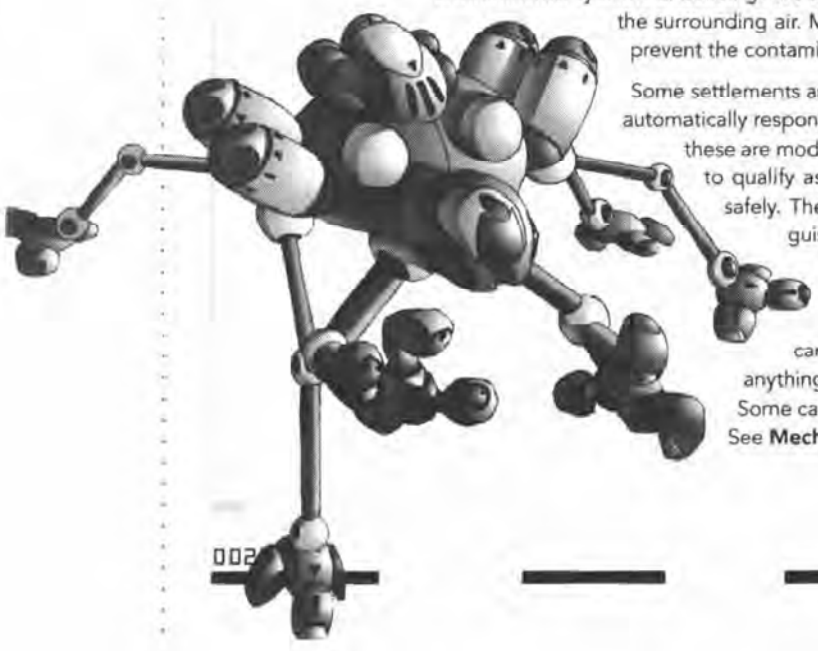
At the beginning of Humankind's ascent into space during the 20th century, experiments were conducted to determine the effects of exposure to vacuum. The results showed that exposure to space for about thirty seconds is unlikely to cause permanent injury. However, holding one's breath is likely to damage one's lungs; full exhalation is recommended. Direct exposure of the skin to the intense ultraviolet radiation of the sun will cause severe sunburn. Lengthy exposure is likely to cause decompression sickness. Symptoms include mild, reversible and painless swelling of the skin and the tissue beneath. After prolonged vacuum exposure, the blood's supply of oxygen is depleted, so lack of oxygen will render the victim unconscious after a minute or two, with brain damage and death following very quickly. The body will not explode, nor does the blood boil because of the structural and environmental protection of the skin and circulatory system. One will not instantly freeze, because although space is cold, there is no medium for heat to transfer away from the body. However, the saliva on the tongue and other external body fluids will boil because of the extremely low vapor pressure at body temperature.

▼ FIRE

Fire is the one of the most feared emergencies in an artificial environment. It is not the heat of the flames that poses the greatest danger, but rather the fire's voracious appetite for oxygen and the smoke, carbon dioxide and other compounds that quickly fill the air. A fire aboard a vessel can quickly consume valuable oxygen and pollute the entire vessel's atmosphere, making even a small fire hazardous. The relatively high concentration of oxygen compared to nitrogen in the standard artificial atmosphere means that fires burn with greater intensity and spread more rapidly than under normal earthbound conditions. All buildings and spacecraft are built to contain fires; rooms are layered with fire retardant materials, and all doors are equipped to close automatically when a fire alarm is tripped. Occupants can open a door to exit the room if the sensors on the opposite side deem it safe to do so (based on temperature and air quality).

The preferred option for controlling and extinguishing fires is to evacuate the atmosphere in the immediate area after it is sealed off. Both ships and buildings within open environments (like colony cylinders and surface settlements), are compartmentalized to facilitate the containment of a fire. The atmosphere is then evacuated completely, or the section is flooded with an inert gas to "starve" the flames. Emergency oxygen apparatus for use by trapped personnel is stored in lockers at containment doorways and other strategic locations. Emergency spacesuits can also be used to limit exposure to fire by-products. As a primary or backup system, wet or dry chemical fire-suppression systems are installed in critical areas; some materials can be self-oxidizing, or may be in contact with an oxidizer, so that evacuating the atmosphere will not extinguish some fires without a fire suppression system. (See the **Space Equipment Handbook**, page 43, for more information about fire fighting equipment.)

Within large, open environments like colony cylinders and surface domes, fires that occur or spread outside a building are combated by variety of methods. Buildings are equipped with exterior chemical fire-suppression systems to prevent the spread of a fire from building to building. Colony cylinder sunlines are equipped with fire retardant foam bombs that can be dropped and directed onto open fires. If there is a sufficiently large population present, emergency response teams equipped for fire fighting duties are available. The environmental systems of buildings are also capable of reverse operations to extract impurities from the surrounding air. Mobile air quality conditioners can be brought into place to prevent the contamination of the habitat's atmosphere.



Some settlements and cylinders also have emergency response M-bots that will automatically respond to alarms with a minimum of human intervention. Most of these are modified search and rescue drones that, although too expensive to qualify as 'disposable', are tough and smart enough to do the job safely. They are equipped with laser cutters and powerful fire extinguisher systems, along with extensive protection against environment hazards. The M-Bots generally have four or more legs for improved stability, with small thrusters providing mobility in space. A number of drones acting autonomously can follow a search pattern and alert an operators if they find anything, at which point they can be tele-operated for finer control. Some can be controlled in the field by a properly-equipped exo-suit. See **Mechanical Catalog 2** for stats and background on these.

EVACUATION ▼

The evacuation of several million people from a colony cylinder is the worst nightmare of disaster services across the Solar System. There is little chance of evacuating an entire colony cylinder, or surface habitat, without some fatalities; in fact, emergency planners know that there will likely be many deaths, and do not publicize that fact. No cylinder has the lifeboats, spacesuits, or survival bubbles to evacuate the entire population. The reality is that if a cylinder is so damaged as to require total and immediate evacuation, it is likely that a great majority of the population will be dead or dying before they have a chance to evacuate. In an emergency, the evacuation alarms will sound and provide instructions for moving to lifeboats and airlocks. Emergency services run evacuation drills in a random cylinder quadrant every few months to ensure citizens are familiar with the evacuation procedures. The situation on Venus, the Moon and Mars is very different, comparatively. (Refer to *Evacuation*, page 41 and 42 in the **Space Equipment Handbook**, for more information.)



VENUS ◇

On Venus, evacuation to the surface is not a viable option for a large portion of the population. Mobile emergency shelters that are lowered to the surface are only accessible to people on the lowest levels. Self-contained emergency shelters are located at regular intervals within the habitat's interior areas. The upper surfaces of the settlements are equipped with a variant of the surface mobile shelter. These shelters use rockets and deployable wings to lift the shelter away from the habitat on a course for a neighboring habitat. The shelters are capable of landing on the surface, where they have an operational lifespan for twenty-four hours.

THE MOON ◇

On the Moon, heavily compartmentalized constructions, with survival shelters both inside and outside, serve to protect the inhabitants. There are sufficient self-contained emergency shelter spaces to protect at least 75% of the expected population of the section for the full support lifespan of the shelter. Exterior airlocks have a large supply of emergency spacesuits nearby to allow the rapid evacuation of large numbers of people. (See below for more on airlock use during evacuations.) Emergency shelters are also located along commonly traveled routes between settlements. It is considered a criminal offense to use the shelters in non-emergency situations.

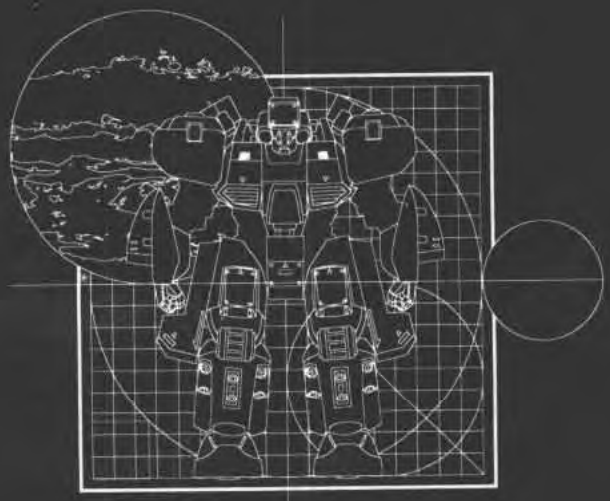
MARS ◇

On Mars, immediate evacuation is easier to conduct under the partially terraformed conditions, which allow people to simply leave with clothing and oxygen masks. This simplicity gives evacuees the chance to set up deployable emergency shelters, or be picked up and moved to another habitat nearby. Larger settlements that have several interconnected habitats will evacuate to adjacent habitats. The primary concern of rescue workers is to minimize long-term exposure to the Martian environment. As on the moon, emergency shelters are also located along commonly traveled routes between settlements.

SPACE ◇

Besides the use of lifeboats and shelters to protect the lives of a habitat's citizens, airlocks are used as egress points from dangerous situations within the habitat. Procedure for evacuation from an airlock begins with getting as many people as possible into emergency or regular spacesuits or survival bubbles in the corridor outside the airlock, and then to seal the corridor. The airlock atmosphere is evacuated, and one section of the interior door is opened, lowering the corridor pressure. The exterior door is opened by overriding the controls. Once the atmosphere in the corridor has finished venting, people exit the habitat with people in spacesuits carrying out the people in survival bubbles. (See *Airlocks* on page 51 for more information about operating airlocks.)

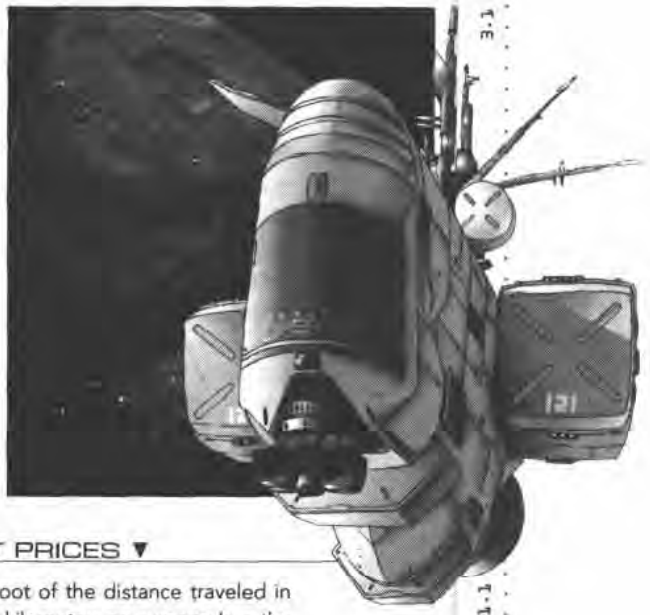
TRAVELING IN SPACE



Identification, ticket and passport please.
Please place your luggage on the table.

— Universal greeting of customs and immigration officers everywhere

CIVILIAN SPACE TRAVEL ◄



3.1

3.1.1

While the militaries send their fleets about the Solar System, many times that number of civilian vessels are travelling about the Solar System at any given moment. The majority of these ships are carrying cargo, but there are many vessels that also carry passengers. Most passenger craft carry a mixture of cargo and passengers, since there are relatively few vessels built exclusively for passenger travel.

Fares for passenger and cargo travel are based on mass and distance traveled, and also by the type or class of travel. Customs and immigration inspections are always required to ensure that the rules of travel and commerce are followed. For people travelling between the planets, there are pre- and post-journey activities, as well the journey itself. Even with the rhetoric flying between CEGA and Jovian politicians, the amount of traffic within the Solar System has never been higher. At the same time, the increasing amounts of cheap arms on the market — legally and illegally — have made some routes more susceptible to pirate attacks.

TICKET PRICES ▼

The base fare for interplanetary passenger travel is equal to the square root of the distance traveled in kilometers. For example, a journey between Earth and Mars is 272.6 million kilometers on average (see the **Jovian Chronicles Rulebook**, page 168). Therefore, the base fare is the square root of 272.6 million, which equals 16,510 credits. This base fare is then subject to a Transit Multiplier based on the Class the passengers will be traveling. First Class passage costs 4 times the base fare; Second Class passage costs 2.5 times the base fare; Business Class passage costs 2.5 times the base fare; Third Class passage costs 2 times the base fare; Economy Class passage costs 1.5 times the base fare; finally, Sleeper Class passage costs 0.5 times the base fare. For passengers with Build greater than +2, an additional multiplier of 1.5 is applied for each point Build above +2; for those with a Build of less than -2, an additional multiplier of 0.75 is applied for each point of Build below -2.

Cargo over the limit allowed by the paid passage is allowed, and carries a rate increase of 25% of the fare per 20% increment of additional cargo. For example, the charge for transporting 200% of the allowed cargo limit is equal to 125% of the passenger's fare. The actual fare can also vary from as little as 50% to more than 200% depending on factors like planetary positions and re-mass burn rates. Shortened transit times will always cost more due to fuel costs. Though there are few circumstances that would cause a passenger line to schedule a faster-than-normal trip, it does occur occasionally, with a proportional increase in the base fare.

LIFTING AND DESCENT FEES ◇

For those who require transportation between a planetary surface and orbit, there are lifting and descent fees for passage to and from orbit. There is a single price for lifting from, and returning to, surface locations. Purchasing both lift and descent tickets simultaneously provides a discount of 25% over the purchase of two individual fares. For those traveling to and from orbit via the Venus and Earth skyhooks, tickets are discounted by 25% for the fuel savings granted by the skyhook. The modifiers for Build given above are also applied to lifting and descent fees. Cargo fees for passenger baggage are equal to a single ticket as a percentage of 75 kilograms. For example, a passenger lifting 50 kilograms from Earth will pay 66% of the usual 845 credit fee, or 558 credits (rounded up).

LIFTING AND DESCENT FEES TABLE ◫

Location	Lifting Fee	Descent Fee	Location	Lifting Fee	Descent Fee
Mercury	313 cr	157 cr	Venus	772 cr	1220 cr
Earth	845 cr	845 cr	Moon	178 cr	89 cr
Mars	386 cr	231 cr	Titan	198 cr	242 cr

▼ PASSENGER ACCOMMODATIONS

First Class fare entitles the passenger to a private suite (two or three rooms) located in the gravity wheel, if the vessel is equipped with one. The suite will likely have several windows providing an exterior view of the ship. Having paid the most for their passage, First Class passengers receive priority access to all shipboard amenities such as theaters, restaurants, game rooms, lounges and personal services. All of these services (with the possible exception of meals) are included with the fare. First Class passengers also receive room service. Each First Class passenger is allowed 300 kilograms of cargo.

Second Class fare entitles the passenger to a cabin with a private bathroom likely located in the gravity wheel, but without an exterior window. Access to common facilities is provided at a greatly discounted user fee. Second Class passengers receive a good selection of meal plans. Each Second Class passenger is allowed 200 kilograms of cargo.

Business Class fare offers business travelers less cargo allowance, but provides high-priority access to onboard computer and communication facilities. They receive the same cabin assignments and meal plan choices as Second Class travelers, but the common facilities available are more geared toward the working business person, with the fees adjusted accordingly. Each Business Class passenger is allowed 50 kilograms of cargo.

Third Class offers the passenger limited privacy in a small private cabin with compact shower and sanitary facilities. The cabin is little more than a storage locker for the passenger's cargo and a sleeping bag. The passenger receives a limited selection of meal options, and does not receive a discount on the user fees for recreation and entertainment facilities. Each Third Class passenger is allowed 50 kilograms of cargo.

Economy Class fares provide the passenger with basic meals and dormitory-style sleeping arrangements that vary from two to eight people per room. Economy Class passengers are restricted from some facilities, and do not receive any discounts. Each Economy Class passenger is limited to 20 kilograms of cargo.

Cryogenic Storage, or Sleeper Class, is available as the most inexpensive form of passenger travel. The passenger spends most of the voyage in a semi-comatose state monitored by the ship's computer and medical personnel; they are woken regularly for exercise and medical checkups, but do not receive meals or entertainment. Sleeper accommodations are available in both the hull and gravity wheel, to maintain the health of travelers from different locales. Each Sleeper Class passenger is allowed 50 kilograms of cargo.

◫ PASSENGER SERVICES



There are many companies offering passenger services between the planets at any one time. Numerous independent vessels offer service on irregular schedules that are posted on the SysInstruum. People who don't mind taking a little longer to travel to their destination can sometimes find a berth on a Mercurian Merchant Guild sail ship, though normal practice requires passengers to work with the crew as part of the passage price.



The Venusian company Eclipse Travel is the largest company to offer regularly scheduled service between the inner planets. The Jovian company Galileo Spacelines offers travelers scheduled service between the Jovian states and the inner Solar System in addition to bimonthly service between the Jovian states. Smaller companies such as Trans-Planet (Earth), Inner System (Venus) and Universal (Mars) offer travelers a choice in service between the company's home planet and one or two other planets.



White Star Line is a name associated with the greatest transportation disaster of the 20th century, the sinking of the RMS *Titanic*. While the company has no plans to attach the name to any of its vessels, White Star Line is concentrating its business on "glamour" cruises between the inner and outer Solar System. Using a series of gravity-assist maneuvers around the inner planets and Sun, the vessels take scenic tours through the inner Solar System before traveling to Saturn for another gravity assist that returns the vessel to Jupiter. The trip back to the inner system is via a direct route. The accommodations offered are limited to First, Second, Third, and Sleeper Class passage at double the normal Transit Multiplier.

The Hanson Circuit is the main passenger service between the Jovian states. Attaching themselves to the two-kilometer-long booster sleds, short-range vessels called sled-liners move people and materials across the vast distance separating the three states of the Confederation. Most passengers travel Sleeper class for an inexpensive average price of 1000 credits for a one-way ticket between states. For those that make the trip awake, the ticket will cost between 44,000 credits (Economy Class) and 120,000 credits (First Class). (Refer to the **Jupiter Planet Sourcebook**, page 49, for more information on the Hanson Circuit.) Other passenger services between the states are irregularly scheduled and take significantly longer to arrive.

THE JOURNEY ◄

3.1.3

Passengers require three things before they can board the vessel. First is their personal identification and any related travel documents for entering and leaving the nation that they depart from or arrive at. Second is their ticket. Finally they require a medical certificate that states their ability, or inability, to live in low- or zero-gee conditions, and any health concerns that the medical staff should be aware of. Sleeper Class passengers must undergo an additional medical exam to determine if they are fit to endure long-term somnolence without severe adverse affects (Sleeper passengers are always warned that Sleeper travel is physically taxing and may produce harmful side-effects). Passengers who have problems with low gravity are treated with free drugs to allow them to embark and disembark from the vessel while it is docked.

Once the passenger has checked in at the spaceport entrance, they are directed to a room where they are instructed on basic safety and emergency procedures, and familiarized with the layout of the vessel. There is a brief exam at the conclusion of this one-hour presentation, with those who fail required to take an additional half-hour course and exam before being allowed to board. The authorities will not allow any passenger aboard the vessel who may endanger themselves, other passengers, the vessel, or the crew. Resistance from the passengers (rare among spacers) often results in their immediate blacklisting with the passenger line; they will not be allowed to purchase passage with that company in the future.

Following the safety and orientation session, passengers are directed to the customs and immigration inspection area. Customs officers ensure that the people leaving are allowed to do so, that they are not carrying anything that is illegal to transport, and check on any number of other regulations and rules that must be followed by travelers. Customs officers are permitted to perform random searches of any cargo a passenger is taking aboard the vessel. (See *Customs and Immigration* on the following page.)

Once passengers are cleared through customs and immigration, they are assisted to their quarters by ship stewards and courtesy personnel. Those passengers traveling Business Class or better can experience the departure from the various lounges in the passenger areas. During maneuvers they can be seated and secured in the numerous comfortable seating areas. All other passengers are required to remain in their cabins until departure maneuvers are completed. During maneuvers these passengers must secure themselves on their beds with safety netting. Once the departure maneuvers are complete, the ship's centrifuge (or the ship itself, depending on the vessel's design) is spun up to produce gravity in the passenger and crew areas.

DURING THE VOYAGE ◄

3.1.4

Once the final maneuvers and thrusting are complete, and gravity has been established, passengers are free to move about the designated passenger areas. This is also the first chance people get to eat after the trip starts as it is recommended to all that they skip eating until after departure. This reduces the chance of people throwing up their last meal during the zero-gravity conditions of boarding through to departure.

Stewards work hard throughout the voyage to keep the passengers fed and entertained. When passengers book their passage, part of the process is to complete a questionnaire about their favorite activities and other personal requirements when traveling. The questionnaire has all manner of questions about food, entertainment, hobbies and work activities, along with ample opportunity to make special requests. This information is compiled and used by the stewards to organize activities for the duration of the journey. Special requests may be provided for, but always for a fee proportional to the request.

For those that wish (or are required) to spend time in low- or zero-gravity, there are facilities for numerous activities from sports to simply floating and bouncing about. For those not acquainted with living in low gravity, these facilities are always heavily used if a person is traveling to a destination in constant low gravity. There are typically some passengers coming from low-gravity environments, so there are some quarters for these passengers so that they can acclimatize themselves to higher-gravity environments.

Passengers traveling at the more economical rates take their meals in common mess areas. The food consists mostly of pre-prepared, packaged meals with fresh food made available on occasion. For those with money to spend, restaurants serving freshly cooked meals (or at least above-average pre-prepared meals), are available. Game rooms, observation lounges, studios and computer access rooms are also available to those who pay the necessary user fee. Passengers are free to enter any passenger area not reserved for Business Class or higher.

▶ ARRIVAL AND DISEMBARKING

3.1.5

Upon arrival, passengers are once again confined to their cabin or the lounges for the final approach maneuvers. After docking is complete, the stewards and courtesy staff help passengers move their luggage to the arrival customs inspection area. Disembarking passengers are greeted by customs and immigration officers in offices where their documents are checked again. After their luggage is inspected, passengers are allowed entry. Once passengers have cleared customs, they are free to travel to their final destination at their point of arrival.

Travelers must have a medical doctor perform an examination and provide a medical certificate prior to departure, and customs officers will check this document. Passenger service providers will not allow seriously ill persons, or persons with contagious or communicable diseases, passage aboard their vessels, but some people may not develop symptoms until after departure. Any person suffering suspicious symptoms, or that has a suspicious medical history or information present on their medical certificate, is redirected by customs officers for an onsite medical exam. The person is effectively quarantined for the duration of the examination and the time required to return any test data. International treaty does not allow medical quarantine for longer than 72 hours without sufficient medical evidence of danger to the general population. Of course, this has received wide interpretation of the "sufficient" clause.

▶ CUSTOMS AND IMMIGRATION

3.1.6

Customs and Immigration are two functions that all governments have in place to protect their borders, such as they are. Borders are very subjective, but they are normally defined as any point of entry into the nation from another nation. Therefore, any station, colony cylinder or settlement has a designated entry point where foreign travelers are admitted and subjected to the customs and immigration process. Nations also have a departing customs inspections to ensure that certain products and technologies are not exported illegally, or exported without payment of any taxes or tariffs. Emigration inspections of departing travelers are increasingly common as the cold war between the Jovian Confederation and CEGA heats up. The major reason for this is to prevent military intelligence and other secrets from getting to the enemy. A Customs Officer archetype is located on page 72 in the *Game Resources* chapter under the *Archetypes* section.

The customs officer is a person who performs all the duties of an inspector and bureaucrat. Each traveler and their baggage must be checked by a customs officer. The officer will check the person's identification and background for authenticity. Generally, criminals are not allowed to travel internationally without special permission (although many nations have differing definitions of criminality; political dissidents from the Mars Federation have no trouble gaining entry to the Jovian Confederation, for instance). The person may also be restricted from leaving or entering a nation for any number of other reasons, but this check is meant to prevent any incidents or other complications that may occur as a result of legal limitations. Random baggage inspections are standard procedure, though the customs officer is empowered to perform any inspection they feel has reasonable likelihood of finding contraband items. Generally, any item with a Restricted Class of D or greater is not allowed beyond international borders.

In addition to checking arriving and departing travelers, the customs officer will inspect import and export containers of products and resources, or any other cargo crossing international boundaries. With the present political situation between the various Solar nations, tariffs and duties of various forms are likely to be imposed as a matter of foreign policy. Mandatory checks of all private vessels not following normal schedules are in place as a means to protect national security. Scheduled commercial traffic is also inspected for any number of potential security violations.

◫ RESTRICTION CLASS

CLASS	DESCRIPTION
A	Illegal to transport, possess, use, sell or store
B	Transportation, possession, use, sale or storage restricted to military organizations
C	Transportation, possession, use, sale or storage restricted to law enforcement
D	Transportation, possession, use, sale or storage of restricted items accessible to civilians
E	Unrestricted

CARGO TRANSPORTATION ◄

Merchant Guild magsail and solar sail ships are the most inexpensive manner of transporting cargo between the planets of the Solar System, but are not the most numerous or timely. Cargo vessels ranging from the smaller Mules to large Cronus-class cargo vessels are also common throughout the Solar System. They can carry virtually any type of cargo between the planets, moons, stations, and colony cylinders. The transport of cargo between the Jovian states on the Hanson Circuit is often reserved for government use, and is fairly expensive for all but the most time-sensitive commercial cargoes. Time-sensitive transportation between other points in the Solar System is normally reserved for optimum orbits and commands the maximum price for services rendered.

Since mass is the all-important arbiter of the cost to move anything around the Solar System, cargo other than passenger travel is based on a per-kilogram formula. The average cost per kilogram for cargo is equal to the square root of the distance between two points in millions of kilometers. This rate is subject to a Cargo Transit Multiplier based upon the type of cargo. Because of the slower transit speed of Merchant Guild sail ships, a final Guild Multiplier of 0.75 is applied.

Gas: Gases are stored in pressurized containers at twenty to thirty atmospheres pressure. A double-hull design with self-sealing membranes ensures that any punctures don't result in catastrophic loss of the gas.

Liquid: Liquids, or liquefied gases, require transportation containers with internal bulkheads to prevent ruptures from shifting loads. The bulkheads are also self-sealing to prevent the loss of liquid if the container is punctured. Loading a liquid container simply requires pumping the liquid into the container. Unloading is accomplished by spinning the container, using centrifugal force and dry inert gas to push the liquid out.

Bulk: Any cargo that has solid form and can be put in a box is classified as bulk cargo. Bulk cargo can range from raw and refined mineral resources to manufactured products of all shapes and sizes.

Secure: Secure cargo is any of the previous cargo types stored in a secured manner. Security can range from special locked and armored containers to various self-destruct mechanisms. In any case, the additional expense per kilogram includes monitoring, the extra weight of the security equipment, and any security personnel required.

Specialty: Specialty cargoes are variations on the three basic cargo types that have unique requirements for transportation. Anything that requires special handling, monitoring, or environmental conditions is classed as specialty cargo. Livestock and artworks are the most commonly-seen specialty cargoes.

CARGO TRANSIT MULTIPLIER ◫

CARGO TYPE	CARGO TRANSIT MULTIPLIER
Gas	x0.1
Liquid	x0.25
Bulk	x0.5
Secure	x0.5 to x2.0
Specialty	x0.5 to x3.0

COMMON IMPORT AND EXPORT GOODS ◫

	IMPORT	EXPORT
Mercury	Food, water	Advanced power technology, shipping services
Venus	Water, biotechnology	Electronics, financial services
Earth	Electronics, complex hydrocarbons, environmental technology	Small arms
Orbitals	Complex hydrocarbons, water	Electronics
Moon	Water, food	Military hardware, light metals
Mars	Nitrogen, complex hydrocarbons	Small arms, environmental technology
Nomads	Food, electronics	Minerals, volatiles
Jupiter	Mineral resources	Electronics, hydrogen fuel, complex hydrocarbons
Saturn	Luxury items, food, space stations	Complex hydrocarbons, volatiles

▶ SPACE NAVIGATION

3.2

Real-life space navigation is a complex undertaking, and well beyond what can be incorporated into a roleplaying game. However, space travel is a large part of characters' lives within the **Jovian Chronicles** universe. This section presents a simplified system of space navigation that allows the Players and Gamemaster to help establish what is happening to the Player Characters. Beginning with a simplified explanation of orbits and orbital mechanics, further sections describe how vessels move and relate to other objects within space under this simplified system. A description of space traffic control and the "rules of the road" give Players and Gamemasters an idea of what the people of the Solar System are doing when they direct their vessels between the planets. The section concludes with some discussion on how to use the previous sections with the game itself.

▼ ORBITS AND POSITION

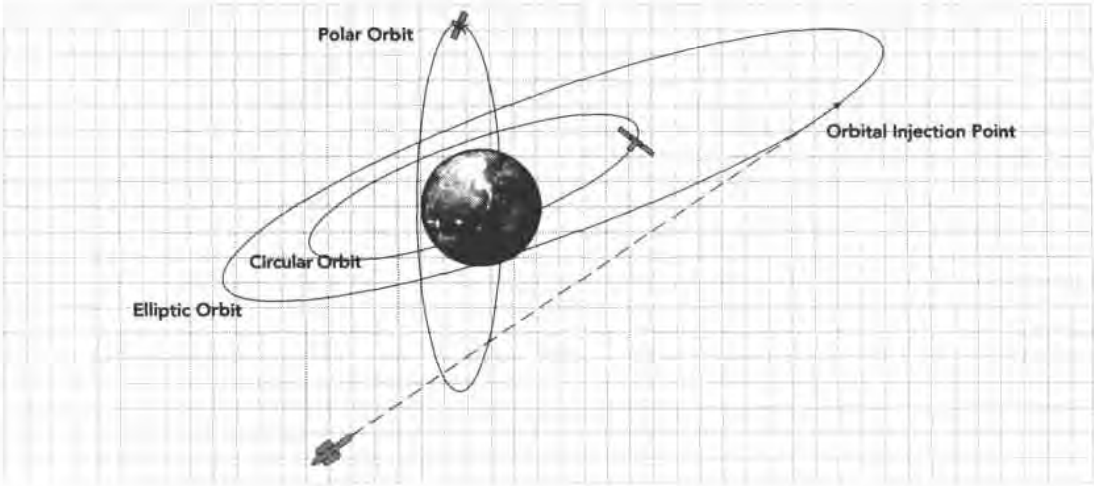
3.2.1

Orbits are described using four conic sections: circle, ellipse, parabola and hyperbola. If the spacecraft's path follows the curve of the orbit, then the focus of the orbit is the center of mass and a source of gravitational influence. The central body — planet, moon, sun or other — is used as a reference point for describing orbits. As orbits change, so can the central body used as the reference point. For example, the planet is used as a reference for orbits about the planet and making the transfer to an interplanetary orbit, but the interplanetary orbit is described relative to the sun. One or more elliptical or hyperbolic arcs define transfer orbits between planets, between orbits or between two points in space.

Planet-synchronous orbits place the craft above a fixed point on the planetary surface. Planet-synchronous orbits are restricted to planets because planets have sufficient gravity to have practical synchronous orbits. For example, a synchronous orbit above the Moon places a vessel in an orbit that would cause it collide with the Earth. Sun-synchronous orbits place the vessel in a fixed orbit with respect to the sun about a planet. For example, Mercurian colony cylinders are in a sun-synchronous orbit that places the cylinders constantly in Mercury's shadow. Polar orbits are perpendicular to equatorial orbits. The major advantage of a polar orbit is the vessel's ability to observe the entire surface of the orbited planet or moon. While this coverage is not complete or constant, the vessel will track across the entire surface area after a number of orbits.

All of these orbits have altitudes described as being low, middle or high. Low orbits are the lowest safe zone in which a vessel can maintain an orbit without spending significant energy to maintain its altitude. High orbits are from a planet-synchronous altitude and higher. Middle orbits fall between low and high orbits. Continuous orbits about planets and moons are either circular or elliptical. Circular orbits place the vessel at a constant altitude, while elliptical orbits vary the altitude from within a few kilometers to thousands of kilometers from a circular orbit. The section on *Flight Rules* details some of the navigation regulations for the orbits described.

◫ ORBITS AND POSITION



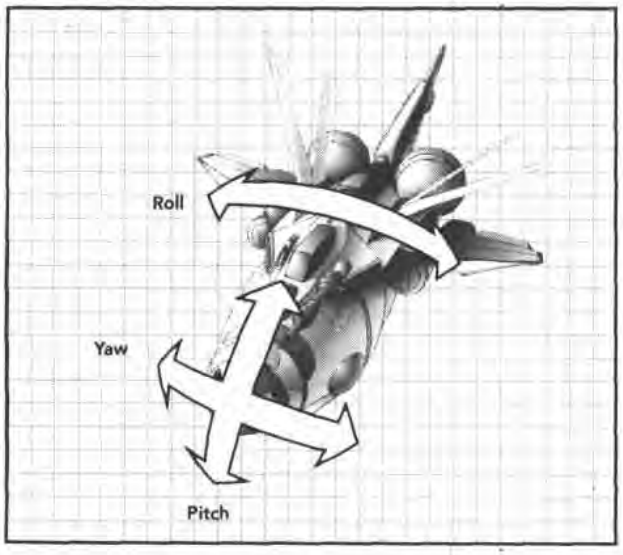
SOME USEFUL TERMS

TERM	DEFINITION
Apoapsis	The point on an orbit furthest from the central body
Periapsis	The point on an orbit closest to the central body
Conjunction	The situation where (or time at which) two bodies are either the same celestial longitude or 180° apart
Eccentricity, *e*	A parameter that defines the shape of a conic section: Circle, $e = 0$; Ellipse, $0 < e < 1$; Parabola, $e = 1$; Hyperbola, $e > 1$. Eccentricity is a measure of how an orbit deviates from circular. A perfectly circular orbit has an eccentricity of zero; other numbers denote increasingly deviating orbits.
Ecliptic	The plane of the Earth's orbit around the Sun inclined to the Earth's equator by about 23.4°
Injection point	The point at which spacecraft velocity is adequate to enter a planetary orbit
Transfer point	The point at which spacecraft velocity is adequate to move to a new orbit, either planetary or interplanetary
Ascending	Travelling toward the ecliptic from below, or travelling away from the ecliptic from above
Descending	Travelling toward the ecliptic from above, or travelling away from the ecliptic from below
Inclination, *i*	The angle between the orbit plane and the reference plane (usually the ecliptic or the equator of the body)

When a vessel is not orbiting a planet, the simplest method for pinpointing the vessel's position is by the use of polar coordinates. Polar coordinates position a point by the number of degrees from an axis and the distance from the origin. In the case of navigation, the origin is the Sun, and the axis is measured counter-clockwise from a line drawn from the Sun to the Earth's position at the vernal (or Spring) equinox; the axis is 0° celestial longitude. The simplest measure used to denote a third dimension is to refer to the inclination of the plane the vessel is traveling along. The orbit plane, or plane of travel, is the plane defined by any three unique points in the orbit, and is expressed by its inclination relative to the ecliptic. (See *Flight Rules* in the following pages for more information about orbit planes and orbit inclination.) Using a standard ephemeride table that gives a planet's celestial longitude for a certain date, realism-minded Players and Gamemasters can make reasonably accurate guesses about interplanetary orbits and positions.

MOTION, ORIENTATION AND RELATION

Space is a three-dimensional environment that does not lend itself to the usual standards of orientation and motion that are applied on a body with gravity. Motion is defined by the direction and rate of travel. Orientation is direction a vessel is "facing," but it is not the necessarily the same direction as the motion. (For example, to slow itself a ship will turn 180° to fire its engines, thus facing in the direction opposite its motion.) Since both of these quantities are three dimensional, the complexity is greater than required for comfortable game play, so simplification requires reducing the number of dimensions and generalizing actual values by using description. Thus, motion is described in two dimensions; one moves forward and backward along the x-axis, and sideslips left and right along the y-axis. Orientation is described as turning left and right (yaw). One can also turn "up" and "down," with "down" always being the direction of the orbit plane of the nearest reference point. If the unit is facing a target that is not in the same plane, it is assumed to be oriented toward the target unless otherwise noted. The command "New Course" will change the vessel's direction to a new heading.



MOTION AND ORIENTATION TERMINOLOGY

TERM	DEFINITION
Delta V (velocity)	Describes current velocity of unit
Increase (velocity)	Directive to accelerate to specified velocity on current facing
Decrease (velocity)	Directive to decelerate to specified velocity on current facing
Shift Right/Left	Perform sideslip in the specified direction
Turn Right/Left (degrees)	Directive to perform turn to the specified heading
Delta Plus	Describes the position of a target: the target is accelerating
Delta Minus	Describes the position of a target: the target is decelerating

◇ RELATION

Relation is the position and motion of the observed (i.e. the target) relative to the position of the observer. (see the diagram at the bottom of the page: the Wyvern's position and movement are measured from the Pathfinder's current position; the Pathfinder assumes that it is motionless in relation to the Wyvern.) This information is reported in a number of ways, all of which are listed in the *Relation Terminology* table. In each case, the target's motion is given with respect to the unit observing the contact. It is not necessary for this to always be the case, but if the observer is reporting to another unit regarding the target, it is required to give the target's position and motion in relation to the position of the unit receiving the report. (e.g. if the Pathfinder informs the Valiant about the Wyvern, the position and motion is reported as if the Wyvern's position and motion are reported from the Valiant's own position.)

◘ RELATION TERMINOLOGY

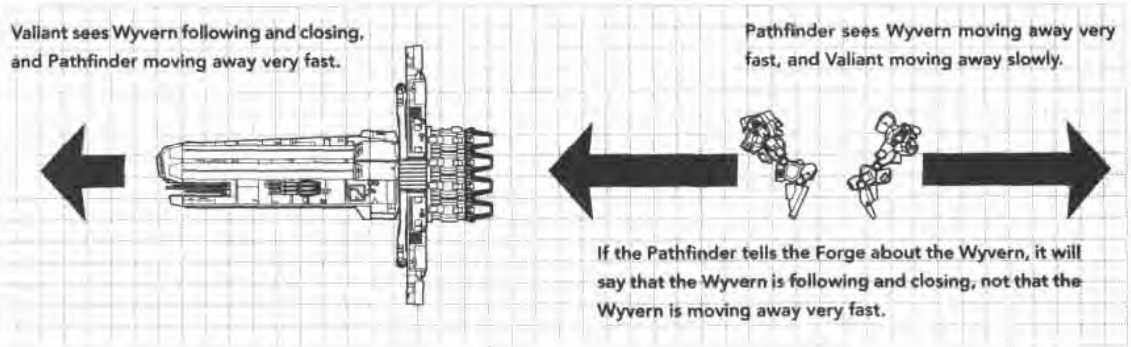
TERM	DEFINITION
Inbound (velocity)	Contact moving toward the unit at specified velocity in kilometers per second.
Outbound (velocity)	Contact moving away from the unit at specified velocity in kilometers per second.
x by *y*	Gives the distance to the contact in hundreds of kilometers from the unit's position. "Positive *x*" is contact distance in front, and "Negative *x*" is contact distance behind, the unit. "Positive *y*" and "Negative *y*" gives the distance to the right and left, respectively.
Up (distance)	Unit is between the contact and the orbital plane at the specified distance (in hundreds of kilometers) from unit.
Down (distance)	Contact is between the unit and the orbital plane at the specified distance (in hundreds of kilometers) from unit.
Crossing Right/Left	The contact will cross the unit's current heading from the right or left (up or down is also possible).

◘ EXAMPLES OF TERMINOLOGY USE

REPORT GIVEN	EXPLANATION
"Hostile, 10 by 5 down 2, inbound 20."	A hostile target is 1000 kilometers in front of, 500 kilometers to the right of, and 20 kilometers in the direction of the orbital plane from the unit, and is closing at 20 kilometers per second.
"Increase plus 5, turn right 45."	Unit increases current velocity by 5 kilometers per second, and turns to the right 45° from its current direction.
"New course. Left 10, decrease 25."	New direction of travel is 10° to the left, and velocity is reduced by 25 kilometers per second.

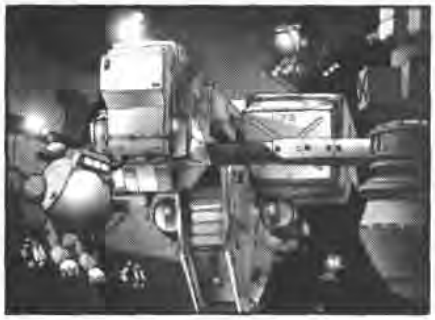
★ USN SPACE NAVIGATION AUTHORITY

The United Solar Nations Space Navigation Authority (simply referred to as SpaceNav) is descended from the old Earth International Space Traffic Control Office. SpaceNav is responsible for devising and maintaining navigational standards throughout the Solar System. While the space traffic control systems of individual nations differ slightly in their implementation and operation, there are common standards set by SpaceNav to ensure timely, accurate and safe passage of all vessels. Navigation terminology, flight plans, orientation and vector data, flight rules (the "rules of the road"), flight recorder data and systems and navigation communication protocols all follow standards set by SpaceNav. The Space Navigation Authority is also responsible for maintaining central databases for all flight plans and lost vessels, and the placement and maintenance of navigational beacons in specific Solar orbits. The Solar Cross has a close relationship with SpaceNav, with special database access for the purposes of rendering timely humanitarian assistance.



FLIGHT RULES ◄

Flight rules refer to the standardized procedures laid out by the Space Navigation Authority for the movement of vessels through space. The latest version of the *Rules and Procedures for Space Navigation* (a.k.a. "the Rules") is over 500 pages in length. Not only does it cover all the flight rules, but also recommends best practices for calculating orbits and maneuvers, and safe piloting methods. Major sections within the Rules specify proper orientation, passing and intersecting orbit procedures, docking procedures, communication protocols and flight plans. The following sections include information about the most commonly used aspects of the Rules.



RIGHT-OF-WAY ◇

Right-of-way is the precedence given to a particular vessel or structure when navigating a course through space. Precedence is based upon the relative mobility of the class of the vessel or structure. Practically, this means that a vessel or structure with high mobility must yield to vessels and structures that are less mobile; in game terms, vessels or structures with higher Maneuver Ratings must yield to vessels or structures with lower Maneuver Ratings. If two ships or structures have similar maneuverability, the larger of the two (based on mass) has right-of-way.

The minimum safe distance between ships mandated by the Rules is five kilometers. A flyby at a distance of five to two kilometers is considered a "near miss," and will result in a warning, and possibly a fine of up to 20,000 credits, to the navigator or pilot of the vessel that failed to yield the right-of-way. A flyby at a distance of less than two kilometers is considered a "near collision," and will result in possible suspension of license and/or a fine of up to 50,000 credits.

OPEN SPACE TRAFFIC ◇

SpaceNav regulations require all vessels in open space to travel close to the orbital plane of their destination. (e.g. vessels destined for Mars must travel approximately within Mars' orbital plane.) Outbound vessels travel below the destination's orbital plane while inbound vessels travel above the destination's orbital plane. Automated beacons are located along different orbits within the orbital plane of each planet to act as navigational reference points.

ORBITAL INCLINATIONS* ◧

Mercury	7.0°	Venus	3.4°	Earth	0.0°
Mars	1.9°	Jupiter	1.3°	Saturn	2.5°
Uranus	0.8°	Neptune	1.8°	Pluto	17.2°
Asteroid Ceres	10.6°	Asteroid Pallas	34.8°	Asteroid Vesta	7.1°

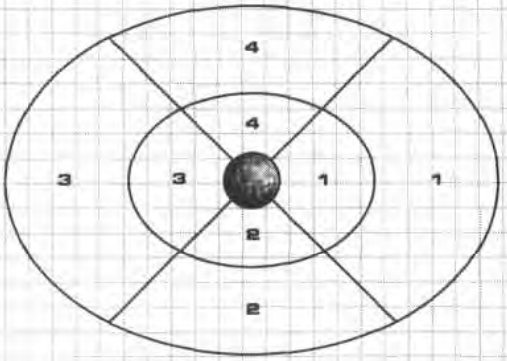
* Measured from the Ecliptic

PLANETARY TRAFFIC ◇

Planetary traffic is defined as vessels moving into, out of, or within a space traffic control zone. Prior to their entry into an STC zone, vessels are required to notify the STC center of their arrival. All vessels entering planetary STC zones perform orbital insertion into high polar orbits before being directed to lower orbits by controllers. Vessels are required to follow the instructions of the STC controllers: while the filed flight plan will give the vessel's orbital insertion data, the controllers may designate new orbits based on traffic and the vessel's final destination within the zone. Automated beacons located throughout the STC zones act as sensor platforms for the entire system, and are also bearing markers for directing traffic.

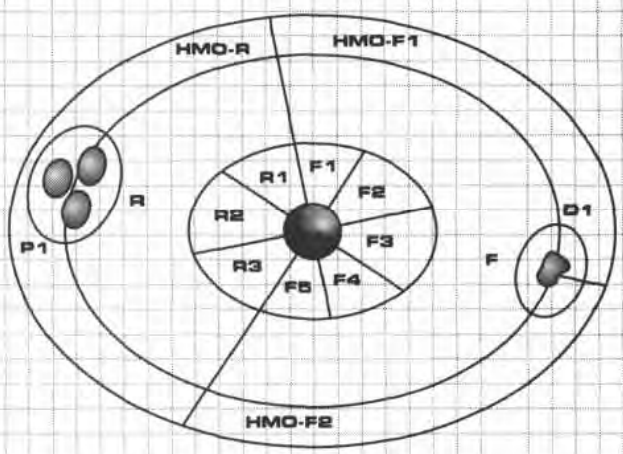
Vessels performing gravity whips or aerobraking are given priority clearance, provided the maneuver is indicated on the vessel's flight plan. Military vessels are given priority clearance for these maneuvers automatically, though they must still notify the STC center to ensure orbit conflicts are resolved. Vessels may request permission to perform these maneuvers even if the maneuver is not indicated on the flight plan, but must be prepared to receive a less than ideal orbit, risking the need to burn more reaction mass.

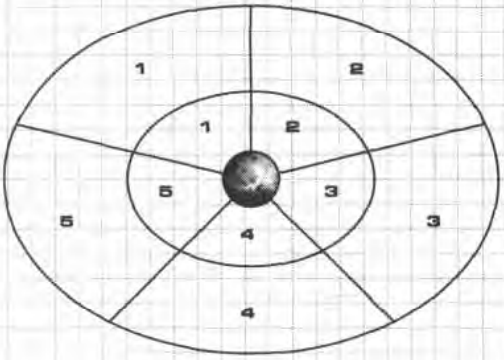
SPACE TRAFFIC CONTROL ZONES



Mercury has three major STC zones and one "hot zone," the hemisphere facing the sun. The two zones adjacent to the hot zone are the Leading and Trailing Outlying STC Zones, while the central zone is the Mercury STC Zone.

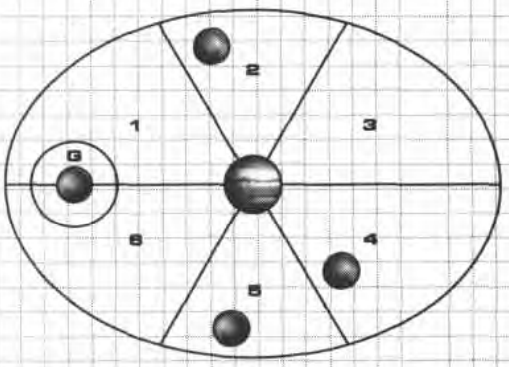
Mars has several STC zones, but the Federation and Free Republic each claim the segments above their respective territories as their own. Thus, there are several Federation control zones (numbered "F") and somewhat fewer Republic STC zones. International travel can pass freely between zones so long as it has a pass from both governments. Areosynchronous orbits are closely monitored by the owning nation, however.





Venus has several STC zones much like Earth's.

Jupiter has STC zones based on the positions of the Galilean moons. The Olympus STC Zone orbits Ganymede. Jupiter itself is divided into numbered STCs based on an axis drawn between Jupiter and Ganymede. This definition ascribes an artificial rotation to Jupiter, and is used mostly by the Jovians to keep track of skyhooks and Jupiter-orbit facilities. For international transit, the entire planet is considered one large STC Zone.



LOCAL CONTROL ZONES ★

Local control zones (LCZ) exist within local STC zones around large structures: colony cylinders, stations, autofacs, cargo yards and shipyards. The typical local control is a sphere 50 kilometers in diameter around the structure. With the increased traffic common to the busiest spaceports, the LCZ is sometimes increased to a larger sphere 100 kilometers in diameter. Inhabited moons typically have a local control zone equal to the moon's radius from horizon to horizon, centered on the habitat. To enter the local control zone, vessels must contact the LCZ control center for permission, approach vectors and docking assignments. If a vessel enters the LCZ without permission, it could be assigned a fine (up to 50,000 credits) or suspension of docking privileges.

RESTRICTED SPACE ◇

Restricted space is an area forbidden to unauthorized vessels. There are several possible reasons for restricting an area of space, the primary one being military. The exclusion of prying eyes is the number one reason the military uses for setting restricted areas, be it for prototype testing or war games. Another reason for restricted zones is protection, whether to protect something in the area or the ships that might enter the area. Sensitive scientific experiments, dangerous natural occurrences, or other non-military restricted areas are generally set up by government agencies for public protection. Consequences for violating restricted space vary widely and include fines, detention, confiscation or even destruction of the offending vessel. No passage into restricted space is permitted without authorization, and evading detection is unlikely without taking extreme precautions. Those that do have authorization must still follow the normal rules of space navigation.

NAVIGATION LIEN ◘

A lien is defined as "the right to hold another person's property until a debt on it is paid," and such is the case with a navigation lien when applied to spacefaring vessels. The transient nature of commercial and private vessels means that collecting debts on cargo, services performed (or not), or the vessel itself, is extremely difficult and expensive to undertake actively. A navigation lien against a vessel restricts it from lawfully entering or exiting any STC zone without advancing a minimum fee toward payment of the debt. If the vessel declares an emergency, it is allowed to enter and seek assistance, including docking, but may not leave without paying the fee, nor may it load or unload any cargo (false declaration of an emergency results in a 1,000,000 credit fine). Personnel are not restricted to remain on the vessel, so long as the vessel itself stays out of the STC. Intentional violation of these navigation restrictions (including the false declaration of an emergency) is considered de facto consent to submit to binding arbitration in the matter. The vessel is then effectively impounded until the arbitrator rules.

FLIGHT PLANS ▼

Flight plans are an important part of maintaining the safety of man and machine in space. Though space is very empty, collisions and various accidents can still lead to disaster. The primary reason for requiring flight plans is to double-check all navigation calculations. While navigators diligently check and re-check navigational data, a final check by an independent source ensures that mistakes are corrected early. Second, the flight plan allows STC computers to verify that no conflicts for orbital space are encountered. When close to a planetary body, a vessel cannot see what is on the other side, so potential conflicts are avoided. (Filing a flight plan requires working communications to transmit a copy to an STC center; a copy may be delivered by hand if the vessel is docked at a facility, but departure permission is often denied to vessels without SpaceNav-approved communications systems.)

FLIGHT PLAN INFORMATION ◘

FILING INFORMATION	VESSEL INFORMATION	FLIGHT INFORMATION	MANEUVERS LIST
Navigator's Name	Name	Departing From	Date/Time*
Navigator License Number	Registration Number	Departure Date/Time	Description*
Filing Date	Transponder Code	Departure Orbit	
	Captain's Name	Arriving At	*for each maneuver
	Number of Crew	Arrival Date/Time	
	Number of Passengers	Arrival Orbit	

▼ USING THE SPACE NAVIGATION SKILL

Now that we have new information about navigating the Solar System, how can players and Gamemasters use navigation in a game? First, only spontaneous maneuvers require the Space Pilot Skill. Planned maneuvers are entered into the vessel's flight computer, which applies thrust as required, without further human intervention. Properly generating and entering a flight plan is the job of the navigator, and uses the Space Navigation skill. If a vessel's navigator is a Non-Player Character, the Gamemaster is responsible for describing the flight plan, and deciding whether to make any Skill Tests. If the vessel's navigator is a Player Character, the Player controlling the navigator PC should handle navigation. What follows is one possible procedure for roleplaying such a situation.

The Player is responsible for writing out the vessel's flight plans and should follow the example on the previous pages. The only section required is the list of maneuvers. The Player Character's Navigation Skill is tested against the Threshold of each maneuver in the flight plan to determine whether the maneuver is successful. If the flight plan was filed with a space traffic control center for verification and confirmation prior to its execution, the Skill Test for each maneuver receives a +2 bonus. If the flight plan was verified, any Fumbles are treated as Margin of Success 0 (an error or conflict was found and corrected, but not optimized). The magnitude of the Margin of Success, or Margin of Failure, is an indicator of how efficiently and accurately, or inefficiently and inaccurately, the maneuver was conducted. For instance, an MoS of 2 indicates success with a couple of course corrections required, but an MoF of 2 indicates that the maneuver was not quite successful and will require another maneuver to make corrections. A Fumble without STC verification is a serious matter that could possibly put the vessel in danger of collision, atmospheric drag effects, or a highly unstable orbit — whatever works out better for the adventure at the GM's call.

Whether or not the Player or Gamemaster rolls the Skill Test is the GM's decision. The following guidelines can be applied to Skill Tests and Thresholds to ensure a fair resolution of maneuvers. In general, relatively high (twice or greater) or low velocities (half or less) compared to the target body will modify the Threshold by +2 when establishing an orbit. In situations where the maneuverability of the vessel might make a difference, also apply half the vessel's Maneuver Rating (round toward zero) as a bonus or penalty to the Skill Test. If the vessel's engines are damaged, the resulting Maneuver modifier must be applied. A navigator can increase the chances of success by running simulations to check his results. For each simulation run prior to executing the maneuver apply a +1 bonus. Each simulation takes 15 minutes to complete per point of Threshold.

◘ MANEUVER THRESHOLDS

MANEUVER	THRESHOLD
Insertion into orbit	(1 + Vessel's Velocity) / 10, rounded up
Planetary transfer	3
Modify current orbital altitude	2
Modify current orbital inclination	2
New altitude and inclination	3
Gravity-assist	*
Aerobraking	3†

* Details in the **Jovian Chronicles Companion**, pages 86-87.

†Threshold for plotting course only; apply MoS as a bonus, or MoF as penalty, to Piloting Skill Roll. See **Jovian Chronicles Companion**, pages 86-87.

◘ THRUST REQUIRED FOR MANEUVER

Maneuver	Thrust Formula*
Insertion into orbit	(Body's orbital velocity - Vessel's velocity) x d6 (non-negative value; minimum 1)
Planetary transfer	(Body's orbital velocity x Body's gravity x d6) + 2
Increase orbital altitude	Body's gravity x Vessel's Size x d6
Decrease orbital altitude	Vessel's Size x d6
Modify current orbital inclination	Vessel's Size x d6

• Must be applied over successive turns if vessel's Thrust is less than required amount. Modify d6 roll by Navigation Test MoS (subtract) or MoF (add); minimum modified roll result of 1.

SEARCH AND RESCUE ◄



Interplanetary space is huge region that can easily swallow the unfortunate for decades before they are found. There are a number of precautions that are taken both prior and during space travel that help increase the chances of rescue if something does go wrong. The first is the filing of a proper flight plan (see page 35) with the local space traffic control center. This gives searchers some idea of where to start looking for a vessel if something happens. The second precaution is to provide position, course and status updates in regularly scheduled communications with other vessels and automated navigation beacons. Since communication systems keep the previous 72 hours of message traffic in a recording loop, searchers can use this information to shorten their search by beginning at the missing vessel's last known location. The final precaution is to ensure that the vessel is properly maintained, especially its safety systems.

THE SEARCH ▼

Once a vessel misses making regular communications, is overdue without notification, or declares an emergency via radio, the vessel is declared missing. If there are other vessels in the area the missing vessel was last reported, they are required by international law to perform active sensor sweeps of their local area and attempt to re-establish communications. Any debris or other evidence of the missing vessel's possible location or condition is transmitted on open frequencies and to the Solar Cross. Once dedicated search and rescue (SAR) vessels arrive (like the Salvation II-class and Geneva-class ships that perform long circuits through common orbits), they begin by following any reported evidence. Since momentum will carry a missing vessel in the general direction of its last known course, SAR vessels will attempt to catch up to the vessel's projected course before widening the search area. The typical search pattern is a corkscrew that places the search vessel in the space adjacent to the progression of the original course; the corkscrew is gradually widened if there is evidence the missing ship is off-course. Multiple search vessels increase the area covered by running parallel search patterns to cover a larger volume of space. Rescue vessels will often carry surplus exo-armors (with weapons and armor removed in favor of upgraded sensors and more reaction mass) to conduct search and recovery operations.

A major part of locating a missing vessel is detecting the signal from the vessel's Emergency Location Transmitter (ELT). An ELT (Comm +1, range 2000 km, operating duration 48 hours) is installed on all vessels, and contains an independent power supply, system status monitor, navigational computer with related sensors and a transmitter. Large vessels will often incorporate a separate ELT in each major component as backups. The ELT can be activated manually, or it will activate itself automatically in the case of major system malfunctions. As a secondary function, the ELT has a 24-hour memory loop that records critical system information that it will transmit to inform search and rescue crews of the vessel's status.

THE RESCUE ▼

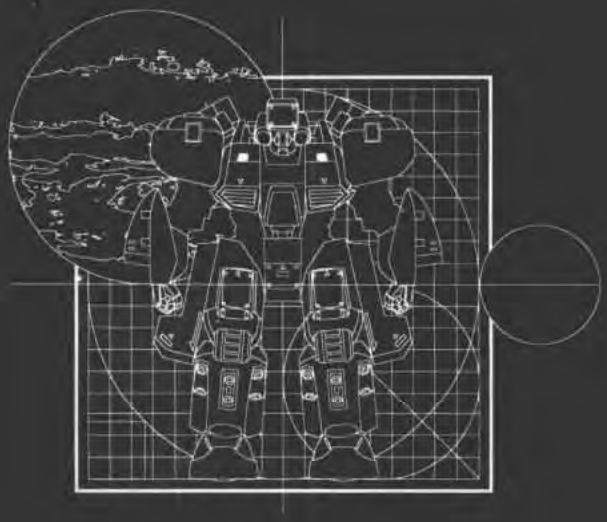
The first priority of the rescue crews is to assess the condition of the target vessel and stabilize it. This task is the most important, since endangering the lives of the rescue crews only makes the situation worse by making it necessary to rescue the rescuers. Most search and rescue technicians (see *Archetypes*, page 69) have some technical training to deal with these situations, but SAR crews also include dedicated technical personnel for stabilizing vessels in distress. While rescue crews are dealing with the crippled vessel, additional craft conduct sweeps to recover any missing emergency life boats and escape pods.

The next step of the rescue is to locate a suitable access point. Airlocks are the preferred point of access, but the SAR crews have other options available depending on the situation. Modified Piranha assault pods (**Space Equipment Handbook**, page 46) are sometimes used to board and evacuate vessels. These are equipped with a detachable airlock that is left on the hull after the crew manually cuts through the vessel's hull; the SAR pod can then make multiple trips to this point to shuttle victims off the vessel.

Once the SAR crews have gained access to the vessel, rescue crews will locate and remove any survivors; failing that, the crews will remove any bodies. This stage also requires the crews to proceed with caution, since exterior inspections seldom reveal interior conditions. It may be necessary for the rescue crews to conduct some repairs to stabilize the vessel before proceeding with a search for survivors. (Refer to pages 45 and 46 in the **Space Equipment Handbook** for search and rescue equipment.)

3.3.1

3.3.2



Even though the human race has moved beyond the need to have solid ground beneath its feet, most of the jobs that need to be done were done on the ground first. That won't change anytime soon.

— Otto Kurtz

COMMERCE ◄

Even as the colonies of Earth struggled to survive and become self-sufficient during the years following the Fall, commerce and trade eased some of the hardship, and eventually reunited the newborn nations of the Solar System. Today, commerce in all forms is rapidly expanding despite the political climate. The flow of natural resources has never been greater, as nations build new infrastructures to support and house their populations. Military spending is now higher than at any time in the past century. Between the antagonists, trade has become another battleground to fight upon. Power and money have remained two of the strongest forces driving human actions.



No matter how self-sufficient the former colonies of Earth become, however, they are still very much dependent on commercial activities to maintain and expand their positions. A nation like the Jovian Confederation can perform most of its trade internally without too much worry about the rest of the Solar System, but it can save costs and manpower by trading its wealth of fuel gases for rarer items and services. The neutrality of the Mercurian Merchant Guild establishes their continued presence throughout the Solar System as the quintessential traders of anything; without international trade, the Mercurian nation would likely crumble. The financial giants of Venus are dependent on the continued growth and interconnection of the Solar economies. Earth is struggling to simply supply itself, having suffered greatly during the Fall, and the Orbitals and the Moon hope to become strong enough to survive if CEGA proves to be less than stable in the years to come. Finally, the nations of Mars fight each other economically when not engaged militarily, trying to get the upper hand. This situation has cooled somewhat, but the tensions will remain for many years.

MONEY AND PERSONAL IDENTIFICATION ▼

The credit, issued by the USN's Unified Monetary Council, is the standard system-wide currency. Credit bills are printed on a special green polymer fiber with a tamper-proof holographic serial number and a watermark depicting the people and events of human history. Every eight years the UMC issues a new series of bills with a new historical theme (with the old bill remaining in circulation). The bills come in 1, 10, 100 and 1000-credit denominations. Centicredits are not issued as physical currency, so the standard practice is to round off prices to the nearest full credit.

Many commercial transactions occur electronically as credit card or electronic fund transfers. Electronic transfers involve one party authorizing a financial institution to move money between accounts. Part of the security for fund transfers is to have the two parties, or their representatives, present to transfer funds, or to set a schedule for the transfer of funds. Credit cards incorporate two anti-counterfeiting and security measures: a random (but identifiable) DNA fragment from the user and a thumbprint scan (thumbprint scans are standard security for many different situations). Greater security is provided by retinal, palm, or full-body biometric scans. Accurate and secure personal identification systems are a critical link in the 23rd century. These systems are required for commerce, access to services and use of some personal items. Since much of the business in the Solar System is conducted with electronic funds, personal identification and bank security systems are closely intertwined. The regulations for ensuring the security of an individual's personal and financial information are very strict.

The standard identification also incorporates a personal credit card. The card is a three-millimeter-thick wafer of plastic twelve centimeters long and six centimeters wide. The face has a thumbscan/DNA sampler sensor on one end and a touch-screen display that covers the remainder of the face. A hardcopy of the owner's personal information and a holographic photograph are embedded on the opposite side.

▼ NATIONAL CURRENCIES

Despite the existence of the credit as the standard Solar-System-wide monetary unit, individual nations still issue their own currency for various reasons. The biggest reason for maintaining a national currency is for control over the nation's economy. The second is to provide some protection against manipulation of the unified currency by other nations and the USN; many nations worry about the implications of the USN controlling their nation through controls on the flow of credits to the nation's economy and enemies. At the same time, the use of the credit has helped to stimulate and maintain international trade. There always seems to be a need for something somewhere in the Solar System, and the exchange of these items is facilitated by the credit.

The Non-Aligned States have a variety of currencies for their own use, but deal in credits when conducting business internationally. CEGA officials have protested on a numerous occasions the USN Monetary Council's valuation of NAS currency for USN credits. These protests have been largely ignored since most of the other Solar nations have some trade relations with the NAS.

The Mercurian Ration Point is not an openly traded currency. Only members of the Mercurian Merchant Credit Union (see below) have the ability to exchange Ration Points for other currencies, and vice versa. It is intended and used for internal trade only. With all the international trade the Merchant Guild conducts, the Mercurians have a large amount of foreign currency flowing into Mercury, which is then converted to credits and issued internally as Ration Points.

Lunar cities use the CEGA dollar because of the close relation of the lunar economy to the CEGA Navy. Many Navy personnel take shore leave on the moon, and since they are paid in CEGA currency, the businesses that serve them must accommodate them. Major defense industries that have CEGA Navy contracts are paid with CEGA dollars and thus pay their employees with that currency.

Belt settlements that have aligned themselves with a foreign nation often use that nation's currency internally and for conducting trade with that nation. Neutral settlements will use credits when absolutely necessary, but they prefer to barter for goods and services. THC's Saturn facilities use the Jovian franc since THC is a Jovian corporation, but this is slowly changing to credits as the amount of international trade with Titan increases.

◫ NATIONAL CURRENCY

LOCATION	CURRENCY	LOCATION	CURRENCY
Mercury	Ration Point (erp)	Venus	Yen (¥)
CEGA	Dollar ($)	Orbitals	SHARE (oS)
Moon	Dollar ($)	Mars Federation	Mark (FM)
Mars Republic	Mark (RM)	Jovian Confederation	Franc (Fr)

◫ CURRENCY EXCHANGE RATES

	Credit	Ration Point	Yen	Dollar	SHARE	Fed Mark	Rep Mark	Franc
Credit	-	0.45	0.61	1.30	0.95	1.15	1.20	0.68
Ration Point	2.23	-	1.36	2.90	2.12	2.56	2.69	1.51
Yen	1.64	0.74	-	2.13	1.56	1.89	1.98	1.11
Dollar	0.77	0.35	0.47	-	0.73	0.89	0.93	0.52
SHARE	1.05	0.47	0.64	1.36	-	1.21	1.27	0.71
Fed Mark	0.87	0.39	0.53	1.13	0.83	-	1.05	0.59
Rep Mark	0.83	0.37	0.51	1.08	0.79	0.95	-	0.56
Franc	1.48	0.66	0.90	1.92	1.41	1.70	1.78	-

Note: A singular-valued note of the currency on the left buys the equivalent value of the currency along the top. For example, 1 Dollar is equivalent to 0.89 Federation Marks.

FINANCIAL INSTITUTIONS ▼

"Money, not gravity, makes the planets go 'round," as an old business proverb says. There are financial institutions located throughout the Solar System, but not many are of a scale that can affect national economies, or finance the largest projects undertaken in the Solar System. Each nation has its own national bank that sets the nation's currency policy, interest rates, and other financial functions as dictated by the economy and government policy.

MERCURIAN MERCHANT CREDIT UNION ◇



Given the suspicion that Mercurians have of the Venusian Bank, the Mercurian Merchant Credit Union was formed to provide the nation with financial services. Along with their service on a Guild vessel, Mercurian citizens receive a single share in the MMCU that entitles them to fully access MMCU services. Until they have begun their service requirement and receive their share, Mercurian citizens are only allowed to use the most basic services of the bank. Only Mercurian citizens with MMCU shares can purchase further shares. This arrangement is meant to ensure that the Venusian banks cannot in any way directly influence the Mercurian system. As a result, the MMCU also acts as an economic instrument of the Mercurian administration.

JOVIAN BANK OF COMMERCE ◇



The Jovian Bank of Commerce (stock symbol JVBC) offers its services throughout the Solar System, with the obvious exception of Earth. The majority of the Jovian Bank of Commerce's clients reside within the Confederation, but that has been changing in recent years with increasing rumors and accusations about the activities of the Venusian Bank. Because Jovian Bank of Commerce is one of the few large international banks, they have attracted worried Venusian Bank customers for their stability and the perceived power of the Jovian Confederation.

UNITED SOLAR NATIONS TREASURY BANK ◇



The USN Treasury Bank deals exclusively with currencies and financing multi-national public and private projects. The Treasury Bank comes under the control of the USN Unified Monetary Council, and as such issues USN credits into the Solar economy as directed by the UMC. The Treasury Bank was struck by a financial crisis when the Mars elevator was destroyed, since it was one of the lending institutions responsible for a large portion of the space elevator's financing. The loss taken during the disaster placed a severe strain on the bank's ability to issue new loans, though insurance policies on the elevator covered a fair portion of the loss.

CONFEDERATED BANK OF MARS ◇



Despite the civil war that has split Mars, the Confederated Bank of Mars (stock symbol CBMr) has remained an impartial institution, much like United Martian Delivery Services. Formed from several pre-civil war banking institutions, the Confederated Bank of Mars ensures that Martian interests are served in the best possible manner in both states. Though each nation has a central bank for modifying the national economy, the CBM has strict controls in place to ensure that what happens in one nation does not impact the other. This policy of neutrality has been a burden on the bank, but it has prospered nonetheless.

The Confederated Bank was also hard hit by the destruction of the Mars space elevator. While it recovered some of the capital lost in the disaster through insurance, the bank's stock tumbled sharply before trading was halted. Several private investors purchased minority shares of the troubled bank, and brought it back from the brink. It is strongly suspected by many financial analysts that the private investors are a front for the Venusian Bank.

VENTURE CAPITAL BANK OF VENUS ◇



The Venture Capital Bank of Venus (stock symbol VCB-V) is, essentially, a ghost company for the Venusian Bank. The bank is a completely separate entity from the Venusian Bank, but VCB-V's Board of Directors is completely allied with the Venusian Bank. The statement "it is easier to control the Solar System if you own the Solar System," sums up the intent of the Venture Capital Bank of Venus. By investing in various projects across the Solar System, the Venusians continue to extend their influence through the manipulation of these projects, which includes causing the failure or growth of ventures.

▼ EXCHANGES

Markets exist to facilitate the transaction of goods, services and capital. The capital funds raised by corporations through stock issues sold on the stock markets build colony cylinders and vessels, harvest and process resources, manufacture consumer products and finance technological breakthroughs. By the middle of the 21st century, globalization led to the integration of the world's major exchanges into a single exchange operating around the clock. The physical distances, and the associated communications time delay, separates the exchanges of the 23rd century once again. This regionalization has also led to specialization by region. The exchange regions are Mercury, Venus, Earth (surface only), Orbital/Moon, Mars and Jupiter.

The existence of separate exchange regions gives rise to new regulations concerning the trading of stocks and commodities. For stock exchanges, there are two major rules that govern the trading. The first rule is that a company must have at least ten percent of its operating assets located in an exchange region to trade on exchanges in that region, with each region trading under a separate stock issue proportional to the total operating assets in the region. Second, the company assumes all risk involved with trading in multiple regions. Thus, if the stock price in one region climbs while it falls in another, the company must accept any losses, even if the climbing stock plummets on the news of conditions on another exchange. For commodity exchanges, there is but one major rule: contracts may only be traded in the region of production. Therefore, contracts of Jupiter fuel hydrogen may only be traded on Jovian commodity exchanges.

◇ STOCK EXCHANGES

There are several noteworthy stock exchanges located within the various trade regions. Because of the international exchange rules, most companies trade on a single exchange, or form strategic alliances with complementary operations in another exchange region. Not surprisingly, the largest stock exchange in the Solar System is located in the Jovian Confederation. The combination of being rich in resources and having a strong industrial infrastructure means that a lot of business is done within the Confederation by both local and international companies. Orbital stock exchanges deal heavily in technology companies that are engaged in manufacturing, and research and development. Venus is unique in that it provides another exception to rules regarding exchanges; because of the vast financial resources and services offered by various Venusian corporations, Venus is home to a large venture capital exchange that exists for the sole purpose of helping to raise capital for new or expanding businesses. Some people who have tempted fate on this exchange have compared the experience to dealing with loan sharks, but for every complaint there is equal or greater praise for the exchange.

◇ COMMODITY EXCHANGES

Brokers that buy and sell commodity contracts on the commodity exchanges are seeking to obtain resources for the lowest price, or to obtain the highest price for their resource. The purchase of the right contract at the right time by a shrewd broker can save a company millions of credits as supply and demand forces the cost of resources higher. Companies can also generate a large profit by buying contracts low and selling them high.

The Mercurian Merchant Guild maintains the largest commodity exchange in the Solar System within the Mercurian capital, Helios Station. The exchange trades in a wide range of commodities, namely anything carried aboard Guild sailcraft. Since Guild spacecraft are considered to be an extension of Mercurian territory (much like an embassy), many Guild captains will purchase cargo at one port, sell the contract through the Guild exchange, and then move the cargo to its final destination for the additional transportation fees on top of the contract price. With the Merchant Guild moving a large percentage of international trading goods, it was only natural that the exchange develop here. Buyers are also accepting of what might technically be called a violation of primary commodity trade rule due to the convenience of finding whatever one might need or want at a single point.

The largest resource commodity exchange in the Solar System is located in the Jovian state of Olympus. Mineral contracts and organics from the Belt to Saturn cross the boards of this exchange. By far, the largest and most numerous contracts are for volatiles and hydrocarbons destined for the inner Solar System. Also, in addition to its large mining operations, the asteroid Vesta is home to a commodity exchange that deals exclusively with independent prospector contracts for asteroid rights and resources from Nomad operations.

MANUFACTURING ▼

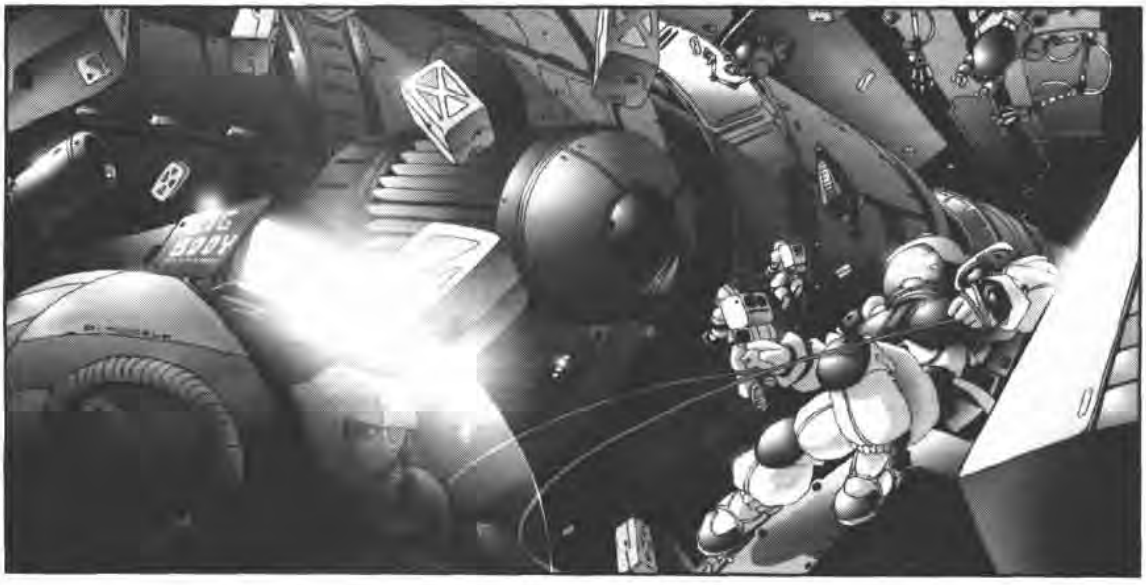
4.1.5

Automated factories, or autofacs, are responsible for the majority of manufacturing output in the Solar System. While many of the other processes for supporting life outside the Earth's atmosphere require regular or constant human supervision, autofacs work in an almost completely autonomous fashion. The majority of human involvement involves the setup of the autofac and the movement of raw materials and finished products to and from the autofac. Technicians will occasionally perform maintenance and equipment upgrades, but there is little else to do other than check what might be wrong if the autofac's systems report a problem.

The people that create the templates, build the autofac tools, set up the autofac production lines and maintain the autofacs are highly trained and extremely well-paid individuals — 70,000 credits/year for junior technicians to more than 1,000,000 credits/year for template design engineers. The production lines of an autofac are modular by nature, but the cost of setup, or changeover to a new product, means that only products destined for long term production, or requiring special production methods, are manufactured in autofacs; everything else is produced by traditional automated production, assembly line and hand-assembly methods. Some of the production line tools in an autofac are large and complex enough that they will never be moved, and will only be shut down for heavy maintenance.

Each autofac has a raw materials delivery dock on one end, and a finished-products dock at the other end. Both docks also allow personnel access to the interior for maintenance and setup activities. Since there is no permanent human presence on an autofac, autofac are under zero gravity conditions at all times. This also makes it possible for the installation of large access doors along the exterior of the autofac to move production line equipment into and out of the autofac during setup, heavy maintenance or upgrades. Production lines within the autofac may or may not be self-contained to a single item. In many cases, the lines intersect each other to bring together the constituent parts for final assembly. In the case of autofacs used for processing resources, separate processes are located in different lines that split from a single, common materials feed. The only consistent fact of autofac internal layout is that every autofac will differ, even among autofacs producing the same or similar products.

Autofacs are rated by the maximum and minimum number of production lines it can operate, and by the rate of production per day in kilograms. Thus, a 24/12-5000 autofac can produce up to 5,000 kilograms of product on 12 to 24 production lines. Since each line is producing something different, or different parts for final assembly, the amount of raw materials required to complete the process from one end to the other will vary widely. For example, two items may both be created on a 10/15-8000 autofac using three production lines each, but one product may require 2,000 kilograms of raw materials each day, while the other might require only 1,500 kilograms of raw materials per day. Templates and tools will cost between one hundred to one thousand times the production cost of a single item.



▼ RETAIL STORES

Within each nation there are numerous retail chains that offer items to consumers, but there are no truly international chains. Differences in local suppliers, trade and corporate regulations prevent single corporations from effective operation. There are, however, multi-national conglomerates that control different retail chains in different nations that vary across the spectrum of products offered. Entertainment products and services, electronic hardware and software, clothing, transportation, and a variety of common miscellaneous items are all sold by retail stores. More generally, anything that is widely available and produced in large quantities is sold by medium to large retail stores.

There are also many smaller, independent stores that provide a variety of products and services to the consumer. A majority of these businesses deal in specialty items, but there a few smaller shops that can compete with large retail chains through a combination of price, location and service. The primary reason that many people shop the smaller retailers is the service and quality. Many independent retailers also operate as cooperatives where a few full-time staff sell the items produced by part-time contributors. A wide range of cottage industries also provide clothing and other similar products to retailers on a consignment basis. Overall, the products and services are varied, and fill niche markets not covered by larger retailers.

◇ THE BLACK MARKET

The black market is a term for irregular trade avenues that deal in all sorts of goods from simply unavailable or scarce commercial items to illegal weaponry and technologies. Items that can be legally bought and sold in the open, but that are much scarcer in an area (or were stolen), are the most common items available from pawn shops or the friend of a friend of a friend in an alleyway somewhere. The sale of such items is not always illegal, but the prices paid for such items range anywhere from 50% to 500% of the normal selling price. Anything that is illegal to own or sell without a permit is likely available on the black market; one just has to find the right person.

Anyone involved with buying and selling on the black market is patently paranoid about law enforcement officers. Anything less means a short business life as the police or SolaPol quickly swoop in to haul the offender off to be subjected to varying degrees of punishment, depending on the nature of the materials bought or sold. With the tensions between the superpowers of the Solar System, the black market is awash with illegal weapons of all sorts as arms shipments and other items go missing. This has led to increased efforts by SolaPol and other agencies to stifle the flow of illegal goods to black markets.

◐ LEGALITY

Combining the Restriction Class (*Customs and Immigration*, page 28) of an item with its Violation Level provides a Legality Code. The Violation Level of the Legality Code is set depending on the perceived severity of any unlawful, damaging, or dangerous act that can be committed with the item. While it may seem unnecessary to do so with some apparently benign items, troublemakers can always find ways to cause problems with even simple items. Manufacturing any Class A, B, C, or D restricted item without the permission of the local government is universally illegal. The penalties for unauthorized manufacturing are usually one or two levels above the Violation Level of the item being possessed, bought or sold. Legality and Availability are covered in greater depth in the **Space Equipment Handbook**.

◫ VIOLATION LEVEL

VIOLATION LEVEL	PUNISHMENT
Level 0:	No violation
Level 1:	1d6 weeks community service; therapy with personal psychiatrist; repayment of damages; 1d6 months probation
Level 2:	minor fines; 1d6 months community service; extensive therapy with psychiatrist; any combination of above; 1d6 years probation
Level 3:	1d6 months incarceration in rehabilitation center; large fines; charge entered on permanent record
Level 4:	1d6 years incarceration in rehabilitation center; huge fines; charge entered on permanent record
Level 5:	permanent incarceration (25 to 50% chance of parole after 10+1d6 years)
Level 6:	permanent incarceration; no parole; death (if applicable)

WORKING BETWEEN THE PLANETS ◄

The many vessels that travel between the planets conduct trade and warfare between the nations of the Solar System. Most of the people that crew these ships have lived their entire lives without a planetary surface under their feet. It takes a certain kind of person to want to live without gravity for long periods, to live in a small enclosure, to deal closely with the same people day after day, and to undertake the daily repetitive tasks of life aboard ship.

As with any organization, there is a chain of command to pass information and direct the actions of those down the chain. The normal chain of command has the commanding officer at the top. The executive officer reports to the commanding officer, and is in charge of the bridge crew and the department heads, and any miscellaneous personnel not attached to a department. On commercial vessels there are normally only two departments: Engineering and Cargo. Passenger vessels will add a third department, Hospitality, for the stewards and other crew that take care of the passengers. Engineering is responsible for the maintenance of ship, and is directed by an engineer with technicians reporting to him. Ships with larger crews will have an engineer and technicians on each crew shift. The Cargo department is responsible for the loading and unloading the vessel's cargo and supplies. They also take part in any extravehicular activities, in which case they are technically on loan to the Engineering department. Finally, the Hospitality department has lots of different duties that keep them busy with the passengers and crew.



LIFE ABOARD SHIP ▼

Daily life on a ship is really no different than life anywhere else in space. A person's quarters are close to their place of work. All the normal facilities — quarters, mess hall, recreation and entertainment — are available on a ship, but are smaller compared to the same facilities found in larger artificial environments. This gives a person a certain sense of familiarity, even if the difference in scale is very noticeable. Routine is the rule on a ship; certain duties and responsibilities are repeated on a daily basis. It is extremely hard to break the monotony of routine, but most crew members will have their own methods for coping and varying their routine.

Much of the time spent onboard the vessel is spent in the company of others. The close confines of a ship environment quickly teach people how to get along with just about anyone. Anyone who cannot deal with the "flaws" of another person will likely never find work on a vessel again. This close contact also provides an intimacy that draws people to each other. Whether that relationship proceeds beyond casual friendship depends on the persons involved, but romances between the planets are not a rare thing, either. A person's private quarters are considered inviolate; any person disturbing another's solitude, without sufficient reason, may be firmly asked to leave immediately. Repeat offenders are likely have their employment terminated, since a captain can hardly have someone regularly antagonizing the other crew members without it affecting performance.

It is not unheard of for entire families to be part of a ship's crew. Young families are normally only involved in situations where near-constant gravity is available so that their children are not adversely affected. Once the children have become teens, families may venture into new opportunities. Dedicated family quarters are normally only available on larger vessels, but families on smaller vessels will simply occupy smaller, adjacent quarters. Schooling for young children is mostly classroom-oriented, but as they grow, education includes increasing practical experience. The most common result is that the children follow a similar path as their parents after short period of rebellion to help establish something of their own identity.

4.2.1

▼ CREW POSITIONS AND DUTIES

The composition of the crew on each ship varies according to its class, and its function. The normal bridge personnel complement includes the captain, first officer, navigator, helmsman and an electronic-emissions specialist. The rest of the crew is usually composed of engineers and a staff of technicians and bosuns. Depending on the function of the vessel, EVA specialists, stewards and any number of possible positions are necessary to operate a vessel. Vessels with smaller crew complements will often combine or overlap positions. (Since military crew positions and duties are detailed in the **Ships of the Fleet** sourcebooks, their duties are not duplicated here. The positions detailed here are strictly from the civilian point of view.)

◇ CAPTAIN & FIRST OFFICER



The captain of a vessel is the person ultimately responsible for everything that happens onboard the ship placed under their care. The conduct of the vessel through space, compliance with international and local regulations, crew safety and actions and the state of the vessel are just some of the many things a captain is occupied with while the vessel is in operation. Since it is not uncommon for the vessel's owner to also be the captain, there are numerous other tasks that are the concern of the captain, such as refits, fuel, cargo rates and all the aspects of running a business. A common career background for a captain is either as a senior bridge crew member or engineering department head, with the former being the most common.

The first officer is responsible for the day-to-day operations of the vessel. The heads of each department report to the first officer, who reports any pertinent information to the captain. The first officer is responsible for finding the right people to fill the various positions aboard the vessel, usually in consultation with department heads. Crew quarter assignments and duty schedules are made by the first officer. When the captain is not present on the bridge, the first officer (or the next most senior bridge crew member) is in command. When docked at a port facility, the first officer must be on the ship if the captain is not on the ship.

◇ NAVIGATOR & HELMSMAN



The navigator and helmsman are not always the same person, but the two positions are very similar and often interchangeable on the smaller ships. Both positions require a thorough knowledge of basic physics and space navigation methods and procedures. In addition to basic course plotting duties, the navigator is responsible for ensuring that flight plans are filed before departure, that said flight plan is respected and that any deviations are reported quickly and efficiently to authorities; the navigator also alters the flight plan as necessary to account for changes in mission or destination. The helmsman is responsible for ensuring that the flight plan is followed, that all necessary maneuvers are carried out in the proper manner, and that all flight systems are operating properly. He carries out the captain's or first officer's flight directives and handles crucial maneuvers such as docking.

◇ ELECTROMAGNETIC EMISSIONS SPECIALIST



The electromagnetic emissions (EME) specialist is the person responsible for operating and maintaining the eyes and ears of a vessel — the sensor and communication systems. On some larger civilian vessels, and on most military vessels, this position is actually divided into two positions that take care of sensors and communications, respectively. The EME specialist is stationed on the bridge of the vessel, ensuring that the space within reach of the vessel's sensors is safe to traverse. The EME specialist also ensures the flow of information between the vessel and the rest of the Solar System. All incoming and outgoing communications traffic must be logged, and possibly checked, to ensure proper use of this vital resource. On smaller vessels where personnel are limited, the EME specialist is also responsible for the maintenance and repair of the vessel's sensor and communication equipment.

EXTRA-VEHICULAR ACTIVITY SPECIALIST & BOSUN ◇



Extra-vehicular activities (EVA) specialists commonly undertake inspections of, and repairs on, a vessel's exterior, or transfer equipment and supplies between vessels. The EVA specialist is trained not only in a specialist field (like a technician), but also to perform in a zero-gravity environment effectively and efficiently. This involves a thorough knowledge of spacesuit use, M-pod operations, airlock operation, numerous safety procedures and the intricacies of moving in zero-gravity.

A bosun is responsible for the maintenance of the vessel's hull and structural framework. Often having cross-training in other technical areas, much of the bosun's time is spent outside the ship inspecting the hull and frame, and patching cracks and abrasions caused by debris and stress. A common part of the bosun's job is also the maintenance of the vessel's point defense systems. Since a lot of the work a bosun performs is exterior, they are experts at EVAs. This means there is a lot of double duty; when not performing their own set of tasks, bosuns and EVA specialists often assist each other.

ENGINEER & TECHNICIAN ◇



An engineer is trained to have a detailed understanding of the vessel's systems as a whole. The majority of an engineer's time is spent monitoring the vessel's plasma chambers and other vital systems. If an engineer is not directly involved with vessel operations, maintenance, repairs, or modifications, the engineer is supervising someone who is involved in such activities.

Technicians are the "mechanics" of a vessel's many systems. Whether the technician is trained to maintain mechanical devices, electrical systems, computer systems, or auxiliary craft, a technician's shift is filled with numerous tasks related to their area of expertise. Given the level of integration between systems, most technicians have some multi-disciplinary training to efficiently carry out their tasks.

SECURITY SPECIALIST & STEWARD ◇



One of the unpleasant facts of living and working in the close confines of a vessel is that small problems can become big problems. The security specialist has numerous duties that involve ensuring the safety of crew, passengers and cargo. More commonly found on vessels with large crews or carrying passengers, the security specialist's primary duty is to enforce discipline. If there is a physical conflict, they are responsible for separating and confining the combatants until the captain takes disciplinary action. The security specialist's training also means he is responsible for coordinating and conducting any defense against someone attempting to board the vessel in open space.

Since the captain or owner of the ship is also responsible for the conduct of their crew, any crew member caught smuggling contraband is not the only one affected by the law should they be caught. The security specialist, therefore, acts on behalf of the rest of the crew to ensure compliance with the laws of any port nation. A law enforcement officer is not always available to investigate a crime that takes place in space, so in such cases, the security specialist will begin the investigation until it is handed over to another agency.

While more common aboard passenger vessels, stewards are also found on other commercial vessels. Small vessels will have crew rotate food preparation duties, or the crew will stock the galley (a small kitchen and mess area) with pre-packaged prepared foods. Larger vessels, with their correspondingly larger crews, will have a steward to prepare meals and coordinate leisure activities for the crew. (For more information, see the Steward archetype on page 74).

▶ DOCKING FACILITIES



Docking facilities are the ports of call of the 23rd century. Whether the ship is there to deal in passengers or cargo, or overhaul the ship's systems, a stop at a docking facility usually means some downtime for the crew where they can stretch out without worry. As such, most docking facilities have recreation areas where crews can relax in a less confined atmosphere. Passenger facilities commonly include temporary quarters provided by the passenger service if they are waiting to make a connection to another ship, though passenger facilities are usually only a small part of the docking facility's function. Cargo storage is commonly limited to supplies required for facility operations, with dedicated cargo facilities dealing with larger cargo volumes on a daily basis. Maintenance facilities vary from simple parts shops to being capable of conducting full refits. The following section describes the common docking facilities according to their major use.

▼ REFUELING PORTS

Refueling ports, or fuel depots, are usually single, or several, small- to medium-sized asteroids with high volatile content placed into various orbits about the Sun and planets. Also called cyclers, these asteroids carry automated systems that process and store volatiles for future use by a visiting ship. Fuel depots are also created by concurrently mining minerals and removing the volatiles to storage within mined sections of the asteroid. High-traffic orbits will have several cyclers available with multiple fueling stations. A ship requires an access code in addition to the orbital information for the a designated fuel depot. Nomads are frequently contracted to maintain the automated production facilities on these cyclers.

The Jovian Confederation has established the greatest number of fuel depots in the Solar System. In addition to regular shipments of hydrogen to the Trojans from the Jupiter gas mines, the Jovians regularly contract Nomad groups to create roving refueling ports within the large amount of space the Confederation controls. The JAF has numerous refueling ports hidden within the asteroid belt, as do the CEGA Navy and CVNA. Military fuel depots often have stores of munitions and supplies in addition to the fuel stores, so they are often equipped with automated defense systems. Most military depots also have extensive sensor suites for collecting intelligence about local traffic.

▼ SKYHOOKS

Skyhooks are a cheap way of defeating the effects of gravity to move goods between the surface of a planet and space. Instead of extending all the way to the planetary surface, skyhooks are space stations with long tethers that end inside the upper atmosphere to allow jet aircraft to bring items to the end of the skyhook; the cargo is lifted to the transfer station (TranStay) or orbital port (OrPort), and cargo is also brought back down. Cargo is commonly moved to a cargo dock (see below) from the TranStay to minimize low priority traffic around the TranStay since there is limited space around the structure. The orbital port (OrPort) is the most common docking point for ships since it has a higher-velocity orbit compared to the TranStay (i.e. a ship does not need to slow down as much). Refer to **Mechanical Catalog 2**, pages 82 to 87, for more information about skyhooks.

◐ NOMAD SETTLEMENTS

Nomad settlements operate zero gravity docks unless they are located with an asteroid large enough to have its own small amount of gravity. The lack of rotation in many Nomad docks negates the need for any complex maneuvers, thus saving on precious reaction mass. The number of docking stations available will depend on the size of the settlement and the amount of local space traffic. Settlements with a large number of docks act as supply and trade centers for the surrounding settlements, as well as various corporate and independent prospectors and miners. Only permanent settlements have docks capable of being pressurized, so the most common docking station is a simple docking arm. Those settlements with large, pressurized docks often specialize in ship maintenance and refit services that other settlements trade supplies in exchange for.

COLONY CYLINDER DOCKS ▼

4-3-3

All colony cylinders have at least one dock located at the end of the cylinder. This dock can rotate with the rest of the cylinder (thus operating in a low gravity environment), or it can counter-rotate to leave the dock in zero gravity (allowing large ships admission.) Low-gee docks have several smaller doors to allow access to numerous berths within. Zero-gee docks have a large main door with two to four smaller doors around it. Whether a colony cylinder has one or two docks makes little difference to the amount of traffic it handles; the docks are perpetually busy with supplies and people arriving and departing the cylinder. This means the dock doors are rarely closed unless the docks are also closed. All docks are capable of being pressurized, but this rarely done.

Low-gravity docks are most often used for passenger traffic and small cargo transfers, including all regular inter-colony shuttle flights, since the low gravity conditions facilitate faster passenger and cargo transfers. Incoming ships match rotation and enter the dock through the doors. Once the ship is inside, a docking frame is extended to the ship, capturing and withdrawing the ship to a low-gee docking slip. Low-gee docks generally have between 100 and 200 bays of varying sizes.

Zero-gravity docks do not require the use of heavy docking frames to secure ships, so the only true limitation to the size of the ship is whether it fits within the docking bay. A ship is secured with docking arms before personnel access corridors are extended to the ship's airlocks. Zero-gee docks often have external docking arms and access corridors available for ships too big to enter the docking bay.

CARGO DOCKS ▼

4-3-4

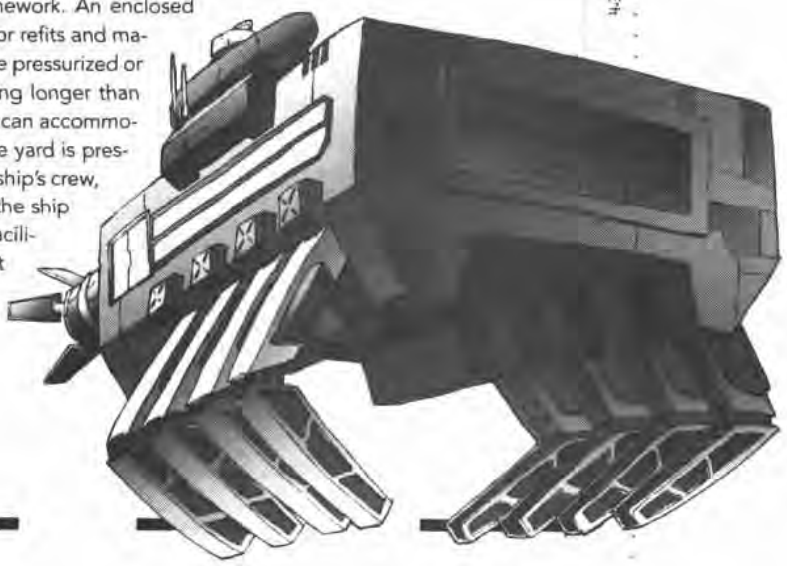
Cargo docks are open structures with multiple spines for securing cargo containers until transfer to their next destination. At some point on the perimeter of the dock are attached habitat and hangar modules with offices and equipment for the personnel that operate the dock. The hangar usually has room for six to twelve cargo M-pods. Multiple airlocks are available for personnel in MMUs that work around the dock. An extendible docking arm is also part of the habitat for securing cargo ships. Additional docking arms are located off the end of the container spines. Supply depots are cargo docks that act as cargo storage facilities instead of cargo transfer facilities. (Refer to Yggdrasil-class space station in **Mechanical Catalog 2**, pages 82 to 87, for more information about supply depots.)

A typical cargo yard is constantly loading or unloading cargo vessels, and when there are no vessels to move cargo for, the yard is moving cargo to and from its local destination. Since not every ship needs, wants, or is allowed to dock at the cargo's destination, the cargo yard simplifies the process of cargo delivery. Once the cargo is offloaded, it waits for an OTV to pick it up along with the cargo of other ships. The owner of the yard usually buys the delivery contract from the vessel in question and consolidates the shipments. Managing to run a yard profitably is one of the most difficult business challenges in the Solar System. It is not surprising that these cargo yards are often corrupt, owing their success to a special relationship with a colony dock master or some similar underhanded deal. This technique allows for a much greater flow of cargo and a manageable flow of cargo ships.

SHIPYARDS ▼

4-3-5

A shipyard is either an enclosed structure, or an open framework. An enclosed shipyard is most often used for assembling small vessels, or for refits and major repairs of larger vessels. The enclosed shipyard can operate pressurized or unpressurized, but it is usually only pressurized for jobs taking longer than one month. The largest enclosed yards will have airlocks that can accommodate small vessels and the transfer of large components if the yard is pressurized. Relatively minor repairs are easily accomplished by a ship's crew, but extensive repairs or refits to existing equipment require the ship to dock at a shipyard. Not all shipyards are large, immobile facilities. Ships like the Jovian Armed Forces' Gagarin-class fleet tender and the CEGA Navy's Detroit-class fleet support ship are capable of handling these repairs in the field, being mobile shipyards in their own right.



▶ EXTRA-VEHICULAR ACTIVITY

Extra-vehicular activity (EVA) involves leaving the confines of an artificial environment for a journey across non-Earth landscapes or through the void of space. The two constants of EVAs are spacesuits and airlocks—the first is required for survival and the second is required for access. M-pods are another common component of EVAs around colony cylinders and vessels (where they are used for construction and maintenance), shipyards and cargo docks (where they are used for moving materials), and during travel and exploration trips (where they are used for moving and using large pieces of equipment).

It has long been standard practice to have the atmosphere in space habitats use lower than Earth-normal air pressure. Along with advances in materials and spacesuit design, the user can simply get into a spacesuit and enter an airlock to begin an EVA. (The pure oxygen atmosphere used in 20th and early-21st century suits required the user to pre-breathe oxygen for many hours to avoid decompression sickness.)

There are two safety rules for EVAs that are considered sacred: 1) one should never leave the airlock alone, and 2) someone else must double check one's suit before entering the airlock. While the first is not always possible in some circumstances (requiring extra caution and attention by the person involved), the second rule is never violated except in extreme emergencies.

▼ SPACESUITS

Spacesuits are worn whenever people leave the artificial environment in which they live. Each suit is fitted to the wearer using modular, interlocking pieces: a helmet, torso, arms, gloves, legs, boots and mission pack. It is normal practice to leave the boots attached to the legs and the arms and mission pack attached to the torso, in order to make getting into the spacesuit easier. A control pad is mounted on each forearm. The control pad consists of a small display screen with selection buttons around the perimeter of the screen. A suit systems monitor also reports any internal systems malfunctions.(See the **Space Equipment Handbook**, pages 11 to 18, for more information about spacesuits and their options.) The following table describes the control pad menus with functional descriptions.

◫ SPACESUIT CONTROL PAD MENUS

MAIN MENU	MENUS	BUTTON(S)*	FUNCTION
Control	BodyTemp	Head, Torso, R. Arm, L. Arm, R. Leg, L. Leg, +, -	Set the temperature for different areas of the body
	Gas	+, -	Controls the rate at which the atmosphere is cycled through the suit
	Test	None	Pressure Test: Displays pressure reading and recommendation about suit integrity
Comm	Preset Freq	Select from listed preset frequencies	Press to select a pre-programmed communication frequency
	Select Freq	KHz, MHz, GHz, +, -	Displays current frequency
		Scan	Select any active frequency in the selected band. Press again to skip to the next active frequency.
		Preset	Switches to the Preset Freq screen to select the preset slot for the current frequency
	Mode	PTT	Push to Talk: requires the user to press the PTT button to transmit
		VOX	Voice Activated: transmits everything the user says in a normal voice
		OPEN	Open Channel: transmits everything (open line)
	Hardline	Open, Close	Activates the hardline communication connection using the current Mode
Monitor	Gases	None	Displays minutes left at current rate of consumption
	Radiation	None	Displays current accumulated exposure and rate of exposure
	Body Temp	None	Displays body schematic with relative temperature by color
	Power	None	Displays minutes left at current rate of consumption
	Diagnostics	None	Displays minutes left at current rate of consumption
Hardware	(Body Location)	Variable	Sub-Menus and displays depend upon the installed systems
	MMU	Remass	Displays amount of reaction mass available as numbers of activations remaining
		Enable VOX, Disable VOX	Turn voice commands on and off
Emergency	Beacon	Activate, Deactivate	Press and hold five seconds: turn the suit's emergency locator on and off
	Purge	Yes	Press and hold five seconds: purges the suit's atmosphere and then replaces it
	Reset	Oxygen, Remass, Temp, Rad	Silences and resets alarm
Lock	Lock	None	Press and hold five seconds: lockout control pad functions
	Unlock	None	Press and hold five seconds: restore control pad functions

*Note: Each menu has a button designated as "Previous" to return to the previous menu screen.

USING A SPACESUIT ◇



Before suiting up, the wearer checks the entire suit for physical damage such as tears, punctures, dents or deep scratches. The wearer also checks that the locking rings at the shoulder and ankles have proper seals. The locking rings at the wrist and neck are checked by test-fitting the gloves and helmet. The mission pack has gauges for direct readings of gas, power and coolant gel levels that the wearer can check before using a spacesuit. A supply line is also connected to the mission pack resupply socket to ensure that the mission pack is fully charged. Of course, if there is any damage to the suit, or the gauges are providing incorrect readings, the wearer will deactivate the suit, attach a warning label, and move the suit to a maintenance area.

The main airlocks are usually in an area of low or zero gravity, so the weight of the suit is minimized, making it easy to suit up when alone. Stored in a room next to the airlock, the torso/mission pack are stored in a rack along a wall where the wearer can stand up into the torso and arms. Due to the low gravity, the legs and boots are stored standing up next to the torso rack, so that the wearer can simply lower himself into the lower half. The locking ring at the waist is secured. The helmet is attached next, followed by the gloves.

An overpressure test is available to check for leaks. Using the suit control pad, the user simply chooses the "Control" menu, and then "Test." The suit's internal computer will ask for confirmation; it will then pressurize the suit to 48 kilopascals (14 kilopascals above normal pressure) and wait for two minutes. If the suit's internal pressure does not drop during that time, the suit is properly sealed, and the internal pressure returns to the ambiant one.

AIRLOCKS ▼

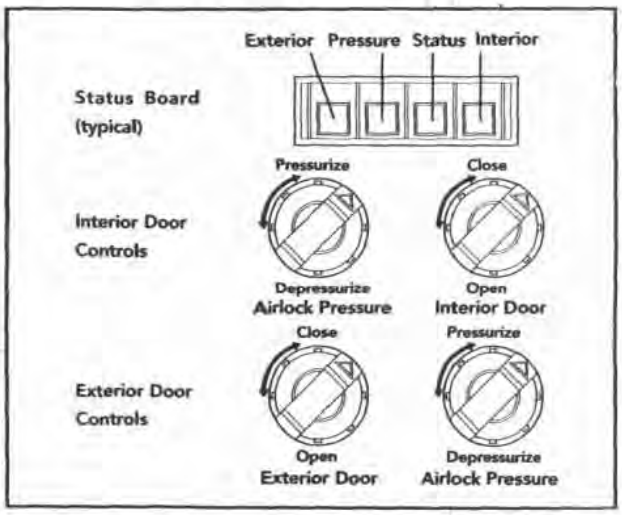
4.4.2

An airlock is used as an entrance and exit between a pressurized environment and an unpressurized environment. An airlock door is composed of two sections; one section opens into the airlock while the other opens in the opposite direction. Each door section is wide enough to allow an individual wearing a spacesuit to pass through. This helps prevent depressurization accidents since the sections reinforce each other, plus the opening caused by a section failure is smaller and easier to repair. The airlock door is opened and closed automatically from the controls for that door. There is also manual system recessed within each door section if power fails.

Each door has a set of controls located next to it on both sides. Each set of controls has an indicator panel, pressurization control and a door control. The door control is located on the right side of the airlock door, next to the door section that opens into the airlock. In case of a power failure, the airlock has an independent power supply that runs the indicator lights and pumps. The indicator panel displays the positions of the doors, airlock pressure level, and the operating status of the airlock using colored lights. The lights are solid or flashing red and green, and in one case solid yellow, as noted in the table below.

AIRLOCK CONTROL PANEL ◫

INDICATOR	COLOR	STATUS
Exterior/Interior	Solid green	Door closed
	Flashing green	Door closing
	Solid red	Door open
	Flashing red	Door opening
Pressure	Solid green	Airlock pressurized
	Flashing green	Pressurizing airlock
	Solid red	Airlock depressurized
	Flashing red	Depressurizing airlock
Status	Solid green	Airlock operating normally
	Solid yellow	Airlock using emergency power
	Solid red	Airlock currently in use



◇ DEPRESSURIZATION SAFETY

Several safeguards are in place to prevent depressurization accidents. The exterior door cannot be opened if the airlock is pressurized, and the interior door cannot be opened if the airlock is depressurized. The airlock will not pressurize if the exterior door is open, nor will it depressurize if the interior door is open. If one door is opened, the second door will not open until the first door is closed; if a door is opened from outside the airlock, the second door will only open from inside the airlock, and vice versa. If an emergency is declared, the airlock will switch to emergency mode and allow override of these safeguards. To do so, the switch is activated at least three times in rapid succession, and then left at the desired operating position.

Within the airlock are resupply and recharge lines for filling mission pack expendables and MMU reaction mass. This allows EVA workers to quickly recharge before returning to work, without having to fully reenter the habitat. Also located within the airlock are emergency spacesuits and survival bubbles. Some airlocks have cradles for storing MMUs. Airlocks regularly used by maintenance or construction workers will also have tools and equipment stored in lockers.

▼ MAINTENANCE PODS

Maintenance pods, or M-pods for short, are large manned maneuvering units with all the options. M-pods have, at minimum, one set of manipulator arms, with the most common configuration being one pair of heavy and one pair of light manipulators. Higher thrust and larger reaction mass reserve allow M-pods to move larger, high mass equipment that would not be efficient to move using MMUs. One of the common uses for M-pods is to maneuver and hold large pieces of equipment for spacesuited workers while they work on or install the equipment. The advanced control system of an M-pod takes into account the change in overall center of mass when moving items. All movement commands are executed according to the center of mass of the M-pod and cargo combined. Each M-Pod is equipped with a heads-up display that provides information about the pod's motion and orientation, the position of the manipulator arms, and objects in close proximity to the pod.

◇ M-POD OPERATION

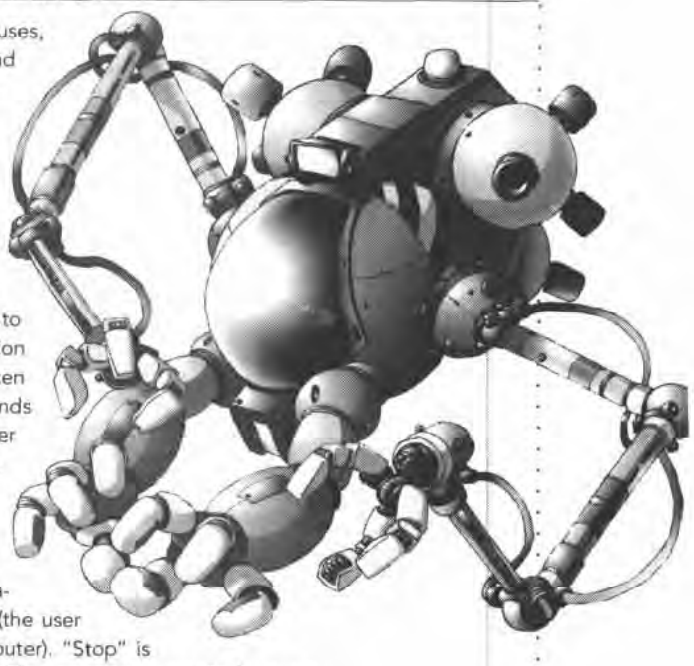
M-pods are operated in a manner similar to MMUs. (See the **Space Equipment Handbook**, pages 67 to 69, for more information about MMU operation.) Instead of temporary switches like an MMU's controls, the M-pod has a pair of joysticks to control its movement, with the right stick controlling movement along the M-pod's axes and the left controlling rotation about the axes. Numerous buttons and switches on the joysticks can be programmed to accommodate hands-free operation of M-pod systems. Beside the joysticks are waldo gloves; these control the manipulators by mimicking the motion of the pilot's arms. The thumb, index finger and middle finger are used to control fingers and thumb on the manipulator, while the ring and little fingers have access to several programmable buttons.

The controls for MMUs are standardized between every model of MMU manufactured in the Solar System. A temporary switch is tied to each of the six movements that a MMU performs: rotation about the x-axis (roll), y-axis (pitch) and z-axis (yaw), and movement along the x-axis, y-axis, and z-axis. (By default, the left hand controls rotation and the right hand controls translation; however, the user can reverse the movements controlled by each hand.) A failsafe switch is included with the controls to ensure that the MMU does not activate when a switch is unintentionally pressed. The most common control used is a large rocker switch that releases a controlled burst of reaction mass, producing a small fraction of a gee acceleration. The switch must return to the neutral position before another command is activated. This activation method allows for great control since a single burst that starts a motion in one direction is stopped by a single burst in the opposite direction.

◘ M-POD CONTROLS

JOYSTICK ACTION	RIGHT JOYSTICK	LEFT JOYSTICK
Forward	Movement forward	Pitch down
Rearward	Movement backward	Pitch up
Right	Movement right	Roll right
Left	Movement left	Roll left
Twist Right	Movement up	Yaw right
Twist Left	Movement down	Yaw left

M-POD VOICE COMMANDS ◇



Voice commands are given in a specific sequence of commands with pauses, and no other sequence will activate the system. First, the voice command system is brought to an active state by the spoken word, "Move," informing the system that the movement command and parameters will follow. Since speaking normally opens communication channels, an active voice command system temporarily routes all speech through an internal buffer that filters conversations to avoid accidental activations. The next word spoken is the actual command the MMU will perform. Some commands also require parameter information, following the command word, to function. The *Voice Command* table summarizes each command and its parameters. Parameter options are divided by slashes to indicate the options available; commands with parameters will not function without the proper parameter information. In case a command is misspoken or incorrect, "Cancel" will clear the command sequence queue. Commands are executed one at a time in sequence (i.e. the user can give another command while the M-pod executes the first command sequence in the queue).

The standard commands encompass a variety of control issues that can be very hard to overcome without a great deal of practical experience. "Stabilize" provides the user with a quick and easy way to stop any rotation, especially rotation that results from the use of the manipulators (the user must have already defined a point of reference for the M-Pod's computer). "Stop" is another useful command to quickly arrest the movement caused by outside personnel or manipulator use. Advanced voice commands allow for normal movements with precision control via an inertial navigation control system. Provided the motion command and a motion parameter, the navigation system moves the user as specified. "Translate" moves the user along one of the three axis that defines a direction relative to which direction the user is currently facing. Translation along the "X"-axis moves the user forward ("Plus") and back ("Minus"). Translation along the "Y"-axis moves the user right ("Plus") and left ("Minus"). Translation along the "Z"-axis moves the user up ("Plus") and down ("Minus"). "Rotate" turns the user about one of the three axis. Rotation about the "X"-axis turns the user on their side, turning to the right ("Plus") and left ("Minus"). Rotation about the "Y"-axis rocks the user forward ("Plus") and backward ("Minus"). Rotation about the "Z"-axis spins the user right ("Plus") and left ("Minus"). The "Hold" command cancels any an rotation about, or translation along, a specified axis. The "Rapid" command is used in place of the "Move" command to specify that the MMU carry out the maneuver at quickly as possible, thus consuming reaction mass at quadruple the normal rate (four BP per one MP).

VOICE COMMANDS ◘

COMMAND	ACTION	COMMAND SYNTAX
Move	Prepares system to receive commands	"Move."
Cancel	Clear command sequence queue	"Cancel."
Stabilize	Stops any rotation about axis	"Stabilize."
Stop	Zeroes relative motion along axis	"Stop."
Command	Turn voice command movement on/off	"Command. Activate/Standby/Deactivate."
Translate	Shift along an axis	"Translate. X/Y/Z. Plus/Minus (distance in meters)."
Rotate	Rotate a fixed arc about axis	"Rotate. X/Y/Z. Plus/Minus (number of degrees)."
Hold	Maintain absolute position	"Hold. Lock/Unlock."
Rapid	Perform high energy movement	"Rapid. (Command). (Parameters)."

EXAMPLES OF VOICE COMMANDS ◘

"Move. Translate. X. Plus five."	Moves the user five meters directly forward
"Move. Rotate. Cancel."	System prepares to rotate, but the command is cleared by the user
"Move. Stop."	M-pod brings the user to a complete stop gradually
"Move. Rotate. X. Plus 90."	Rotates right, perpendicular to original orientation, but still facing in the original direction

▶ SPACE CONSTRUCTION

4.5



From Humankind's earliest days, it has built all manner of things; this has not changed in the 23rd century. New colony cylinders, stations, ships and habitats are continually under construction throughout the Solar System. Automated factories (see *Manufacturing*, page 43) provide the finished materials and parts to build habitats and ships. In the case of surface structures, finished materials are produced in orbit and brought to the surface, or they are produced on the surface using native materials. To help in the construction of Nomad settlements in the Belt, a consortium of Nomads built and continues to operate a number of mobile autofacs that travel the Belt to produce required materials for Nomad settlements on-site.

▼ COLONY CYLINDER

4.5.1

Colony cylinder construction begins at one end of the structure, usually the end with the stationary (low gravity) docks. The main structural skeleton of the cylinder is the first thing to be assembled. As the skeleton progresses, a follow-up crew begins to install the machinery located between the skeleton members. Following the machinery installation, the outer layers of the cylinders skin are applied. Interior foundation decking and shielding is installed over the skeleton and machinery. Before the far end is capped, thousands of containers are stored within the cylinder to finish the interior. It is common practice to install the raised monorail pathways through the cylinder interior as the cylinder skin is installed. The monorail system is the first fully functional component inside the sealed cylinder, being used to move work crews and materials inside the cylinder. Thermal radiators, communication arrays and life boats are also installed on the surface of the cylinder as the exterior surface is completed. For Vivarium cylinders, the sunline is assembled as the skeleton is almost assembled. Segments of the sunline are produced prior to installation within the cylinder.

Once the main body of the cylinder is completed and sealed, a pressure test is conducted to check for leaks and test the operation of the life support system. After the leak check, the cylinder is brought up to normal pressure so the crews can work without spacesuits. The cylinder is also spun up to produce a low gravity environment to simplify work without requiring all the machinery necessary at normal gravity. Work crews begin by assembling standard living quarters. Once these are assembled, and other supporting structures are built, the construction crews will continue to live within the colony cylinder until the interior is completed. As quadrants of the interior are completed, the citizens of the new cylinder begin moving into the cylinder. This provides additional services to the crew, with the new citizens often spending their free time helping to finish landscaping and other odd jobs within the cylinder.

▼ SHIPBUILDING

4.5.2

A typical shipyard is located near the autofacs that produce the ship components. The components are then delivered to the shipyard for final assembly. Open-framework shipyards are simply structures to support the major components of the ship being built. These yards are used for assembling large components such as the ship's keel, engines and gravity wheels; major bulkheads and hull skins are also assembled in open yards. For ships that are manufactured from modular sections, the open shipyard is used for final assembly of the component modules. Pressurized shipyards assemble smaller ships and modular sections for larger ships. Components and finished ships are brought into the docks through large airlocks.

▼ STATIONS

4.5.3

Space stations are small compared to the enormity of a colony cylinder. Most stations are modular in design to allow for sections to be built at a central shipyard before being moved to their final location. The station is often assembled at the shipyard, whose crew performs systems integration tests and ensures that the final assembly on-site will proceed smoothly (since it would be very inconvenient to tow the section back to the place of manufacture.) Before the station is moved to its final assembly point, the sections are disassembled and filled with supplies, equipment and furnishings to finish the interior outfitting on-site.

SALVAGE ◄

It is a sad fact of life that there is a constant need for people skilled in the recovery of vessels and property from the emptiness of space. Whether the vessel in question is a warship damaged in battle a week ago or a commercial freighter missing for a decade, there are people waiting for the recovery of valuables from the ship itself to the contents thereof. The work of salvage crews is often dangerous, but the rewards are great for those involved in what can be a time-consuming and tedious job.

Every component of most ship or structure in space is marked with a serial number for identification in case of disaster. A detailed database of the components and their serial numbers and which ship or structure they are currently a part of is catalogued, and the current whereabouts and disposition of those items is tracked whether they are in storage or being moved as cargo between two points. The Salvage Office of the USN Space Navigation Authority maintains this database. Salvage operators pay an annual access maintenance fee of 50,000 credits, plus a find fee (1000 credits per search) for database access should they ever happen upon something.

While some salvage operators concentrate almost exclusively on items long missing, other operators are more concerned with recent losses. The military conflicts of recent years have made salvage work very lucrative; the governments involved issue regular contracts, and even commit to secret salvage operations in the hope of retrieving enemy vessels damaged in battle. Depending on the condition of the hulk, the salvage teams can expect to get from 5% (if mostly scrap) to 50% (if largely intact) of the vessel's value. Depending upon the cargo and other miscellaneous items present onboard, the teams could potentially earn many times what the actual ship is worth.

The Solar Convention on Salvage provides some guidelines for setting the value of any compensation due. Under the terms of the Convention, any vessel that has been lost for less than ten years is still the property of its owner(s). In this case, salvage teams will have to contact the owner and ask permission to salvage the vessel if it is abandoned. If the owner does not give permission to salvage, tradition dictates that the owner refund the salvage team their database access fee and pay a gratuity for the lost vessel's location and orbit.



SALVAGE OPERATIONS ▼

Salvage operations are a delicate dance between the recovery craft and the object to be recovered. Combat salvage is even more delicate since the object is often rotating about multiple axes and will likely contain explosive materials. Salvage crews are extremely well-trained and well-equipped for their task. A large part of the salvage teams are EVA specialists who are proficient in numerous technical skills. Many salvage personnel are former shipyard workers, so they have an intimate knowledge of ship systems.

Salvage ships carry many heavy duty M-pods for stabilizing and modifying the orbits of vessels and moving recovered materials and personnel between vessels. Large cargo bays are another common feature of salvage ships, with expectations that they can be filled with salvage. Most salvage ships' computers contain detailed blueprints for known ships for use by the salvage teams in their tasks. Large reserves of reaction mass are carried to shift orbits, to fuel the salvage vessel's many auxiliary craft, and to tow salvage to port. A wide range of tools is carried to ensure efficient conduct of salvage tasks. It is not uncommon for salvage vessels to carry at least one squad of exo-suits for self-defense of the ship and the salvage.

◇ STEP ONE

If the crew believes it has found a lost vessel, the first step is to attempt communication by radio and check for a transponder signal. If there is no response, the crew will move to intercept the vessel and establish visual contact to check for operational navigational lighting. The use of Morse Code to establish communications by flashing the navigation lights is common practice when the radios are damaged. At the same time, the crew will try to match the other vessel's course. The crew also checks the transponder signal (if there is one), or the vessel's registered name on the hull, against the SpaceNav database for lost or missing ships. If the vessel is missing, the salvage vessel will begin rescue operations (which may become salvage operations, depending on the situation). A visual inspection is also carried out to determine the condition of the other vessel; the crew looks for things like missing lifeboats, escape pods and physical damage.

◇ STEP TWO

Once the lost vessel is determined to be salvage (the SpaceNav database returns a positive result, and/or the vessel's owner is contacted), an EVA team will perform a close inspection of the exterior, and also board the vessel for an interior inspection if it is considered safe to do so. The bodies of any remaining crew and passengers are recovered before any salvage is taken. A detailed record of location and condition of any recovered bodies is made for presentation as evidence at potential legal proceedings. After the inspection and removal of bodies is complete, a decision is made as to what method of salvage will be used: scrap, tow, recover, recover and scrap, or recover and tow.

◇ STEP THREE

Once the decision is made about the salvage method, the vessel's flight data recorder (the "black box") and computer core are recovered from the vessel. If the salvage team has a salvage-certified electronics expert onboard, he will make duplicates of the data and transmit a copy of the data to the SpaceNav Incident Investigations Office. The recovery of the black box and computer core is the only salvage task the salvage team is legally obligated to perform. The salvage team then proceeds with the rest of the salvage work.

◇ STEP FOUR

Scrap operations involve quickly removing anything of potential value from the vessel. Equipment is removed, chunks of bulkheads and the hull are cut loose, and cargo containers are offloaded. Tasks are quickly done to minimize the time spent with the vessel. This kind of salvage is often undertaken due to difficult orbits or dangerous circumstances, such as collision courses or intervention by military forces.

Recover operations are much more time-consuming compared to scrap operations. Everything aboard the ship is removed. Personnel effects of the crew are packed (to be returned to the owner's family in expectation of a gratuity payment), subsystems are completely removed, cargo containers are removed and catalogued, and reaction mass is transferred to the salvage vessel. Once this is completed, the hulk will either be towed to a port or scrapped as above.

◇ STEP FIVE

If the vessel is in good condition structurally and operationally, the vessel will likely be towed back to a shipyard for closer inspection, and possibly refit and repair. Depending on how well the salvage team is equipped, Step Four and Five might be reversed so that the team can access additional personnel and equipment for scrap or recovery tasks.

◇ STEP SIX

Once salvage tasks are complete and it is decided that the hulk is not to be towed to port, the hulk will be destroyed by pushing the hulk into a degenerating Solar orbit that will burn the hulk in the sun. If orbital mechanics make this too costly, the hulk will be put into an orbit that sends it out of the Solar System or somewhere else out of the way.

THE SOLAR CONVENTION ON SALVAGE ▼

As Humankind traveled more frequently into space, the inevitable accidents occurred — vessels were lost, and later found. It did not take long before the old Earth International Convention on Salvage was adapted for use beyond Earth's oceans. In 2189, five years after the emergence of CEGA and 200 years after the original maritime version was instituted, the convention was again ratified by the Solar nations as the Solar Convention on Salvage (SCS). The administration of the SCS falls under the mandate of the USN's Space Navigation Authority (SNA).



4.7.2

NOTABLE ARTICLES OF THE CONVENTION ◇

For the sake of brevity and clarity, a brief summary of notable Articles is provided here. A more complete text on the Solar Convention on Salvage is included in the *Game Resources* chapter on page 76.

Article 3 — Platforms

Unmanned or immobile platforms engaged in scientific research, or resource exploration and exploitation are not covered by the convention (i.e. a party cannot salvage an unmanned gas miner).

Article 4 — State-owned Vessels

Vessels owned by the a nation are not subject to the Convention and are entitled to sovereign immunity under international law. The nation may apply the Convention to its vessels, but must notify the SNA Chairperson of the terms and conditions associated with the application of the Convention. This does not mean State vessels cannot be salvaged, but if they are, salvors cannot expect remuneration for their salvage.

Article 9 — Rights of Solar States

The State is allowed to take actions to protect itself from spaceborne threats that supersede the interests of the vessel owners and salvors.

Article 10 — Duty to Render Assistance

Every master is bound to render assistance to any person in danger of being lost in space. Each nation is responsible for ensuring the enforcement of this Article (i.e. setting out criminal penalties for failing to render assistance). The owner of the vessel is not liable for any breach of the Article by the master.

Article 13 — Rights of Salvors and **Article 14 — Special Compensation**

These articles detail the means and levels of compensation due the salvor. Payment due is set under legal contract, and as such the parties involved can take legal actions under these Articles to remedy disagreements about compensation.

Article 16 - Salvage of persons

A person saved from distress is not obligated to compensate his rescuer, but may do so. A rescuer of human lives is entitled to a fair share of the salvage awarded to the salvor for salvaging the vessel.

Article 18 - The effect of salvor's misconduct

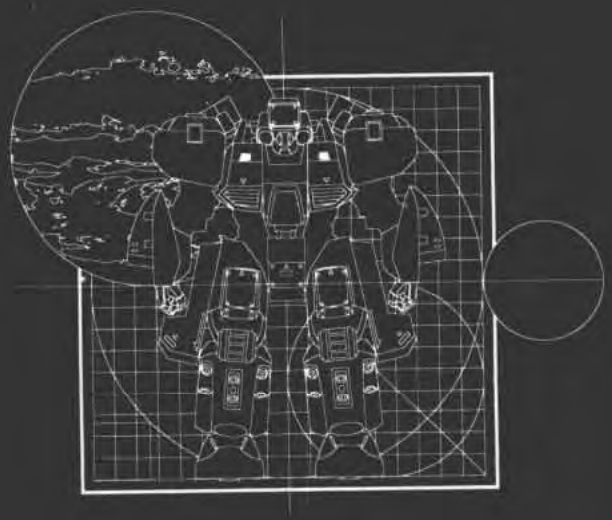
Payment may be withheld due to negligence or incompetence in the conduct of the salvor's duties.

Article 25 — State-owned Cargoes and **Article 26 — Humanitarian Cargoes**

The Convention cannot be used as the basis for seizure, arrest or detention of non-commercial State or humanitarian cargoes.

BRIEF GLOSSARY OF TERMS ◘

TERM	DEFINITION
Master	vessel's commander
Salvor	party conducting salvage operation
State	a sovereign nation
Vessel	any ship or craft, or any structure, capable of navigation



The great enemy of clear language is insincerity.
— George Orwell

A BRIEF GUIDE TO SPACER'S RUNIC ◄

Spacer's Runic is a written language — using ideograms — created by spacers during the late 21st century as an alternate or emergency form of communication when speaking wasn't possible. The straight lines and dots used for the words of the Spacer's Runic lexicon facilitate the use of improvised tools and surfaces for writing messages almost anywhere. As a matter of practicality, people who perform EVA tasks regularly carry both temporary and permanent markers for writing messages in Spacer's Runic. The array of ideograms has grown very large during the past century, so only a small portion of the lexicon is provided here.

Combined with the use of Morse Code, Spacer's Runic is the only truly universal language, though it did develop some different dialects as the result of isolation after the Fall. Morse Code is considered to be part of the Spacer's Runic lexicon by many, so anyone with at least one level in Spacer's Runic (and a working knowledge of a Latin-based language) also knows Morse Code. It is easy to use, and often used when communications fail, through the blinking of running lights on a vessel or any other light source.

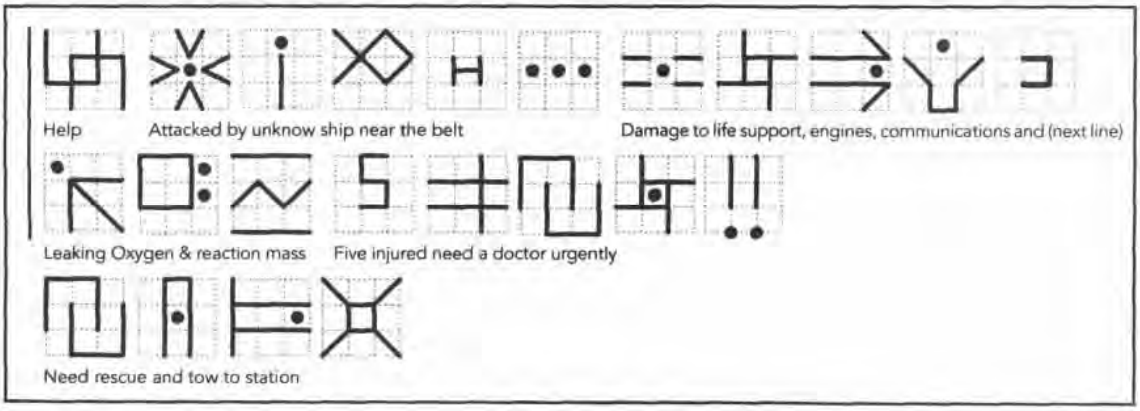


GRAMMAR AND SYNTAX ▼

Grammar in Spacer's Runic is kept to an absolute minimum, with only a few syntactic marks and spacing conventions serving to help clarify intent or meaning. Spacer's Runic is read from left to right, top to bottom. A single straight line is used to indicate the left side, and orientation, of the ideograms as written. Given that orientation is relative in microgravity, this convention is the most important to ensuring timely translation. The orientation mark must include at least two lines of ideograms to ensure clarity, though it is common to extend the mark to encompass all lines. A message that is only a single line will have the mark extend above and below the line of ideograms.

An ideogram consists of a set of dots and straight lines drawn within a 3 x 3 grid of evenly sized squares. Dots are drawn in the center of a square or at the intersections of the grid; lines are drawn from one side of a square to another, either from an intersection or the midpoint. The author does not strictly need to follow this structure, but it must be reasonably consistent to avoid confusion. It is understood that the ideograms are likely written under stress, but clarity on the part of the author is still required to communicate effectively, especially if warning of danger.

Each line of ideograms starts at the orientation mark with new ideograms being added to the right of the last ideogram. Each line is thought of as a single sentence, but there is a symbol that marks the continuation of the sentence on the next line. The convention for spacing each ideogram requires the width of one ideogram between each ideogram, but no more space than two full ideograms in width. One exception to this rule allows each digit in a number to be placed closely together.

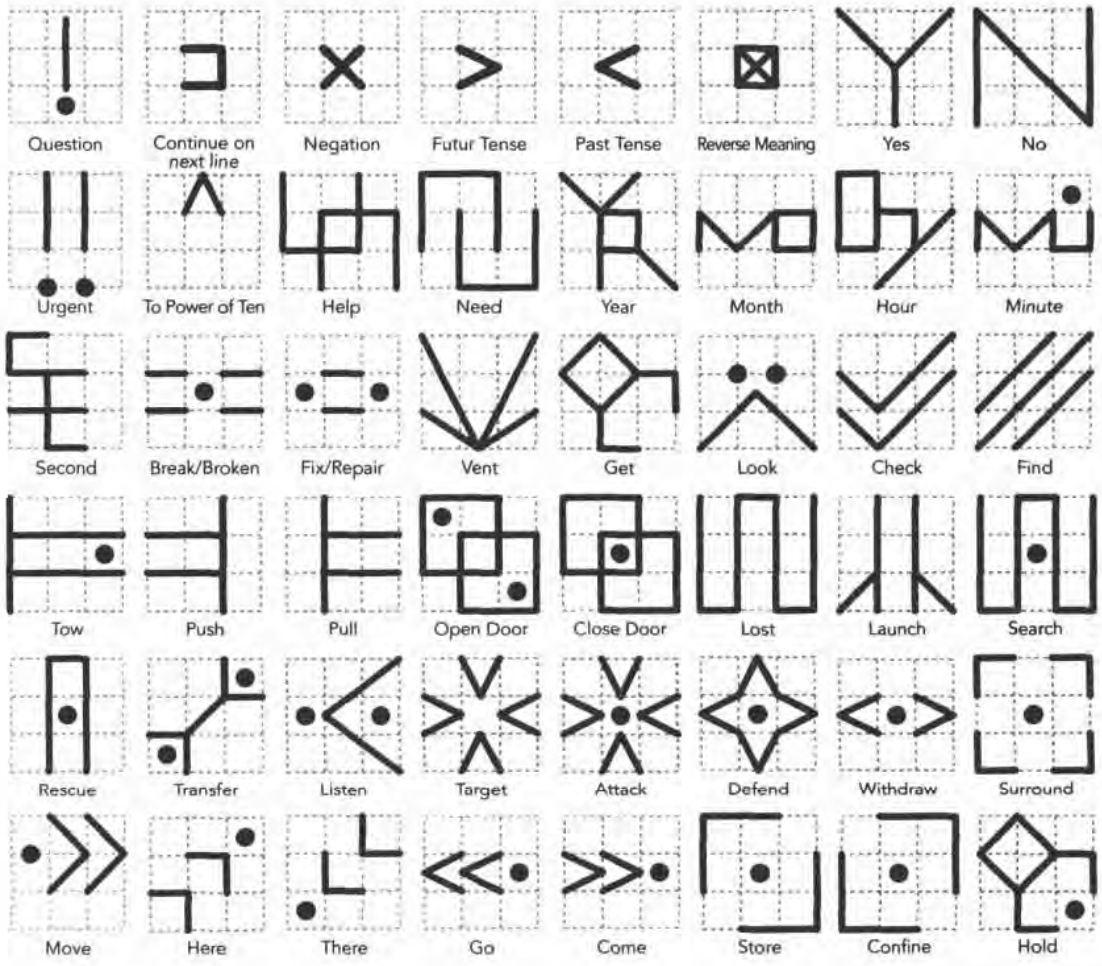


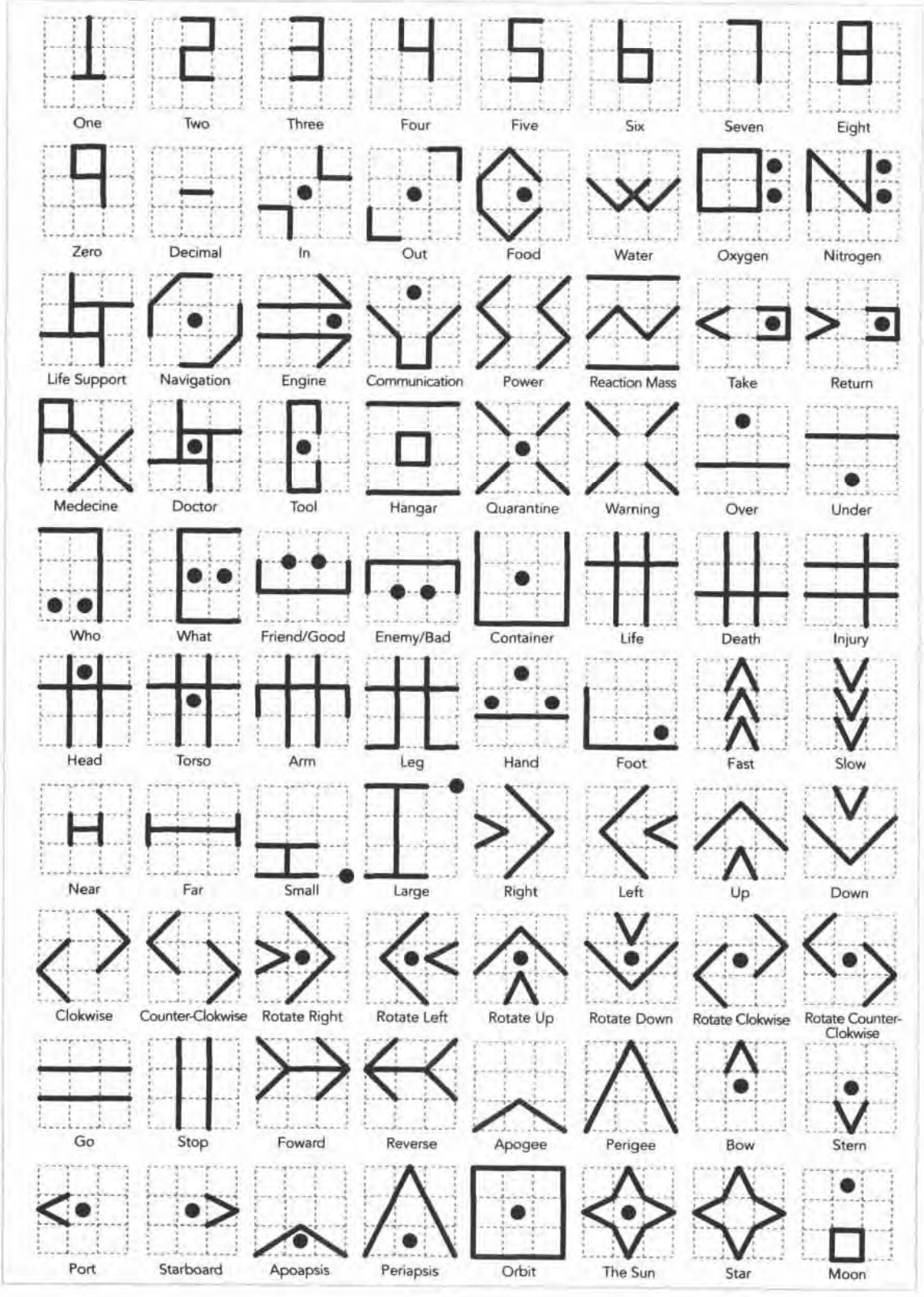
▼ USING SPACER'S RUNIC IN THE GAME

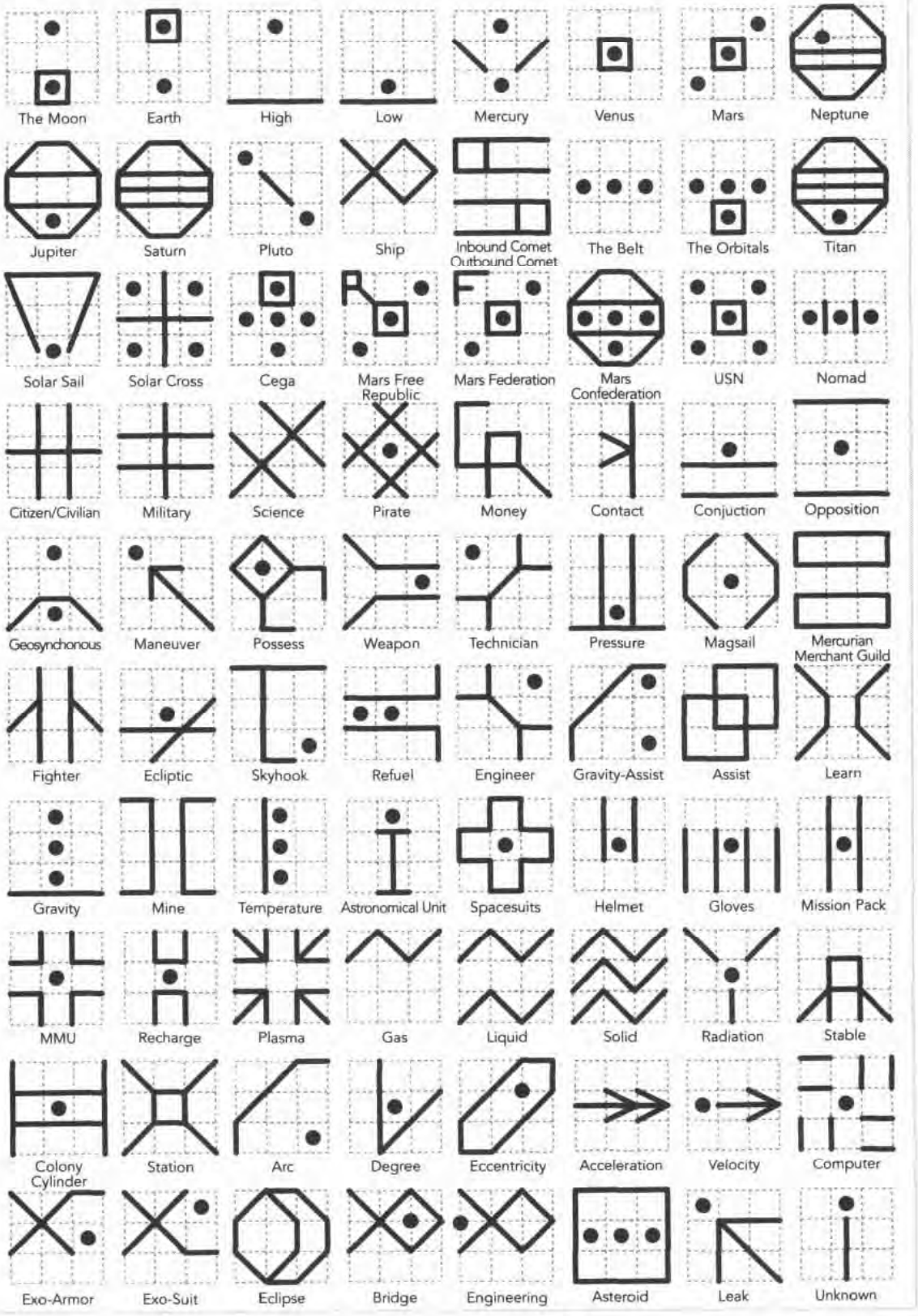
Basic space survival training (Space Survival Level 1 or greater) includes all the necessary Spacer's Runic ideograms to communicate basic emergency information. Personnel are able to describe the situation in general terms, and can request supplies and assistance. Level 1 skill allows a character to conduct simple conversations and provide information beyond the requirements of an emergency situation. A person with this skill level could make do travelling anywhere in the Solar System. Messages that are technical in nature require the users have at least Level 2 language proficiency. While Players and Gamemasters are not expected to learn Spacer's Runic themselves, the following pages contain a wide range of useful ideograms. And since this brief dictionary is far from complete, Players and Gamemasters are encouraged to add new ideograms of their own devisory.

Depending on the complexity of the content, and the length, of the message, the Gamemaster assigns a Threshold for a Language Skill Test. Subtract the Margin of Success from, or add the Margin of Failure to, double the assigned Threshold to determine the number of minutes the message takes to write out. A message will always take at least one minute to write. For example, Sara's character is writing a long, yet simple, message with an assigned Threshold of 3. She rolls an MoS of 1, so it takes her character five minutes to write the message. The suitability of a given tool for writing may add or subtract from the Threshold. To read the resulting message, the reader must roll a Language Skill Test against the same Threshold, subtracting the MoS, or adding the MoF.

◘ DICTIONARY OF IDEOGRAMS




One
Two
Three
Four
Five
Six
Seven
Eight
Zero
Decimal
In
Out
Food
Water
Oxygen
Nitrogen
Life Support
Navigation
Engine
Communication
Power
Reaction Mass
Take
Return
Medecine
Doctor
Tool
Hangar
Quarantine
Warning
Over
Under
Who
What
Friend/Good
Enemy/Bad
Container
Life
Death
Injury
Head
Torso
Arm
Leg
Hand
Foot
Fast
Slow
Near
Far
Small
Large
Right
Left
Up
Down
Clokwise
Counter-Clokwise
Rotate Right
Rotate Left
Rotate Up
Rotate Down
Rotate Clokwise
Rotate Counter-Clokwise
Go
Stop
Foward
Reverse
Apogee
Perigee
Bow
Stern
Port
Starboard
Apoapsis
Periapsis
Orbit
The Sun
Star
Moon


The Moon
Earth
High
Low
Mercury
Venus
Mars
Neptune
Jupiter
Saturn
Pluto
Ship
Inbound Comet
Outbound Comet
The Belt
The Orbitals
Titan
Solar Sail
Solar Cross
Cega
Mars Free Republic
Mars Federation
Mars Confederation
USN
Nomad
Citizen/Civilian
Military
Science
Pirate
Money
Contact
Conjuction
Opposition
Geosynchonous
Maneuver
Possess
Weapon
Technician
Pressure
Magsail
Mercurian Merchant Guild
Fighter
Ecliptic
Skyhook
Refuel
Engineer
Gravity-Assist
Assist
Learn
Gravity
Mine
Temperature
Astronomical Unit
Spacesuits
Helmet
Gloves
Mission Pack
MMU
Recharge
Plasma
Gas
Liquid
Solid
Radiation
Stable
Colony Cylinder
Station
Arc
Degree
Eccentricity
Acceleration
Velocity
Computer
Exo-Armor
Exo-Suit
Eclipse
Bridge
Engineering
Asteroid
Leak
Unknown

SEARCH AND RESCUE TECHNICIAN ▼



Outside of being a combat pilot, being a search and rescue technician is one of the most dangerous jobs in the Solar System. Walking into an unknown and potentially dangerous situation is just one of the occupational hazards that goes with the job. While most of the time the work is fairly ordinary, search and rescue technicians are some of the most highly trained and professional people in the Solar System when the situation is at its worst; one need only talk to those saved by these extraordinary people.

Part medic and part mechanic, the search and rescue technician is the first person to come to the aid of people on a vessel in distress. Besides their training in emergency medicine, they are trained in damage control procedures, since they may be called to stabilize the situation to get to victims safely. Search and rescue technicians are trained to never enter an area until it is stable; an unsafe rescue is all too likely to become a situation in which both the victim and the SAR technicians need help.

Search and rescue technicians are serious and methodical people that are dedicated to saving lives. Many are driven by personal experience with disaster, or have been traumatized by the disasters they have witnessed. They are all too familiar with the dangers of space, and are ever-vigilant in seeking to protect those that have the misfortune of being a victim.

ATTRIBUTES ◇

AGI	+1	APP	0	BUI	0	CRE	0
INF	0	KNO	+1	PER	0	PSY	0
STR	0	HEA	0	STA	25	WIL	+1
FIT	0						
UD	3						
AD	3						

SKILLS ◇

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Computers	1	+1	Exo Pilot	1	+1	Mechanics	2	+1	Space Survival	2	0
Electronics	1	+1	First Aid	3	+1	Notice	2	0	Zero-G Movement	2	+1

EQUIPMENT AND COST ◇

Typical Equipment:	SAR tools, hard spacesuit
Salary:	40,000 to 80,000 credits/year
Basic Costs:	18 Character Points, 30 Skill Points

ACTION CAMPAIGN USES ◇

Action means physical damage of both people and machines, though the search and rescue technician is better equipped to deal with the former. Not only can they patch people up, but they can help patch up most anything else. This makes them useful in any number of situations, and not just for the aftermath, either.

INTRIGUE CAMPAIGN USES ◇

When a covert operation goes wrong, the search and rescue vessels arrives to help, oblivious to the web of intrigue that they are about to be stuck in. Perhaps the people rescued were working on Edicts-violating technology, contaminating the rescue vessel, or, with her dying breath, a rescued spy slips an SAR tech the design documents for a prototype exo-amor, warship, or weapon.

POSSIBLE VARIATIONS ◇

Search and rescue technicians are employed by both civilian, military and paramilitary organizations in a number of roles. Search and rescue technician in the military will have basic combat training, not to mention access to additional equipment that is not normally widely available to civilians. Being highly trained already, some personnel opt for more combat training to become combat medics for special forces units.

POSSIBLE SUBPLOTS ◇

Nothing frustrates a search and rescue technician more than not being able to help someone in distress. They hate it even more if the reason for their inaction is politically motivated. A badly damaged commercial ship is discovered drifting out of the asteroid belt by the rescue ship. The search and rescue technicians start their work of stabilizing the situation and evacuating casualties when a warship arrives, demanding that the rescue crew turn over all personnel from the ship.

▼ GHOST



Whatever the reason for a person becoming a Ghost, they have accepted their new life without reservation or regret. For some reason, the Ghost became disenchanted with life as most other people live. By nature, Ghosts are always solitary and shy. It is not difficult to hide oneself among the machinery, nor is difficult to find what is needed. Most people who become Ghosts are technically proficient, or become proficient. Part of their life involves "borrowing" what they need, and what they need comes from the systems that support the colony cylinder.

Most Ghosts prefer to remain invisible. The only indications of their existence in a locale are the mysterious repairs, modifications or changes made to systems in the area a Ghost "haunts." Ghosts often move between several locations to prevent someone from noticing their borrowing. The locations they choose as their "home" will have everything they need within a reasonable distance, and have several access and egress. Hidden stashes of supplies and useful items are kept in other locations so that the Ghost is not affected by the discovery of his primary living area. Many Ghosts do have some contact with a few selected people they trust or have received help from. In fact, those that discover a Ghost but act as though they saw nothing are likelier than most to earn his gratitude and cautious friendship.

◇ ATTRIBUTES

AGI	0	APP	-1	BUI	0	CRE	+1	FIT	0
INF	0	KNO	+1	PER	+1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◇ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Computers	1	+1	Mechanics	1	+1	Stealth	1	0	Survival (Space)	1	+1
Electronics	2	+1	Notice	2	+1	Streetwise	2	0	Tinker	2	+1

◇ EQUIPMENT AND COST

Typical Equipment:	Worn-out coveralls, simple tools
Salary:	None
Basic Costs:	18 Character Points, 28 Skill Points

◇ ACTION CAMPAIGN USES

Ghosts avoid conflict entirely; they are not equipped to deal with violence, nor do they care about the conflicts of others (they would not be a Ghost if they did). That being said, someone who views the Ghost as a threat could make the Ghost the object of a manhunt. This will lead to all sorts of interesting adventures as the Ghost attempts to stay ahead of the hunters, and, quite possibly, fight back with traps to discourage pursuit.

◇ INTRIGUE CAMPAIGN USES

Who better to see what happens in the shadows than a Ghost? A Ghost will have access to all kinds of interesting places on a colony cylinder, or the means to get to places otherwise unvisited or unnoticed. As a means of support, Ghosts sometimes cultivate discreet contacts among the cylinder's population that can provide reciprocal favors for something the Ghost can provide. Most times this contact is by anonymous means, and always in exchange for useful tools and supplies.

◇ POSSIBLE VARIATIONS

Playing a Ghost against the stereotype is an interesting idea given the general assumptions people make about these whispers of rumor. People that choose this course for themselves have motives other than escape. For example, it is an excellent means to conduct certain businesses with anonymity and freedom of movement. True Ghosts will likely seek to interfere with such activities, however. Reorganizing some of the skills easily creates a high-tech cat burglar.

◇ POSSIBLE SUBPLOTS

One of the Player Characters is contacted by an old friend who now lives his life as a Ghost. He says has important information, and it relates to something the PCs are currently involved with. The only problem now is finding him. Instead of the Ghost they were expecting to meet, someone else is found nosing around the meet area.

SPACE TRAFFIC CONTROLLER ▼

Space traffic controllers watch over the expert system computers that monitor and direct the actual traffic in the control zones. Often former navigators or pilots, these people are familiar with both sides of the dance of space traffic. Many of the people who have become space traffic controllers were bored by the lack of work for them between departure and arrival. Most also have training in other areas like communications and sensor systems. This training also provides them with excellent qualifications to become a space traffic controller, and now they are always busy.

Even the most automated STC systems require human oversight to prevent mistakes. The typical work day of a space traffic controller is filled with system checks, flight plan verifications, traffic handoffs as vessels move between zones, requests to change or modify orbits, vessels that declare emergencies, vessels moving to their final destinations, transitions between the STC zone and local control zones and any number of procedural, computational or administrative tasks that need attention. Smaller, less traveled zones are usually fairly quiet, but the major zones around the planets are always busy. Many controllers will take a leave of absence from this hectic pace to serve a tour aboard a commercial vessel before returning to space traffic control. These personnel are highly sought after for their intimate knowledge of the STC systems, and are often the most efficient means of navigating the control zones.



ATTRIBUTES ◇

AGI	0	APP	0	BUI	0	CRE	+1	FIT	0
INF	0	KNO	+2	PER	0	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

SKILLS ◇

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Communications	1	+2	Elec. Warfare	2	+2	Space Navigation	2	+2	Space Survival	1	+1
Computer	2	+2	Physical Sciences	1	+2	Space Pilot	1	+1	Zero-G Movement	1	0

EQUIPMENT AND COST ◇

Typical Equipment:	Portable computer, PDA (navigation regulations)
Salary:	50,000 to 75,000 credits/year
Basic Costs:	21 Character Points, 32 Skill Points

ACTION CAMPAIGN USES ◇

The extensive sensor system used to monitor space traffic is very useful for avoiding hunters or following prey. A controller is an invaluable ally for seeing through the chaos of battle, tracking everything within range of his STC sensors. When involved in combat, it is all too easy to lose track of what is happening; a controller can help a pilot keep his bearings — and perhaps his life.

INTRIGUE CAMPAIGN USES ◇

"I was never here, and no auxiliary craft departed from that ship." When people want to hide their comings and goings they must deal with the people who keep track of the traffic in the STC zones. Space traffic controllers taking bribes to turn a blind eye to certain traffic is a disturbingly common occurrence. Short of being an STC system technician, space traffic controllers are intimately familiar with the STC systems and the peculiarities of their control zones.

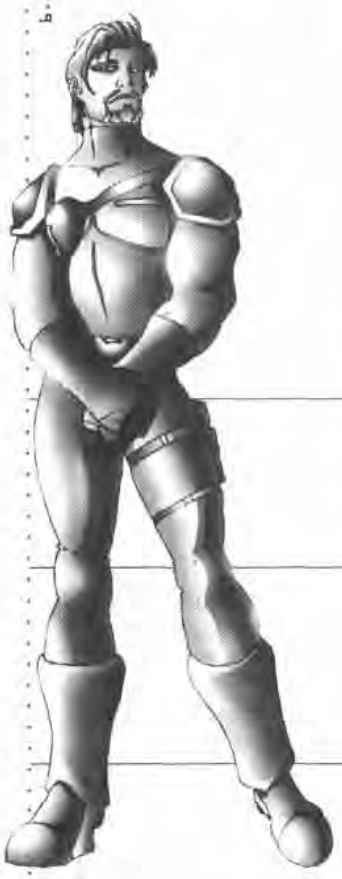
POSSIBLE VARIATIONS ◇

In the wet navies on Earth, they are called the air combat controllers, but in space they are referred to as flight operations officers. They are responsible for the launch and recovery of all auxiliary craft, from M-pods to exo-armors. This is no easy job, especially when trying to recover a battle-damaged craft low on reaction mass and missing half its control thrusters. They are also responsible for directing fighters and exo-armors during combat.

POSSIBLE SUBPLOTS ◇

The tabloids are rife with stories of top secret warships and exo-armors. Something strange is occurring at the edge of the STC sensor areas, so the on-duty controller duly notes the occurrences. The next day, tabloid reporters are swarming the controller asking about the secret goings of aliens and military projects. What to do about this sudden attention?

▼ CUSTOMS OFFICER



To most people, customs officers are just another kind of law enforcement. They are much more than that, however, since they deal with a wide range of often complicated and dense laws, and the bureaucracy that accompanies those laws. They deal with people on a regular basis and are always watchful for the subtle signals that things are not as they seem. Through all the changes that have occurred since the establishment of humans in space, nations still jealously guard their borders in whatever form. This means ensuring that what enters and leaves the nation is considered safe and in the nation's best interest. From people to products, anything that crosses a nation's border is subject to the approval of a customs officer.

Customs officers are always busy performing inspections and talking to arriving travelers. The most visible presence of the customs officer is that encountered by people entering and leaving the nation. All commercial passengers and crews must pass through a customs office whenever they wish to move beyond the vessel's confines. Behind the scenes, customs officers are inspecting cargo against manifests and collecting duties on products. On occasion they also board vessels to search for known or suspected infractions against the laws and regulations of the nation. Of course, there is also all the paperwork to do that goes with being part of a government department.

◇ ATTRIBUTES

AGI	+1	APP	0	BUI	0	CRE	0	FIT	0
INF	0	KNO	+1	PER	+1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◇ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Bureaucracy	2	+1	Human Perception	1	0	Law *	1	+1	Small Arms	2	+1
Dodge	1	+1	Investigation	1	+1	Notice	2	+1	Zero-G Movement	1	+1
* (Customs & Immigration)											

◇ EQUIPMENT AND COST

Typical Equipment:	Uniform, sidearm, PDA (regulations, schedules, duties), contraband scanner
Salary:	30,000 to 50,000 credits/year
Basic Costs:	19 Character Points, 29 Skill Points

◇ ACTION CAMPAIGN USES

As law enforcement officers who specialize in customs and immigration matters, customs officers are in conflict with smugglers, fugitives and anyone else trying to break the laws they enforce. Boarding and searching vessels is a common occurrence, and one that occasionally escalates when the offender believes a fight is preferable to the alternatives.

◇ INTRIGUE CAMPAIGN USES

With their knowledge of customs procedures, officers know all the holes in the system for sneaking just about anything onto a station or into a habitat. Whether it is contraband for the black market, or spies for an enemy nation, they are the men and women responsible for overseeing the flow of goods and people into a nation. Whether they interfere with or aid the intrigues that occur at the border, a customs officer is always just around the corner.

◇ POSSIBLE VARIATIONS

A customs official is placed behind a desk to handle all the paperwork that accompanies the people and goods that enter into a nation each day. As such, their primary vocational Skills include Computers and Investigation instead of the combat Skills required to deal with people attempting to circumvent customs regulations and laws.

◇ POSSIBLE SUBPLOTS

An internal investigation of the customs officer, whether the allegations are true or not, can place profound stresses on relationships and job performance. Such pressure can, at times, even cause previously honest officers to go bad. Also, unwittingly exposing a friendly undercover agent during the performance of their duties has all sorts of consequences for officer, the agent, and the investigation being undertaken at the time.

CARGO MASTER ▼



The cargo master knows his cargo docks better than any other person. He can tell a person virtually anything about the cargo on the docks: schedules for arriving and departing shipments, the contents of cargo containers, and the rumors an arriving crew brings. Cargo masters are some of the most accomplished businesspeople in the Solar System. The transactions they perform on a daily basis can account for millions of credits of goods and resources. The busiest cargo docks will have numerous vessels moving cargo to and fro at any given moment. It is the cargo master's responsibility to coordinate all this activity.

Cargo masters are in regular contact with customs and government officials. Since it is normal practice to sell or purchase contracts from the people doing business with the cargo dock, the cargo master must ensure that regulations are followed, and that any duties, tariffs or fees are paid. Accompanying customs inspectors is another duty that cargo masters are sometimes involved with.

Finally, the constant and regular contact with commercial crews from across the Solar System means that the cargo master is fount of obscure and valuable information. The cargo master often uses this intimate knowledge of unofficial goings-on in the Solar System to cut a better deal, or even to avoid a deal altogether. Since all these rumors and stories are not always true, it is the sign of a truly successful cargo master to discern what is useful.

ATTRIBUTES ◇

AGI	0	APP	0	BUI	0	CRE	0	FIT	0
INF	+1	KNO	+1	PER	+1	PSY	0	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

SKILLS ◇

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Business	2	+1	Exo-Pilot	1	0	Notice	2	+1	Zero-G Movement	2	0
Computer	1	+1	Haggling	2	+1	Space Survival	1	0	Streetwise	1	+1

EQUIPMENT AND COST ◇

Typical Equipment:	PDA (cargo yard records)
Salary:	40,000 to 65,000 credits/year, up to 500,000 credits/year if involved in illegal activities
Basic Costs:	19 Character Points, 28 Skill Points

ACTION CAMPAIGN USES ◇

A cargo master can serve in the military as a quartermaster or supply technician. While they don't have any combat experience themselves, they are likely to know who to call if some muscle is required. Cargo yards are also strategic resources, so they are likely to be subject to attack, and are defended accordingly.

INTRIGUE CAMPAIGN USES ◇

The cargo master knows every container that enters or leaves his yard, so when containers start disappearing, it is the cargo master that notices. Even more interesting is that the missing containers all contain very mundane items, according to the manifests. Are some of the yard workers trying to make a buck on the side, or is there something else in those containers?

POSSIBLE VARIATIONS ◇

Many cargo masters have served as quartermasters in the military. This military service will make them even more hard-nosed about their dealings. This also means they will have contacts within the military establishment that can provide valuable information not normally available to civilians. Of course, those friends in the military receive due compensation from the cargo master for such information.

POSSIBLE SUBPLOTS ◇

The cargo master is approached by "persons of questionable reputation" to allow the use of the cargo yard as a channel for illegal shipments, with or without willing cooperation. The choices, and the consequences, of acceptance and subsequent actions provide a multitude of opportunities for adventure.

▼ PASSENGER STEWARD



Stewards aboard commercial vessels are tasked with the difficult job of keeping the passengers happy during the often long trips between the planets. While crews are kept busy by virtue of their duties, passenger boredom can cause problems for the crew. Most passenger stewards specialize in one or two activities that are regularly scheduled for passengers. From painting classes to elegant formal dinner parties, activities for every passenger are offered at some point.

When a passenger vessel arrives at its destination, it is time for the stewards to relax and unwind before the vessel departs for its next destination. Exploring the local sights is not only something a steward can enjoy, but is also considered occupational training as they can better inform passengers of the most interesting places to visit. If stewards are expected to be on-site for an extended period, they will often assist the local travel company staff in the office. Stewards also have the option of taking some time away from shipboard duties by taking an office position, thus giving another staff member the chance to travel.

◇ ATTRIBUTES

AGI	0	APP	+1	BUI	-1	CRE	+1	FIT	0
INF	+1	KNO	0	PER	0	PSY	+1	WIL	0
STR	0	HEA	0	STA	25	UD	3	AD	3

◇ SKILLS

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Business	1	0	Human Perception	2	+1	Music	*	+1	Visual Art	*	+1
Cooking	*	+1	Literature	*	+1	Space Survival	2	+1	Zero-G Movement	1	0
Etiquette	2	0									

* Choose three of these four skills with two at Level 2 and one at Level 1.

◇ EQUIPMENT AND COST

Typical Equipment:	PDA (passenger information, activity schedules, recipes, book lists, music lists, etc.)
Salary:	25,000 to 50,000 credits/year plus bonuses
Basic Costs:	19 Character Points, 28 Skill Points

◇ ACTION CAMPAIGN USES

Stewards with combat training often serve as security personnel for passenger vessels. Some stewards come from military service backgrounds that grant them limited combat skills, but many also have training in first aid and damage control procedures. These people are highly sought after by civilian passenger lines for their ability to assist passengers and crew during emergencies.

◇ INTRIGUE CAMPAIGN USES

The frequent travel of stewards makes them the ideal carriers (cooperative or not) for information and other discreet items. Being a steward is also an ideal cover for professional intelligence agents to travel anonymously. Agents using this cover often have access to passenger quarters, so it is entirely possible to dig for information within the quarters of any VIPs onboard.

◇ POSSIBLE VARIATIONS

As mentioned above, stewards with combat training can act as bodyguards to VIPs while acting as personal staff. The stewards are highly paid for their services, their discretion and ,often, their silence. All such bodyguards are proficient in both small arms and unarmed, or melee, combat. There is plenty of flexibility and cross-training in areas of activity undertaken other by Player Characters to help keep morale high while actively contributing to the team's mission.

◇ POSSIBLE SUBPLOTS

Friction between rivals in a cruise becomes heated, and places a steward in middle. Even though it is his job to keep the passengers happy, this intervention earns him the enmity of one or both parties. Whatever the outcome, the former passenger will do everything in his power to make the steward's life miserable as repayment for the slight.

MARTIAN BIATHLETE ▼

Martian biathlons are considered the ultimate in competitive sports. The challenges to a biathlete's psychological and physical toughness and skills are monumental. Combined with immense size of the Martian terrain and still-deadly atmosphere, Martian biathletes are held as equals to the challenges they face; they are among the few people widely known and respected across the divided planet. Almost all biathletes are born on Mars, though there are some who come from low-gravity environments.

Biathletes spend most of their time training, which means continually traveling about the planet on their own legs. Each biathlete has hidden stashes of supplies along commonly used routes, or a support team that places supplies at certain points. During the actual competition, it is violation of the rules to raid another biathlete's stores, so lack of supplies is the number one reason honest competitors fail to finish the race.

When not actively training or engaging in competition, biathletes act as guides for tourists who want to explore the Martian wilderness firsthand. Climbing tours are some of the most popular activities on Mars, even for native Martians, and Martian biathletes are uniquely qualified for the job. Even the best biathletes enjoy guiding tours since it gives them a chance to relax but still keep their skills sharp.



ATTRIBUTES ◇

AGI	0	APP	0	BUI	0	CRE	0	FIT	+2
INF	0	KNO	0	PER	0	PSY	0	WIL	+1
STR	+1	HEA	+1	STA	30	UD	4	AD	4

SKILLS ◇

Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.	Skill	Level	Attr.
Athletics	3	+2	First Aid	2	0	Mechanics	1	0	Survival	2	0
Earth Science	1	0	Land Navigation	2	0	Notice	1	0	Tinker	1	0

EQUIPMENT AND COST ◇

Typical Equipment:	Climbing gear, compact Mars tent, custom Mars suit
Salary:	50,000 to 2,000,000+ credits/year; paid by a sponsor or other means
Basic Costs:	21 Character Points, 30 Skill Points

ACTION CAMPAIGN USES ◇

With the conflict on Mars, the skills of a Martian biathlete are very useful as either a scout or infiltrator. In fact, many of the top biathletes formerly served with one of the national militaries. There are also innumerable emergencies that can occur during a climbing tour that allow the Martian biathlete to use their skills to aid others.

INTRIGUE CAMPAIGN USES ◇

Fame is a powerful tool when wielded properly, and a screen to hide all sorts of secrets. From being able to hire professional public relations help to gaining access to otherwise restricted areas, fame opens many doors. There is also the possibility that the biathlete's habits are less than acceptable socially, and thus require great secrecy.

POSSIBLE VARIATIONS ◇

If a biathlete is not already at the fore of their sport, they are either up-and-comers, retired and respected stars, or washed out has-beens. In each case, the challenges to playing this kind of character are numerous. For those craving action, a Player Character star biathlete can employee other Player Characters as bodyguards and assistants.

POSSIBLE SUBPLOTS ◇

Many successful athletes are also superstitious biathletes, engaging in good luck rituals and requiring their special charms to guarantee their continued success. The theft of one superstar biathlete's collection of lucky charms has the star upset and the management distraught, prior to the commencement of the big race. A lot of money is riding on a victory, and not just the athlete but also the sponsor's entire new product line depends on the recovery of the lost items.

▶ THE SOLAR CONVENTION ON SALVAGE, 2189

THE STATES PARTIES TO THE PRESENT CONVENTION RECOGNIZING the desirability of determining by agreement uniform international rules regarding salvage operations,

NOTING that substantial developments have demonstrated the need to review the international rules presently contained in the International Convention on Salvage in Space, done at Geneva, 23 September 2059,

CONSCIOUS of the major contribution which efficient and timely salvage operations can make to the safety of vessels and other property in danger,

CONVINCED of the need to ensure that adequate incentives are available to persons who undertake salvage operations in respect of vessels and other property in danger,

HAVE AGREED as follows:

Chapter I — General provisions

Article 1 — Definitions

For the purpose of this Convention:

(a) Salvage operation means any act or activity undertaken to assist a vessel or any other property in danger in navigable space or in any other space environment whatsoever.

(b) Vessel means any ship or craft, or any structure capable of navigation.

(c) Property means any property not permanently and intentionally attached to the owner and includes freight at risk.

(d) Damage to the environment means substantial physical damage to human health or resources in open space or planetary proximity or areas adjacent thereto, caused by contamination, fire, explosion or similar major incidents.

(e) Payment means any reward, remuneration or compensation due under this Convention.

(f) Authority means the United Solar Nation's Space Navigation Authority.

(g) Chairperson means the Chairperson of the Authority.

Article 2 — Application of the Convention

This Convention shall apply whenever judicial or arbitral proceedings relating to matters with in this Convention are brought in a State Party.

Article 3 — Platforms

This Convention shall not apply to fixed or mobile platforms when such platforms or units are on location engaged in the exploration or exploitation production of mineral or organic resources, or conducting scientific research or exploration.

Article 4 — State-owned vessels

1. Without prejudice to article 5, this Convention shall not apply to warships or other non-commercial vessels owned or operated by a State and entitled, at the time of salvage operations, to sovereign immunity under generally recognized principles of international law unless that State decides otherwise.

2. Where a State Party decides to apply the Convention to its warships or other vessels described in paragraph 1, it shall notify the Chairperson thereof specifying the terms and conditions of such application.

Article 5 — Salvage operations controlled by public authorities

1. This Convention shall not affect any provisions of national law or any international convention relating to salvage operations by or under the control of public authorities.

2. Nevertheless, salvors carrying out such salvage operations shall be entitled to avail themselves of the rights and remedies provided for in this Convention in respect of salvage operations.

3. The extent to which a public authority under a duty to perform salvage operations may avail itself of the rights and remedies provided for in this Convention shall be determined the law of the State where such authority is situated.

Article 6 — Salvage contracts

1. This Convention shall apply to any salvage operations save to the extent that a contract otherwise provides expressly or by implication.

2. The master shall have the authority to conclude contracts for salvage operations on of the owner of the vessel. The master or the owner of the vessel shall have the authority to conclude such contracts on behalf of the owner of the property on board the vessel.

3. Nothing in this article shall affect the application of article 7 nor duties to prevent or minimize damage to the environment.

Article 7 — Annulment and modification of contracts

A contract or any terms thereof may be annulled or modified if:

(a) the contract has been entered into under undue influence or the influence of danger and terms are inequitable; or

(b) the payment under the contract is in an excessive degree too large or too small for the services actually rendered.

Chapter II — Performance of salvage operations

Article 8 — Duties of the salvor and of the owner and master

1. The salvor shall owe a duty to the owner of the vessel or other property in danger:

(a) to carry out the salvage operations with due care;

(b) in performing the duty specified in subparagraph (a), to exercise due care to prevent or minimize damage to the environment;

(c) whenever circumstances reasonably require, to seek assistance from other salvors; and

(d) to accept the intervention of other salvors when reasonably requested to do so by the owner or master of the vessel or other property in danger; provided however that the of his reward shall not be prejudiced should it be found that such a request was unreasonable.

2. The owner and master of the vessel or the owner of other property in danger shall owe a duty to the salvor:

(a) to co-operate fully with him during the course of the salvage operations;

(b) in so doing, to exercise due care to prevent or minimize damage to the environment;

(c) when the vessel or other property has been brought to a place of safety, to accept redelivery when reasonably requested by the salvor to do so.

Article 9 — Rights of Solar States

Nothing in this Convention shall affect the right of the State concerned to take measures in accordance with generally recognized principles of international law to protect the State's sphere of control or related interests from threat upon a spaceborne casualty or acts relating to such a casualty which may reasonably be expected to result in major harmful consequences, including the right of a State to give in relation to salvage operations.

Article 10 — Duty to render assistance

1. Every master is bound, so far as he can do so without serious danger to his vessel and persons thereon, to render assistance to any person in danger of being lost in space.

2. The States Parties shall adopt the measures necessary to enforce the duty set out in paragraph 1.

3. The owner of the vessel shall incur no liability for a breach of the duty of the master paragraph 1.

Article 11 — Co-operation

A State Party shall, whenever regulating or deciding upon matters relating to salvage operations such as admittance to ports of vessels in distress or the provision of facilities to salvors, take into account the need for co-operation between salvors, other interested and public authorities in order to ensure the efficient and successful performance of operations for the purpose of saving life or property in danger as well as preventing damage to the environment in general.

Chapter III — Rights of salvors

Article 12 — Conditions for reward

1. Salvage operations which have had a useful result give right to a reward.

2. Except as otherwise provided, no payment is due under this Convention if the salvage operations have had no useful result.

3. This chapter shall apply, notwithstanding that the salved vessel and the vessel performing the salvage operations belong to the same owner.

Article 13 — Criteria for fixing the reward

1. The reward shall be fixed with a view to encouraging salvage operations, taking into account the following criteria without regard to the order in which they are presented below:

(a) the salvaged value of the vessel and other property;

(b) the skill and efforts of the salvors in preventing or minimizing damage to the environment;

(c) the measure of success obtained by the salvor;

(d) the nature and degree of the danger;

(e) the skill and efforts of the salvors in salving the vessel, other property and life;

(f) the time used and expenses and losses incurred by the salvors;

(g) the risk of liability and other risks run by the salvors or their equipment;

(h) the promptness of the services rendered;

(i) the availability and use of vessels or other equipment intended for salvage operations;

(j) the state of readiness and efficiency of the salvor's equipment and the value thereof.

2. Payment of a reward fixed according to paragraph 1 shall be made by all of the vessel and other property interests in proportion to their respective salved values. However, a State may in its national law provide that the payment of a reward has to be made by one of interests, subject to a right of recourse of this interest against the other interests for their respective shares. Nothing in this article shall prevent any right of defence.

3. The rewards, exclusive of any interest and recoverable legal costs that may be payable thereon, shall not exceed the salved value of the vessel and other property.

Article 14 — Special compensation

1. If the salvor has carried out salvage operations in respect of a vessel which by itself or cargo threatened damage to the environment and has failed to earn a reward under article at least equivalent to the special compensation assessable in accordance with this article, he shall be entitled to special compensation from the owner of that vessel equivalent to his expenses as herein defined.

2. If, in the circumstances set out in paragraph 1, the salvor by his salvage operations has prevented or minimized damage to the environment, the special compensation payable by owner to the salvor under paragraph 1 may be increased up to a maximum of 30% of the expenses incurred by the salvor. However, the tribunal, if it deems it fair and just to do so bearing in mind the relevant criteria set out in article 13, paragraph 1, may increase such special compensation further, but in no event shall the total increase be more than 100% of the expenses incurred by the salvor.

3. Salvor's expenses for the purpose of paragraphs 1 and 2 means the out-of-pocket reasonably incurred by the salvor in the salvage operation and a fair rate for equipment and personnel actually and reasonably used in the salvage operation, taking into consideration criteria set out in article 13, paragraph 1 (h), (i) and (j).

4. The total special compensation under this article shall be paid only if and to the extent such compensation is greater than any reward recoverable by the salvor under article 13.

5. If the salvor has been negligent and has thereby failed to prevent or minimize damage the environment, he may be deprived of the whole or part of any special compensation due under this article.

6. Nothing in this article shall affect any right of recourse on the part of the owner of the vessel.

Article 15 — Apportionment between salvors

1. The apportionment of a reward under article 13 between salvors shall be made on the of the criteria contained in that article.

2. The apportionment between the owner, master and other persons in the service of each salving vessel shall be determined by the law of the flag of that vessel. If the salvage has been carried out from a vessel, the apportionment shall be determined by the law the contract between the salvor and his servants.

Article 16 — Salvage of persons

1. No remuneration is due from persons whose lives are saved, but nothing in this article shall affect the provisions of national law on this subject.

2. A salvor of human life, who has taken part in the services rendered on the occasion of accident giving rise to salvage, is entitled to a fair share of the payment awarded to the salvor for salving the vessel or other property or preventing or minimizing damage to the environment.

Article 17 — Services rendered under existing contracts

No payment is due under the provisions of this Convention unless the services rendered exceed what can be reasonably considered as due performance of a contract entered into before the danger arose.

Article 18 — The effect of salvor's misconduct

A salvor may be deprived of the whole or part of the payment due under this Convention to the extent that the salvage operations have become necessary or more difficult because of fault or neglect on his part or if the salvor has been guilty of fraud or other dishonest

Article 19 — Prohibition of salvage operations

Services rendered notwithstanding the express and reasonable prohibition of the owner or master of the vessel or the owner of any other property in danger which is not and has not been on board the vessel shall not give rise to payment under this Convention

Chapter IV — Claims and actions

Article 23 — Limitation of actions

1. Any action relating to payment under this Convention shall be time-barred if judicial or arbitral proceedings have not been instituted within a period of two years. The limitation period commences on the day on which the salvage operations are terminated.

2. Any action relating to payment under this Convention shall be time-barred if a derelict vessel or platform is salved after a ten year period commences on the date that the vessel or platform was reported lost.

3. The person against whom a claim is made may at any time during the running of the limitation period extend that period by a declaration to the claimant. This period may in like manner be further extended.

4. An action for indemnity by a person liable may be instituted even after the expiration of the limitation period provided for in the preceding paragraphs, if brought within the time allowed by the law of the State where proceedings are instituted.

Article 25 — State-owned cargoes

Unless the State owner consents, no provision of this Convention shall be used as a basis for the seizure, arrest or detention by any legal process of, nor for any proceedings in rem against, non-commercial cargoes owned by a State and entitled, at the time of the salvage operations, to sovereign immunity under generally recognized principles of international

Article 26 — Humanitarian cargoes

No provision of this Convention shall be used as a basis for the seizure, arrest or detention of humanitarian cargoes donated by a State, if such State has agreed to pay for salvage rendered in respect of such humanitarian cargoes.

Chapter V — Final clauses

Article 30 — Reservations

1. Any State may, at the time of signature, ratification, acceptance, approval or accession, reserve the right not to apply the provisions of this Convention:

(a) when the salvage operation takes place in the State's sphere of control and all vessels involved are of sphere of control navigation;

(b) when the salvage operations take place in the State's sphere of control and no vessel is involved;

(c) when all interested parties are nationals of that State;

(d) when the property involved is solar cultural property of archaeological historic interest and is situated in space.

Article 31 — Denunciation

1. This Convention may be denounced by any State Party at any time after the expiry of year from the date on which this Convention enters into force for that State.

Article 32 — Revision and amendment

1. A conference for the purpose of revising or amending this Convention may be by the Authority.

2. The Chairperson shall convene a conference of the States Parties to this for revising or amending the Convention, at the request of eight States Parties, or one of the States Parties, whichever is the higher figure.

Article 34 — Languages

This Convention is established in a single original in the Arabic, Chinese, English, French, Russian, Spanish, Venusian and Spacer's Runic languages, each text being equally authentic.

IN WITNESS WHEREOF the undersigned being duly authorized by their respective Governments for that purpose have signed this Convention.

DONE AT PYREA STATION this twenty-eighth day of November two thousand one hundred and eighty eight.

▶ BASIC SPACE GLOSSARY

The following list contains various space-related terms in common use among the space-faring societies of the 23rd century.

Aerobraking: a maneuver using friction with an atmosphere to decelerate a spacecraft.

Aeroshell: a heat shield used to protect a spacecraft during aerobraking or reentry.

Agora: the seat of the Jovian Confederacy's government. It is located in the Jovian capital of ElysÉe.

Airlock: a sealed chamber that can be independently pressurized, allowing movement to and from the vacuum of space.

Albedo: the reflecting power of a non-luminous body on a decimal scale of 0 to 1. A perfect reflector would have an albedo of 1, reflecting 100% of the light aimed at it.

Aperture: the diameter of the opening through which light passes in an optical instrument.

Aphelion: the farthest point that a body reaches in its orbit around the Sun.

Apoapsis: the farthest point that a body reaches on an orbit around any other body; the "generic" root of "aphelion" and "apogee."

Apogee: the highest point that a body reaches in its orbit around a planet.

Asteroid: small celestial body composed of metal, rock, ice, or any combination of the above.

Asteroid Belt: the region of space extending from approximately 2.2 to 3.3 AU from the Sun. Most of the asteroids orbit within this zone.

Astronomical Unit (AU): a unit of measure based on the distance from the Earth to the Sun. It is equal to 1,49 x 10^8 km and is commonly used for interplanetary flight.

Attitude: the orientation of a spacecraft to a given frame of reference.

Axis: an imaginary line around which a body rotates.

Barbecue Mode: a slow rolling maneuver that improves heat distribution on the skin of a spacecraft.

Bulkhead: a structural wall inside a spacecraft.

C Asteroid: carbonaceous asteroid, rich in organic matter, water-soluble salts, magnetite and clay minerals. They dominate the outer asteroid belt.

Caldera: a type of volcanic crater caused by the collapse of the ground after a powerful eruption; common on Venus and Io.

Central Earth Government and Administration: see CEGA.

CEGA: short for Central Earth Government and Administration. It is the ruling body that controls much of the Earth system.

Colony Cylinder: a huge, self-contained space station between 25 and 40 km in length, slowly rotating to generate one gee of gravity on the inside surface.

Cryogenic: very cold temperatures.

Deck: the floor level of a room, generally oriented toward the engines.

Delta V: change in the velocity of an object.

Deorbit Burn: a rocket thrust which reduces the orbital velocity of a body to lower its altitude, generally in preparation for reentry or landing.

Departure Velocity: the relative velocity of a spacecraft once it leaves a celestial body's gravitational field. Also known as hyperbolic velocity.

Deployment: releasing a payload or daughter craft to space.

Doppler Effect: the apparent change in the wavelength of light according to the motion of the body emitting it, in relation to the observer's position. It is used to calculate the velocity of a moving object.

Eccentricity: the measure of how well an orbit compares to a perfect circle; an eccentricity of 0 is a perfect circle, 1 is a parabolic orbit and greater than 1 is a hyperbolic orbit. Most planets have very low eccentricities, with Mercury and Pluto being the most extreme examples.

Ecliptic: the imaginary plane on which much of the solar system rotates; it is defined by the orbit of the Earth around the Sun.

Escape Velocity: the minimum velocity an object must reach to escape from the surface of a planetary body.

EVA: extra-vehicular activity, more commonly known as a space walk; going outside a craft in a space suit (called "going EVA").

Exo-Armors: large personal armors, standing around fifteen meters high and piloted from a cockpit usually located in their chest area.

Exo-Suits: also known as powered armors, or powered suits, they are smaller counterparts of the exo-armors. They are worn by their pilot and generally stand between two and three meters tall.

Floaters: secretive, giant "gas bag" creatures living in Jupiter's atmosphere. They are about as intelligent as a whale and can communicate with one another through electronic impulses.

Gee: A measure of acceleration, the gee (also noted as simply *g*) is equal to the pull exerted by the Earth at sea level. It is equal to 9.8 m/s2, though the rounded value of 10 m/s2 is used for most calculations.

Heliocentric: an orbit centered about the Sun.

Hohmann Transfer Orbit: an elliptical orbit where one end is tangent to the orbit of the point of departure and the other tangent to the orbit of the point of arrival. It is the lowest energy path from one point to another.

Hydrazine: a nitrogen-hydrogen compound that gives off energy when decomposing; it is used in very small (and thus simple) rocket motors.

Hypergolic Propellants: chemicals that ignite spontaneously on contact with each other; generally used in small maneuver engines or in weaponry (like the Wyvern's bazooka).

Hypersonic: a speed greater than five times the speed of sound.

Igloo: a temporary pressurized chamber (slang term).

Infrared: electromagnetic radiation with a wavelength longer than visible red light.

Integration: assembling payloads or components of a spacecraft in a desired configuration.

Kinetic Kill Cannons: a class of weapons cause damage by kinetic energy (movement). See Massdriver, Railgun.

KREEP: a rare and valuable type of lunar rock with a high content of potassium (chemical symbol: K), rare earth elements (REE) and phosphorus (P), all extremely useful elements.

Lagrange Points: five points in space located around two bodies that revolve around each other in nearly circular orbits; the gravitational forces of the two bodies combine with their motion and the motion of the points in space to provide regions of relative equilibrium at which other, smaller bodies (such as asteroids or colony cylinders) can "congregate" instead of orbiting independently — and, for colony cylinders, inconveniently — around the large bodies. Three points are located on the axis connecting the centers of the two large bodies: L1 is located between the two bodies, L2 is located "behind" the smaller body and L3 is located "behind" the larger body; these points are unstable and are largely useless except as curiosities. The L4 and L5 points, however, are stable enough to be useful. They are located on the orbit of the smaller of the two large bodies and are found 60 degrees "ahead" (L4) and 60 degrees "behind" (L5).

Laser: acronym for Light Amplification by Stimulated Emission of Radiation, a laser is a beam of coherent light, used for long range communication or to superheat and destroy a target.

LEO: short for Low Earth Orbit, a 300- to 600-kilometer radius, nearly circular orbit with a period of about ninety minutes for Earth.

LH: liquid hydrogen; it's a cryogenic fluid which must be kept at extremely low temperatures.

Linear Frame: the main control element of an exo-armor. It looks like an industrial exo-skeleton and completely supports the pilot, reproducing his every movement.

LOX: liquid oxygen; it's a cryogenic fluid which must be kept at very low temperatures.

Magnetic Sail (MagSails): a thin ring-like device that generates a magnetic field that can be pushed by the solar wind and the magnetic field of planets. It is a somewhat slow propulsion system, but it requires no propellant and is thus very economic. Magnetic sails have low field density but occupy a large volume of space (in excess of 60 km for even the smallest ships).

Maser: a beam of microwave radiation, used as a detection device or (more rarely) as a weapon.

Massdriver: a weapon that uses a series of magnetic rings to fire a hail of small shells.

Missiles: self-propelled, self-guided projectiles, using sophisticated guidance computers and laser targeting technology.

M-Pods: tiny free flying spacecraft used to move objects around (slang term).

Nomads: colloquial term for groups of people that live on asteroids, outside of mainstream human society.

Occultation: the concealment of one celestial body by another.

O'Neill Island: a type of colony cylinder that uses glass panels and mirrors to direct sunlight inside. Island Type I is a sphere with agricultural rings attached, while both Island Types II and III are large cylinders with reflective mirrors.

Orbit: the path traced by a celestial body (natural or artificial).

Particle Cannon: also known as beam cannon, it is a magnetic accelerator designed to shoot ions instead of a solid slug. They cause damage through a combination of kinetic energy, heat and induced electrical charge.

Periapsis: the closest point that a body reaches on an orbit around any other body; the "generic" root of "perihelion" and "perigee."

Perigee: the lowest point that a body reaches in its orbit around a planet.

Perihelion: the closest point that a body reaches in its orbit around the Sun.

Plasma: very hot gaseous mix of high-energy electrons and ions moving freely about.

Plasma Combustion Chamber (PCC): one of the most common types of space propulsion systems in use. Using an inert gas or liquid as reaction mass (most often hydrogen or water), the PCC enables spacecraft to achieve great acceleration for extended periods, reducing travel times to mere weeks and, sometimes, mere days.

Plasma Lance: a compressed-gas cylinder with an ionizer ejector system at one end. Powerful current transforms the gas into a giant plasma flame that can be used as a cutting weapon.

Railgun: a weapon that magnetically accelerates a single projectile via twin rails along the length of the barrel.

Regolith: loose top layer of soil found on airless celestial bodies; it is made up of crushed rock, dust and meteor debris.

Rem: a unit of measure for radiation.

S Asteroid: stony asteroid, rich in silicates of iron and magnesium, feldspar, iron-nickel alloy and iron sulfide.

Screen Generator: a device that protects the vehicle or space suit on which it is mounted by either absorbing or deflecting the radiation striking it.

Shield Volcano: volcano with a large base and gentle slopes created by repeated lava flow; the famous Mont Olympus on Mars is the largest one in the Solar System.

Sidereal Period: the revolution period of a satellite around its primary as measured against the nearly fixed background of stars. In the case of planet Earth, it is equal to one year.

Skyhook: a more feasible kind of "space elevator" that allows cargo to be hoisted up into orbit. It consists of a long tether extending from a low orbit station down into the upper atmosphere and up into space. Hypersonic suborbital planes can match velocities with the lower end of the tether to hook up their cargo rather than spend the energy to go up to a full orbit.

Snowball: slang term for water ice-rich bodies such as comet cores.

Sol: one Martian day, equal to 24.6 Earth hours.

SolaPol: the law-enforcement agency of the United Space Nations.

Solar Sail: an extremely thin, highly reflective sail that is pushed by light beams (either solar or laser-generated). It is a slow propulsion system, but it requires no propellant and is thus very economic. Solar sails are extremely fragile and occupy a large area of space (several square kilometers for even the smaller ships).

Solar Wind: the sleet of charged plasma from the Sun that travels outward into the solar system. It is used to drive MagSails.

Specific Impulse: a measure of the performance of rocket engines; it is the number of seconds an engine will supply one kilogram of thrust on one kilogram of fuel. The higher the number, the more efficient the engine is. It is often abbreviated as *Isp*.

Solar Power Satellite (SPS): these are used to gather sunlight and convert it to electrical power ready to be beamed to a nearby world or colony.

SSTO: short for "single stage to orbit" — a spacecraft that does not need to discard boosters or other rocket stages to reach orbit.

Terminator: the boundary between the illuminated ("day") and dark ("night") portions of a planet or satellite.

Transit: the apparent passage of a small celestial body across the face of a larger one.

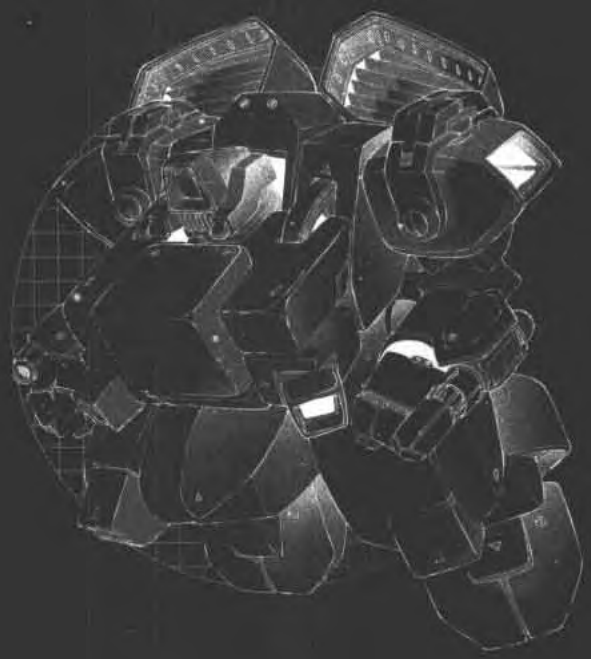
Ultraviolet: electromagnetic radiation with a wavelength shorter than visible violet light.

United Space Nations (USN): an advisory council, the USN is the successor of the 20th century's United Nations.

Van Allen Belts: radiation zones of charged particles trapped in powerful magnetic field lines.

Venusian Bank: a powerful economic corporation, based on Venus.

Vivarium Colony: a type of colony cylinder that is closed and thickly protected against radiation, relying on a "sunline" running along its axis to provide illumination. Mostly used by the Jovian Confederation.



CHAPTER ONE:
INTRODUCTION

TOOLS FOR THE FUTURE ◄

The **Space Equipment Handbook** is a source of new technologies and new adventures. It is impossible to write a sourcebook that included every conceivable piece of useful equipment, so we have attempted to include the most useful and colorful items. The items we chose were created as either highly evolved versions of current technology, or as items that would be necessary or useful for a population that lives beyond Earth's atmosphere. Player Characters and Non-Player Characters alike should find something in these pages that proves useful in accomplishing their goals.

The *Book Content* (below) talks about what we included, but what did we leave out? Anything from the 21st century that would still be around in the 23rd century that would not have changed radically. Therefore we have not included every tool that could appear in a mechanic's tool box, nor have we included items of clothing. Common household items, food and drink are not included.

Undoubtedly, the writers and Players may disagree on what should and should not be include in this sourcebook. Remember the Golden Rule: If you, the Player or GM, don't like the way something is portrayed, feel free to change it. The game is meant to be fun, and only the Players and GM can ensure that.



1.1

BOOK CONTENT ▼

1.1.1

The *Introduction* includes two sections about the *Availability* and *Legality* of equipment in the Jovian Chronicles universe. Questions of how easy an item is to find, and who can legally purchase it, are addressed in this chapter. The information is a set of guidelines for Players and Gamemasters about the ways and means of acquiring equipment.

Space Suits introduces several new space suit types, and gives Players and GMs the option to customize and change the standard models. The space suits are divided into two classes — soft and hard — each containing different suits for different roles. The most common options for customizing suits are described.

Ordnance and Armor presents many new weapons from personal sidearms to heavy lasers to the sharp and pointed. New ammunition types for chemical slug throwers expands their useful and role to cover areas normally reserved for advanced, or energy, weapons. Accessories of all types and functions are now available for the entire arsenal of **Jovian Chronicles** weaponry. This chapter also includes new armor type, purchasing partial armor, rules for armor damage and repair, and armor accessories. Anti-missile and anti-laser defense systems are detailed for larger defensive applications.

Emergency Equipment provides new equipment for surviving the dangers of life in space. Most of the items are oriented towards surviving the space environment and damage control. Equipment for dealing with emergencies on a planet or moon is not forgotten.

Electronics covers new communication, computer, and audio-visual equipment. The *Computers* section includes new hardware examples, new academic and security Modules, and expanded computing rules provide a detailed system for resolving computer security and data retrieval. Surveillance equipment and electronic accessories complete the chapter.

Space Equipment is almost everything else a Player Character or Non-Player Character could need for an adventure in space. Personal items, construction equipment and surface vehicles form the bulk of this section. There is new information about portable sensor systems.

The *Appendix* contains Availability and Legality tables for equipment from the **Jovian Chronicles Rulebook**, **SolaPol Sourcebook**, and the **Ships of the Fleet** books. This brings the information in these books up to date with the *Availability and Legality* guidelines presented here.

HOOKS AND TIPS ▼

1.1.2

The **Space Equipment Handbook** is a gold mine of new adventure ideas for GMs. Each piece of equipment can provide the starting point of an adventure; however, the Players should be aware that a particular piece of equipment exists, and how it is used.

Each chapter ends with a *Point of Departure*: a piece of short fiction and adventure ideas based on the chapter's content. The *Background* provides information about the "big picture" and continues the scenario presented in the fiction. *Suggestions* gives Players and GMs ideas for variations on the adventure idea and other tips about the adventure.

▼GETTING EQUIPMENT

1.1.3

Player Characters, or any character, in the campaign can obtain equipment from a variety of sources. Humankind has always used various tools to affect their environment, and this remains especially true with the sophisticated technology of the 23rd century solar system. These are some of the sources of equipment in a campaign.

In Stores: only the most common and unrestricted items are widely found in stores. Some specialty stores will have uncommon and/or restricted items (with the proper permit) available for sale. In small communities, common items are often stored centrally for all people and are available freely (though within reason — waste is not highly regarded in the space settlements).

Assigned Military Supplies: for people in the armed forces, there is often little choice as to what types and makes of equipment are available. The quartermaster is solely responsible for issuing equipment to personnel, with special items often requiring authorization from superior officers.

Autofactories: Player Characters can get equipment directly from autofactories, but this is an extremely rare occurrence. This will only occur with first run models or thefts from the autofac line. If the PCs want something special made, they must have the appropriate tool templates and blueprint instructions to manufacture the item.

The Machine Shop: the technicians that work in a machine shop are likely able to manufacture or assemble the parts of many items. It is unlikely that techs will simply drop everything to accommodate the requests of a Player Character, but this is often the only way to obtain certain items in remote locations or onboard ship.

The Bargain/Deal: when someone lacks currency, or both parties possess an item their opposite wishes to obtain, any number of bargains or deals can be struck. Exchanges of services for goods, or for goods and a smaller cash amount, or any combination thereof, are perfectly acceptable means of acquiring things. This is the most common means of conducting transactions through the black market or connections, though black market deals will often require large sums of money.

Stealing: whether by reason of desperation or a price too high, stealing what you need is always an option. Of course, this course of action carries with it its own risks and rewards of varying magnitude. If Player Characters are caught stealing by a law enforcement agency, they can expect to be treated humanely. Intelligence agencies and criminals will likely have other ideas about the suitable treatment for a thief.

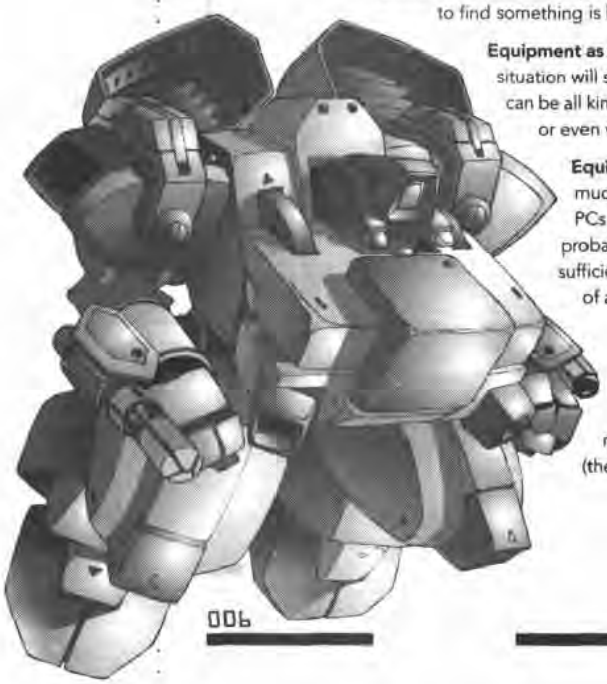
▼EQUIPMENT IN AN ADVENTURE

1.1.4

At the most basic level, a character's equipment is the tools of his trade. From the weapons and armor of the mercenary to the instruments and tools of the scientist, every Player Character will have at least some of the equipment normally associated with his occupation, and even some that isn't. Over the course of a game, the PCs can obtain new equipment in a number of ways.

Equipment as Reward: it is usually at the end of an adventure that Player Characters have the chance to restock their supplies and buy new or better equipment. The PCs have made some money, or found something of value to trade, and now they want something newer or better.

Equipment as Punishment: it is the latest and greatest in newly developed technology, and the Player Characters get to field test. Of course, it probably works a lot better on paper and in the lab than in the field. There is also the case of someone else wanting to play with the new toys. Sometimes what you want is not necessarily what you get, so it is surprising to find something is big and bulky if you were expecting the something much smaller.



Equipment as Goal: in this case, a certain piece of equipment becomes the goal of the whole adventure. This situation will see the Player Characters trying to locate, steal or retake a specific piece of equipment. There can be all kinds of complications possible with this situation. PCs could have no idea where to start looking, or even what the item looks like.

Equipment as Tool: sometimes things are just easier with the right tool. A Player Character's life is much easier with the right tools, but the wrong tools can surely make their live a living nightmare. PCs can always arrest a known criminal with nothing more than their bare hands, but it would probably be a lot easier with a sidearm if the criminal is also armed. A commercial computer may be sufficient to hack information out of a personal assistant, but is no match for the electronic defenses of a corporate network.

Equipment as Means to an End: this case is a combination of the previous two cases: a specific piece of equipment is required to reach a specific goal. For example, the Player Characters need to find out the location of a corporation's covert lab and destroy it. To accomplish this they will need a better computer and software to access the corporations network, or maybe they need it to disable the security system. They must find right computer (the tool) to get the information they need (the goal).

AVAILABILITY

Some things are just harder to find than others. Whether by virtue of the cost, or difficulty of manufacture, or even the utility or demand for a specific item, the items described in this book, and previous books (see the *Appendix*), are assigned an Availability Threshold. Players roll two dice, plus any modifiers the GM applies, against this Threshold to determine if they can find the item for sale. If the Player Characters are looking for a restricted or illegal item (see *Legality* for more information), then they may need to locate it through non-standard channels — the black market. In this case, a Player should roll Streetwise against the Availability Threshold.

The intent of this system is not for Players to roll the dice, subtract some credits from their account, and add the item to their inventory. For Gamemasters, this is an opportunity for roleplaying encounters. While shopping for mundane items does slow down a game, any situation can test the wits of Players and provide a moment of entertainment. Entire adventures can revolve around the search for a single needed item, or the Players could be looking for one thing and find something else unexpectedly.



AVAILABILITY THRESHOLD

Threshold	Availability
1	Very common; available almost anytime, anywhere
2	Common; can be found with little effort
3	Common
4	Common
5	Uncommon
6	Hard to find
7	Very hard to find
8	Restricted items
9	Very limited production runs
10	Only a few units in existence
11	Prototypes
12	One of a kind

MODIFYING AVAILABILITY THRESHOLDS

Modifying Availability Thresholds is not an exact science, which is why a table of modifiers is not provided. It is recommended that Gamemasters apply modifiers to Availability depending on the situation. In general, it will always be easier to acquire items where there is a large population; the larger the population, the easier it is to find something. It bears repeating that Availability is used to determine if they *can find* the item at all, not if the item *is* for sale.

As an alternative to rolling dice, the GM can use the Availability Threshold as an indicator of how much trouble to put the Player Characters through to get the item. High thresholds may require the Characters to visit old friends, call in some favors, or take risks to locate what they need or want. Lower thresholds are simply a matter of calling a few shops on the vidphone to find out if they have any in stock.

Though it is described in the next section, Legality is complementary to Availability. Civilians trying to purchase military equipment will have a very hard time. The police are likely to show up and ask them why they are trying to purchase military gear. If the Players are military or law enforcement personnel, items restricted to the military or law enforcement are more easily available, though there are often strict procedures for personnel to gain access to these items.

WHAT IS THE CODE?

The Code is simply the combination of the Availability Threshold and Legality Code (see next section) presented as X-YZ. The first number, X, is the Availability Threshold. The second part, YZ, is the Legality Code — Y is the Restriction Class, and Z is the Violation Level.

While in many cases the Code is designated for each area of the solar system, some items have a single, system-wide Code. In the end, the Code assigned to various items can be modified by the GM, or they can be disregarded entirely. The Codes are listed in tables in each section. Codes for previous **Jovian Chronicles** books are listed in the *Appendix*.

▶ LEGALITY



The Legality system is a set of guidelines for Players and Gamemasters when dealing with restricted items. The material that follows is subject to multiple interpretations of its application. In the end, the GM must decide how to apply these guidelines in their campaign, and inform the Players of how these changes will affect the Legality of their equipment. For example, if the Gamemaster decides to place further restrictions on certain weapons that every Player Character happens to be carrying, the PCs will face greater opposition from law enforcement personnel.

Legality Codes are a letter and number combination. The letter is the Restriction Class, or how hard to find the item is. Increasing the Restriction Class level makes it harder to obtain an item legally. The number is the Violation Level, which is the severity of the restrictions in terms of punishment for violating them. Items with high Violation Levels are viewed by law enforcement and legislative bodies as being dangerous to the public.

◫ RESTRICTION CLASS

Class	Description
A	Illegal to transport, possess, use, sell or store.
B	Transportation, possession, use, sale or storage restricted to military organizations.
C	Transportation, possession, use, sale or storage restricted to law enforcement.
D	Transportation, possession, use, sale or storage of restricted items accessible to civilians.
E	Unrestricted.

Class A items fall under the jurisdiction of special government agencies, like the Edicts Enforcement Bureau of SolaPol or the Edicts Research and Review Board. Special exemptions are available under the supervision of these agencies, but the requirements and procedures are very strict. Of course, these same agencies also give themselves exemptions regularly. Class A items include any Edicts-violating technology, NBC weapons, or any other technology listed by Solar governments as extremely dangerous for one reason or another, such as basic nanotechnology.

Class B items include capital ship weaponry, heavy weapons, assault weapons, exo-suits, military-grade body armor and defensive systems, explosives, and highly advanced electronics. Even military personnel are not found carrying around their equipment all the time; usually, the necessary equipment is only issued when personnel are on deployment.

Class C items include sidearms and rifles, light body armor, some advanced electronics, and any item deemed too dangerous for general public use. Many of these items are used by law enforcement and security firms in some capacity, while other items are simply designated as Class C to keep them out of public circulation.

Class D items include protective garments, non-lethal or low damage weapons, and some types of high end consumer electronics and computers. Most of the time, these items are restricted because the governing body wants to know who is using the item, and why the item is being acquired. Many of these items are Class D to ensure only the "right kind" of person can obtain the item.

Class E items are freely available to any person. This class of items still has a Violation Level attached with their use, thought the punishment is meant to deter mischief. Items with a Legality Code of E0 are not considered a threat at all.

◫ VIOLATION LEVEL

Level 0:	No violation
Level 1:	1d6 weeks community service; therapy with personal psychiatrist; repayment of damages; 1d6 months probation
Level 2:	minor fines; 1d6 months community service; extensive therapy with psychiatrist; any combination of above; 1d6 years probation
Level 3:	1d6 months incarceration in rehabilitation center; large fines; charge entered on permanent record
Level 4:	1d6 years incarceration in rehabilitation center; huge fines; charge entered on permanent record
Level 5:	permanent incarceration (25 to 50% chance of parole after 10+1d6 years)
Level 6:	permanent incarceration; no parole; death (if applied)

The Violation Level of the Legality Code is set depending on the perceived severity of any unlawful, damaging, or dangerous act that can be committed with the item. While it may seem unnecessary to do so with some apparently benign items, troublemakers can always find ways to cause problems with even simple items. Manufacturing any Class A, B, C, or D, restricted item without the permission of the local government is universally illegal. The penalties for unauthorized manufacturing are usually one or two levels above the Violation Level of the item being manufactured.

PERMITS ▼

In some cases, permits are available for restricted items. Permits are issued for a specifically defined use and item. Depending on the nature of the permit request, multiple uses and items may also be designated. Permits also have conditions attached to them depending upon what the permit is being issued for. Violation of a permit's conditions is grounds for seizure of the item and permit, not to mention charges for the violation to the order of the permit's Violation Level. For example, a PC has a permit for the possession and storage of a laser pistol. If the PC shot someone he saw steal something, he would be charged with illegal use, and murder if the person was killed.

PERMIT DEFINITIONS ◫

Transportation	The secured movement (i.e. locked in a case) of a restricted item by the permit holder, possibly between designated points.
Possession	The transportation of an unsecured restricted item on the person of the permit holder.
Use	The activation of restricted equipment, or the discharge of a restricted weapon, in authorized areas.
Selling	The transfer of possession of a restricted item for money; restricted item designated by the issuer.
Storage	The storage of a restricted item in a designated location; restricted item and location designated by the issuer.

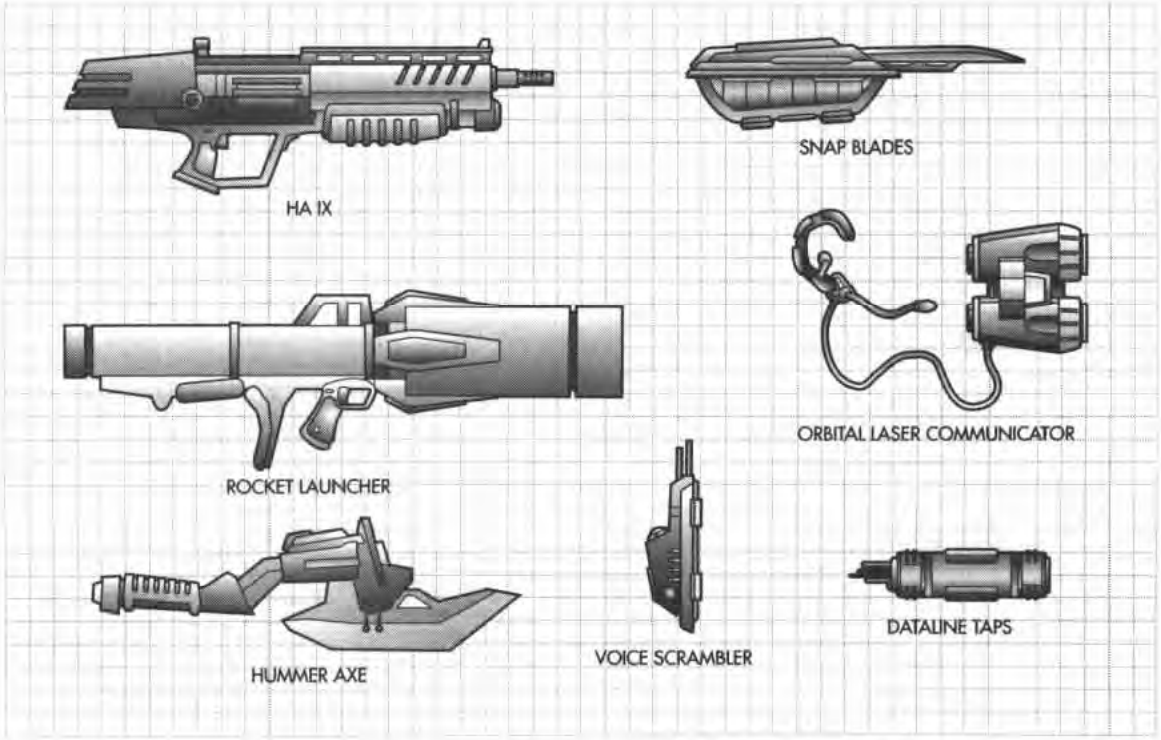
GM'S NOTE ◑

There are a couple of important points to remember when dealing with things that require permits. It is important that the GM understands the implications, and even more important that Players understand the consequences.

First, there are often more costs involved that simply purchasing the appropriate permit. There are often storage and transportation codes that must be met in order to obtain the permit. Special safes (1000+ credits), transportation containers (100+ credits), and security measures (50+ credits/month rental or 2000+ credits owned) are just some of the additional costs that are involved with obtaining a permit. These kinds of conditions will vary depending on location and the nature of the item.

Second, storage and transportation are two separate issues, and as such may require different permits for each activity. In the eyes of some law enforcement personnel, if a PC has a permit to store an item and not a transport permit, when the police catch the PC without the proper permit they are likely to think the PC is up to no good.

Finally, additional penalties may result from the consequences of any action taken with the item. For example, murdering someone with a weapon carries penalties for murder in addition to violating weapon restrictions. Simply firing the weapon may be considered a crime, with or without intent to harm, if the Player Character does not have the proper permit.





CHAPTER TWO:

SPACE SUITS

SPACE SUITS IN THE 23RD CENTURY ◄

The basics of space suit design remain unchanged after more than 200 years of human space exploration. What has changed, and drastically, are the manufacturing methods and materials that make modern space suits far superior to the space suits of the 20th and 21st centuries. The biggest change is the use of a layer of self-sealing material capable of closing holes up to 0.5 cm in diameter in one round.

For the most part, space suits manufactured in different parts of the solar system will vary only in the appearance, and the placement of, components. Suits function at the same five psi mixture of oxygen and nitrogen (3.5 psi/1.5 psi) that all ships and habitats use. Most space suits feature a myomer layer to help move the suit and counteract the suit's air pressure. The myomer is powered by the suit's power supply and micro-generators in the suit's joints that provide power when the wearer moves. Because nitrogen is a buffer gas, the amount of nitrogen carried is minimal. Additional nitrogen is often carried as reaction mass for integrated suit propulsion systems. Using standard atmosphere gases also eliminates pre-breathing; thus, a person can quickly put on a space suit in an emergency without worrying about developing nitrogen narcosis (nitrogen bubbles forming in the joints.)

SPACE SUIT COMPONENTS ▼

The space suit itself is several interlocking pieces: a helmet, torso, arms, gloves, legs, boots, and a mission pack. This modular fit allows the space suit to accommodate any body size or shape. For convenience, the arms and mission pack are left attached to the torso unless it is replaced with a new component. The same thing is done with the legs and boots. The gloves and helmet are left unattached since it makes getting into a space suit easier. The mission pack is the backpack that carries the air supply, power source, and cooling system for the suit.

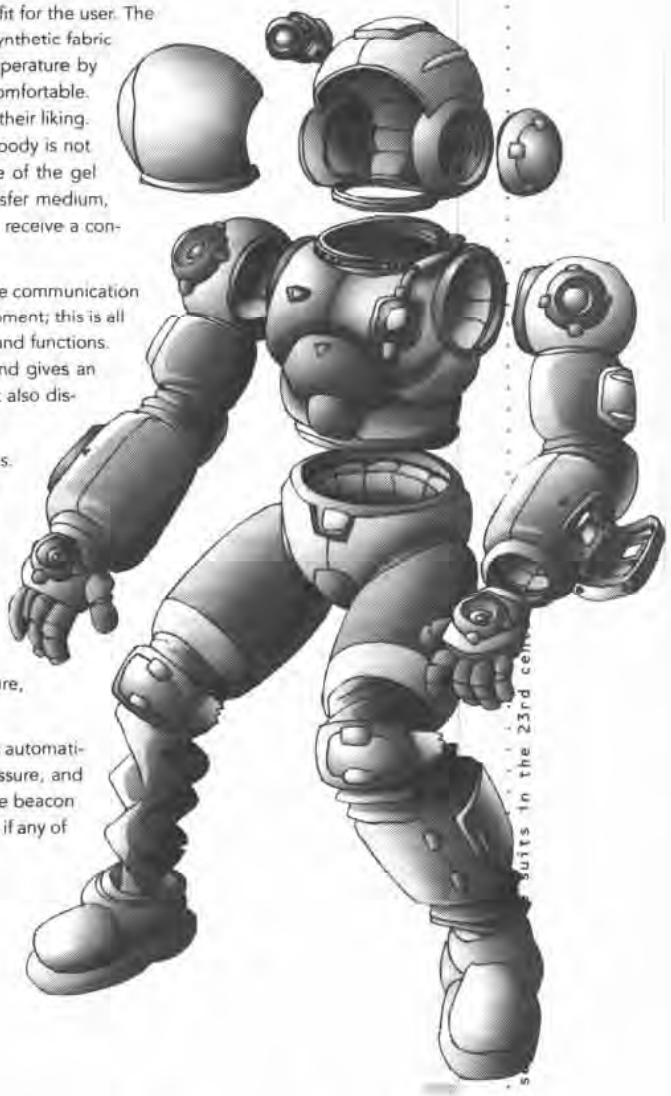
The inside of a space suit consists of numerous gel bladders that provide a skin-tight fit for the user. The gel also acts as a temperature control medium. This means the user wears a simple synthetic fabric suit to channel body moisture away from the skin. The bladders maintain body temperature by shifting the gel between hot and cold areas of the body to keep the wearer uniformly comfortable. The control panel allows the user to modify the relative body temperature settings to their liking. The gel medium temperature can also be modified by the life support system if the body is not generating sufficient heat to keep the temperature comfortable. Another advantage of the gel temperature system is in the gloves that can be worn. Because of the gel heat transfer medium, manual dexterity and sensation are completely uninhibited by the gloves. The gloves receive a constant flow of heated gel to keep the hands warm.

The suit control pads are mounted on the forearms of the suit. The control pads include communication controls, suit function and resource monitors, and connections to any additional equipment; this is all displayed on a small video screen with buttons around the screen to choose menus and functions. The suit function and resource monitor alerts the wearer to any suit malfunctions, and gives an appropriate course of action. The suit is equipped with a radiation level monitor that also displays warnings on the screen in addition to an audio alarm.

A communications jack is located next to the radio controls for hardline communications. A small compartment next to the jack contains a one meter coil of hardline. Only one person needs to connect to their partner to communicate, though it is possible to "chain" the hardlines together to increase the number of people on the circuit.

Helmets carry the suit radio, drawing power from the mission pack and an internal backup. In addition to polarized anti-glare visors, the helmet faceplate tint is adjustable to reduce the light level. A light is also mounted on the helmet. A water dispenser is standard equipment for all space suit helmets. Turning your head to the left brings the drinking tube within easy reach of the mouth. The water is under low pressure, so biting down on the mouthpiece quickly dispenses a mouthful of cool water.

Finally, all space suits are equipped with a rescue locator beacon. The beacon activates automatically for a number of circumstances: oxygen depleted, power depleted, loss of pressure, and extreme fluctuations in temperature or radiation levels. Under these circumstances, the beacon can be overridden by the wearer, but it is assumed that the wearer will be unresponsive if any of these situations should happen. The wearer can also manually activate the beacon.



▶ TYPES OF SPACE SUITS

2.2

Suits are generally divided into two classes: soft and hard. Space suits are considered soft suits if they are made with soft materials and flexible polymers. Soft suits are the most common of all space suits. Soft suit types include the basic (soft) worksuit, flight suits, crew suits, and Mars suits. Hard suits are designed for extremes. These space suits are made from hard polymers, composites and metals to resist the hardest use and harshest environments. Hard suits are commonly used in space construction, during exploration, by law enforcement, and by the military. Hard suit types include the hard worksuit, armored suit, augmented suits, and the new adaptive technology suit.

▼ SOFT WORKSUIT

2.2.1

Soft worksuits are used inside stations and in low Earth orbit, where the magnetosphere offers greater radiation protection. They are also used on the Lunar colonies for short duration excursions; longer duration excursions are made with a radiation screen. These worksuits are often worn by M-Pod pilots and other personnel operating machinery in non-Earth environments. Soft worksuits are manufactured throughout the solar system by numerous companies. Each model will often have its own design peculiarities to try and distinguish it from a competitor's version. Some users are known to insist on using a single model only because of perceived differences in performance.

◇ CREW SUIT

Crew suits are soft worksuits with several modifications for use by ship crews. The first is the addition of a socket for plugging into the ship's life support and internal communication systems at crew stations. Each station has a connector cable situated under a clearly marked cover. The end of the connection and the suit socket are shaped with the top half rounded and the bottom half square. This makes the connection easy and foolproof. The connection provides oxygen-nitrogen in/out, drinking water, power and communication hookups. High friction points on the suit are covered with duraplast mail to prevent wear. Military crew suits have even more duraplast mail as protection against shrapnel from combat damage. The Mercurian Apollo crew suit is considered to be the best available on the market. It is has less protection, but it is more comfortable and easy to use.

◇ PILOT SUIT

Pilot suits are the least bulky of all space suits. This keeps the pilot's movements from being restricted in any way — an especially important trait for exo-armor pilots. These suits also have a crew connection socket that draws air and power from the onboard systems. This conserves the suit's air and power supplies for emergency use. A holographic HUD-equipped helmet (see *Accessories and Options*) is standard equipment for pilot suits; there is a socket at the base of the helmet for the HUD data feed.

The Jovian A-9 flight suit and CEGA SPFS-3.3 flight suit are manufactured by various companies to military specifications. Each Jovian state has their own supplier, and CEGA get their suits from various Orbital and lunar companies.

◇ MARS SUIT

Mars suits are the lightest of the soft suits, and are designed exclusively for use on the Martian surface. The major suit component is a snug body suit that is impervious to ultraviolet radiation. The body suit contains heating elements since the average surface temperature is still quite cold, especially at night. The enclosed helmet has the standard radio and light. Standard mission pack endurance is six hours, and is quite light compared to space suit packs. Most Mars suits are equipped with a recharge port for air and power from Mars surface vehicles. Mars suits used by the Martian militaries are covered in red camouflaged duraplast mail, have extended duration, and are equipped with military radios (see *Accessories and Options*). Mars suits are manufactured by numerous companies on the red planet.

◫ SOFT SUITS

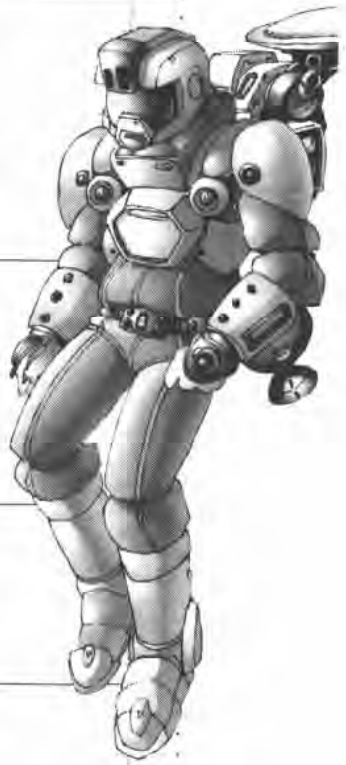
Suit Type	Expandability*	Armor Rating	Encumbrance	Endurance	Mass	Cost
Military Crew Suit	1/0/0/2	22	-1	6 hrs+hookup	12	8000
Civilian Crew Suit	1/0/0/2	18	-1	6 hrs+hookup	10	6000
Mars Suit	1/1/2/1	5	0	6 hrs+recharge	8	5000
Military Mars Suit	1/1/2/0	24	0	8 hrs+recharge	10	6500
Pilot Suit	0/1/1/0	5	0	2 hrs+hookup	8	6000
Soft Worksuit	1/1/3/2	10	-1	8 hrs	10	5500
Apollo Crew Suit	1/1/1/1	16	0	6 hrs+hookup	8	6000

• Expansion Slots available in order: Helmet/Torso/Mission Pack/Legs

STEALTH SPACE SUITS ◇

Nearly any space suit can be stealth equipped. Every military force, and some paramilitary groups like SolaPol and intelligence services, have some stealth space suits for use. The prohibitive cost of manufacturing and maintaining stealth suits means there are relative few examples possessed by any one group.

Stealth space suits cannot be modified with equipment other than was originally fitted (since this would lower the suit's effective stealthiness.) Because of the complexity of stealth space suits, a space suit cannot be retrofitted with stealth capabilities. To determine the cost and added weight of a stealth space suit consult the *Armor Accessories* table on page 37, including any modifications to the base suit. Stealth space suits are have a universal Code of 9-B4.



HARD WORKSUIT ▼

Hard worksuits are the same as a soft worksuit, except for the addition of a tough "shell". Typical hard worksuits have a solid, durashell torso, while the remainder of the suit is covered with duraplast mail. These worksuits are commonly used in space construction and extended EVAs.

The Hercules is the common hard suit of the outer solar system, while the Venusian Kame (Japanese for "turtle") is the common hard suit of the inner Solar System (though Mercurians call it "smelly".) A special variant, the Shakunetsu ("scorching heat"), is available for working on the Venusian surface at the expense of endurance and expansion space.

ARMORED SUIT ◇

Armored suits, like the armored version of the Hercules, are regularly worn by marines in the various fleets. The suit is built around a one piece durashell torso with the limbs encased in articulated durashell plates. In essence, armored suits are hard worksuits with even more armor protection, meaning that manufacturers of commercially available hard worksuits are the same companies supplying the military. Few people have use for an armored suit outside of military or police organizations.

AUGMENTED SUIT ◇

Augmented suits have additional myomer and actuator additions to increase the strength of the user. These space suits are the last step before an exo-skeleton or exo-suit. The majority of materials are more flexible than a normal hard suit, technically making the augmented suit a heavy soft suit. These suits are considered hard suits because of the structural reinforcement to support the user and accommodate the myomers and actuators. Augmented suits are used where exo-skeletons cannot operate, or when exo-suits are too costly to use. The space suit does not increase the wearer's movement rate, but it gives the wearer an effective Strength of +2. (If the character has a STR of 2 or higher, they gain no benefit to their STR.)

HARD SUITS ◫

Suit Type	Expandability*	Armor Rating	Encumbrance	Endurance	Mass	Cost
Armored Suit	1/2/2/1	50	-2	10 hrs	18	7500
Augmented Suit	1/2/2/2	25	-1	10 hrs	20	9000
Hard Worksuit	1/2/2/2	30	-1	10 hrs	15	6500
Shakunetsu Worksuit	1/1/0/0	24	-1	6 hrs	16	8000

* Expansion Slots available in order: Helmet/Torso/Mission Pack/Legs

SPACE SUIT AVAILABILITY AND LEGALITY ◫

Space Suit	M	V	E	Or	L	Mf	Mr	N	J	S
Soft Worksuit	6-D1	6-D1	9-D1	4-D1	5-D1	7-D1	7-D1	6-D1	7-D1	9-D1
Civilian Crew Suit	6-D1	5-D1	9-D1	5-D1	6-D1	7-D1	7-D1	5-D1	5-D1	7-D1
Military Crew Suit	6-B1	6-B1	10-B1	6-B1	6-B1	8-B1	8-B1	7-B1	6-B1	9-B1
Apollo Crew Suit	4-D1	6-D1	9-D1	5-D1	5-D1	7-D1	7-D1	6-D1	5-D1	7-D1
Pilot Suit	6-B1	6-B1	9-B1	6-B1	8-B1	8-B1	8-B1	8-B1	6-B1	8-B1
Mars Suit	10-D1	10-D1	10-D1	10-D1	10-D1	3-D1	3-D1	10-D1	10-D1	11-D1
Military Mars Suit	10-B1	10-B1	10-B1	10-B1	10-B1	5-B1	5-B1	10-B1	10-B1	11-B1
Hard Worksuit	4-D1	5-D1	10-D1	6-D1	5-D1	9-D1	9-D1	3-D1	4-D1	4-D1
Shakunetsu Worksuit	9-D1	4-D1	10-D1	9-D1	10-D1	11-D1	11-D1	10-D1	10-D1	11-D1
Armored Suit	6-B2	6-B2	10-B2	6-B2	6-B2	8-B2	8-B2	8-B2	6-B2	7-B2
Augmented Suit	8-D1	8-D1	10-D1	8-D1	8-D1	9-D1	9-D1	8-D1	8-D1	8-D1

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn

▶ ACCESSORIES AND OPTIONS

Space suit accessories and options are available for many different suit components: helmets, gloves, boots, life support, propulsion, and electronics. While the following items are the most widely available, Players and Gamemasters can always create new items to add to their space suits. Indeed, modularity is the key feature of every space suit design, to some degree.

◇ HEADS-UP DISPLAY

An integrated HUD is a standard feature of pilot helmets. Other professions also like to use helmet HUDs. M-Pod pilots like to have vital information always in sight since they are often not looking forward through the canopy, but always surveying their surroundings for collision hazards. There are two HUD models available: a 2D projection, and a 3D holographic projection.

◇ FOOD DISPENSER

Dispensers for food are available, though calling it 'food' is actually misleading, since dispensers don't actually provide solid products. Various nutrient rich pastes and thick drinks are normally dispensed through a tube that slowly serves the food when the user bites down on the mouthpiece. Concentrate tablets are another common food supplement for space suit users.

◇ LIGHT SOURCES

Light sources of varying size and power are attached to the helmet. The light source is self-contained, though some of the most powerful versions carry their power sources in the mission pack. Helmet lights are rated by the effective range and arc they illuminate. The standard helmet light is a 20/45 light (20 meter range over a 45 degrees arc). The most common self-contained model upgrades are the 20/90, 50/45 and 50/90 (which uses a lamp on each side of the helmet). Lights powered by the batteries in the mission pack are available in 100/45, 100/90, and 250/60 models (all of them a twin-lamp configuration). All light sources can operate for twelve hours before requiring a recharge, which can be done through a standard charge port (see below).

◇ WALDO GLOVES

Waldo gloves — a misnomer since they actually replace the suit's arms — feature built-in controls for using remote manipulators. Activating the gloves allows the user to enter a control code to take over a set of robotic manipulators on any manipulator-equipped system. The back of the right hand glove has controls for calibration, motion and feedback. The back of the left hand glove has controls for manipulator override and the waldo-manipulator interface. Limited voice recognition is used to allow the user to freeze the manipulators when he needs his hands for something else. The manipulators do not unlock their position until the controls are unfrozen and the waldo gloves are returned to a position that approximates the manipulator's current position. Waldo gloves are only available in pairs.

◇ PSEUDO-HANDS

A pseudo-hand is a mechanical hand and elongated forearm unit that mimics the user's hand movements via a hand waldo. This gives the impression that the user has longer than normal forearms. The heavy duty version gives the user a stronger grip strength and extended reach that is useful for handling extremely hot, cold or dangerous items. The light duty pseudo-hand is much narrower and smaller for detailed work in hard to reach places. Both versions have the option to include a light (+50 credits) and video feed to a helmet heads-up display (+250 credits).

◇ GRAVITY BOOTS

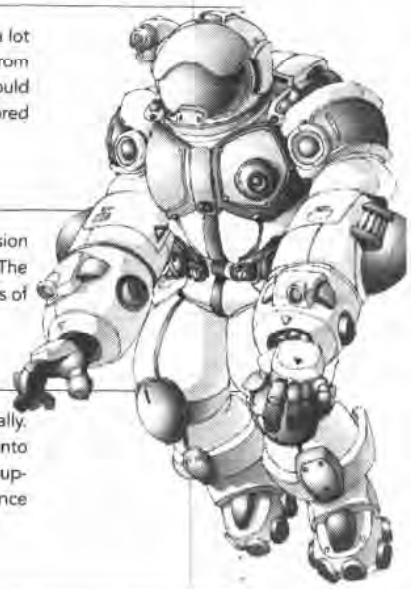
The electrohesive attachment system, or "gravity boots," is a common feature for colony cylinder workers. It gives the user the ability to walk along the construct in zero gravity conditions, which reduces MMU usage for increased durations. Gravity boots use the same molecular polymer technology as scaling pads (**SolaPol Sourcebook**, p.111) to keep the user attached to whatever they are standing on. It provides the user with a +1 modifier for any Zero-G Movement test. The power supply is carried in a pocket above each ankle, but can be turned on or off from the wrist controls.

◇ REINFORCED BOOTS

Reinforced boots are constructed with additional composite panels and duraplast mail that reach the mid-thigh, enabling them to take extra abuse. The boots are simple additions for users that spend a lot of time on the surface of planets and moons. Frequent users are geologists who spend time on their knees, or in various crevices that might catch the suit legs, collecting samples. Reinforced boots add six points to a soft suit's Armor Rating.

ARMORED BOOTS ◇

Armored boots are composite-metal boots that reach the mid-thigh. They are meant specifically for users that spend a lot of time in above-average "hostile" environments. Prospectors and miners use armored boots to protect themselves from debris thrown out by mining equipment. The armor is appreciated when it absorbs blows from erratic equipment that would otherwise maim or sever the leg. It is also a lot cheaper to partially armor a soft suit instead of buying a complete armored suit. Armored boots add ten points to a soft suit's Armor Rating.



RADIATION SCREENS ◇

Radiation protection is provided by a magnetic screen generator attached to the suit's torso or mounted in the mission pack. Radiation screens are available in three levels of protection: 100 rads/hour, 1000 rads/hour, and 10,000 rads/hour. The most powerful version is normally used within the orbit of Venus, during times of increased solar flare activity, or in areas of high radiation. All screens come with an independent power supply sufficient for 12 hours of operation.

ENDURANCE UPGRADE ◇

Space suit endurance upgrades are accomplished by mounting additional air tanks and batteries internally or externally. Internal upgrades permenantly increase the size and mass of the mission pack. External endurance upgrades lock onto specified attachment points with air and power connectors. The mission pack can carry a maximum of four external upgrades or two internal upgrades, though external upgrades are still usable with the internal additions. Each endurance upgrade increases the suit's endurance by two hours.

RECHARGE PORT ◇

For suits that are not normally fitted with an accessible recharge port, it can be retrofitted. The end of the connection, and suit socket, is shaped with the top half hexagonal and the bottom half square. This makes the connection easy and foolproof. The connection replenishes the suit's atmosphere supply, drinking water, and power. Separate oxygen and nitrogen lines mean that integral MMU systems are also refueled. A recharge port should not be confused with the resupply ports that are located on the side of a mission pack — an inaccessible spot for a lone person.

INTEGRAL MMU ◇

Integral MMUs for space suits add a set of thrusters and reaction mass tanks to the top and bottom of the missions pack. The thrusters (2 MP) are set into the ends diagonal extensions at each corner of the mission pack. The MMU uses nitrogen gas, heated by the suit's thermal control system, for reaction mass (20 BP). (External MMUs are described on pages 67-69 of *Space Equipment*.

The MMU controls are two keypads located on the upper thigh of the suit's legs. A switch locks out keypad inputs to prevent accidental thruster bursts. The left keypad controls yaw, pitch, and roll. The right keypad controls translation along the x-, y- and z-axis. Each time a key is pressed, a controlled burst of nitrogen is released. This allows easy control since a single burst that starts a motion in one direction is stopped by a single burst in the opposite direction.

ADVANCED MMU ◇

Advanced MMUs are identical to a normal integral MMU in every aspect (2 MP, 20 BP) except the degree of control. Advanced voice commands and inertial navigation allow the user greater flexibility and precision control of the MMU. Some of the commands available include precise rotation and lateral movements, stability and orientation correction (constant or specified), and moving at specific rates. Advanced MMUs are only available to expert users, since it is very easy to quickly deplete the onboard re-mass.

EXTERNAL REACTION MASS TANKS ◇

Increased reaction mass is possible by attaching additional tanks (10 BPs each) to the suit. These are externally mounted to the MMU sections of the mission pack (since it is preferable to carry additional oxygen internally.) Integral and advanced MMU systems both have the necessary mounts to double their reaction mass capacity with external tanks that decreases the maximum number of external life support upgrades by two.

◇ ENHANCED COMMUNICATOR

Enhanced communication systems provide improved voice and data transmission over longer ranges. The standard radio (-5 Comm, 10 km ground/1000 km space) is replaced with a more powerful radio (-3 Comm, 20/2000 km). The enhanced radio is also capable of handling real-time video and data transmission from equipment attached to the suit comm system.

Military-grade communicators improve their transmission capabilities with encryption, frequency hopping, and increase power output. The standard radio (-5 Comm, 10 km ground) is replaced with a powerful military version (0 Comm, 30 km ground). The military radio is capable of handling real-time video and data transmission from equipment attached to the suit comm system. This gives officers current situation intelligence during a mission for better command decision making.

◇ SENSOR SYSTEMS

Though a person can always carry a portable sensor unit, there are two methods for mounting sensors on space suits: modular and permanent. Modular sensors are mounted to an interface plate on the suit's torso. The suit's forearm control pad acts as the interface to the sensor; sensor data is also displayed on the control pad screens. Permanent sensors are simply hardwired into the suit; the sensor unit is still located on the suit's torso. It is not uncommon for people performing certain tasks, like prospecting or search and rescue, to have the appropriate sensor unit permanently attached to their space suit. Audible sensor alarms can be set with both versions to alert the user to important, or dangerous, readings.

Installation of a modular sensor mount costs 200 credits. Modified portable sensors that mount on the suit cost an additional 10%. Permanently mounting a sensor system to the suit also costs an additional 10%. (See *Portable Sensors*, page 72, for further information about sensors.)

◇ ELECTRONIC WARFARE PACKS

Two electronic warfare packages are available to mount on space suits: electronic counter measures (ECM) and electronic counter-counter measures (ECCM). Both systems use an separate power source, but their operating time is limited to approximately thirty minutes of continuous use. Either system is plainly visible from the numerous antennae on the mission pack's exterior. These antennae preclude the use of any other externally mounted options, like additional reaction mass. These systems are equivalent to Rating 1 vehicle system with a basic range of one kilometer.

◇ ADAPTIVE FITTINGS

Adaptive fittings allow a space suit to fit different accessories for different tasks; thus, a single suit can perform the functions of several suits with permanently atttached accessories. A universal helmet ring allows for numerous helmet options, but because of the limited space inside a helmet, different helmets must fit different options. The adaptive fittings occupy the existing suit expansion slots, and can only accept accessories no larger than the normal suit expansion slots, with the exception of the mission pack.

An open-frame mission pack — replacing the normal pack — has fixed internal support structures, but also several adjustable structures. The only fixed components occupy the middle third of the pack: atmospheric gas storage, power source, comm system, and gel pump and temperature control system. The fixed systems provide the suit with an endurance of six hours (instead of the normal suit endurance.) The rest of the pack interior consists of adjustable frame members and color coded connectors — blue for life support, red for electronics, and black for propulsion. The mission pack is a hard shell design that uses sliding panels to adjust the internal volume, and mount external equipment. These changes increase the number of available expansion slots on the suit's mission pack by two.

Attachment points for suit accessories are added to the torso, arms legs to accept most optional equipment. The accessories require some modification to attach to the adaptive fittings, but once modified can easily attached and detached (two rounds) by a trained user. Systems that require power either have their own source or a connection to the suit's power supply. Components that are adaptive-fitting compatible cost an additional 10%.

◑ WEARING A SUIT

A spacesuit is a miniature, form-fitting spaceship designed to keep its single occupant alive in the deadly conditions of outer space. It has to defend the fragile human body against extremes of temperature, vacuum and hard radiation. No matter how high tech the suit is, it cannot accomplish these tasks and yet feel like casual clothes. Wearing a suit is a tiring, bothersome affair. The joints restrict movements, the gloves remove tactile sensations (though some of the better gel-based "thin" models manage to transmit quite a few sensations) and the helmet always block at least a portion of the field of vision.

Depending on the Reality Distorsion Factor of the campaign, this can be used for ambiance or simply ignored. In a high action, anime-inspired adventure, suits are like clothes: they can be put on within seconds, always work without being checked out, and can be worn for hours on end without discomfort. For a more hard science game, however, Gamemasters would be well-advised to read astronaut reports and learn about pressure-stiffened joints, suiting-up procedure checklists and fogging helmet faceplates. Either approach is entirely valid, and the two can even be mixed when the plot calls for it.

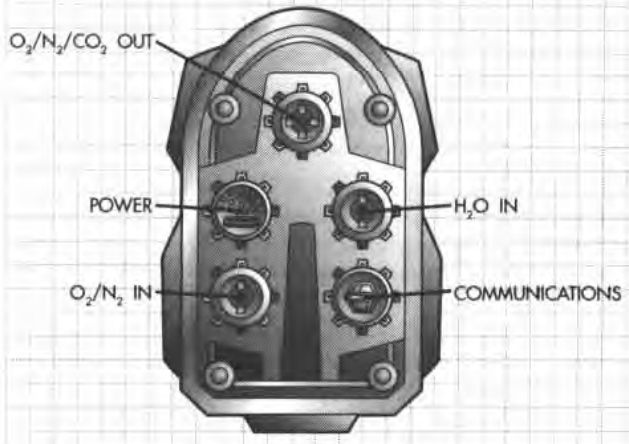
SPACE SUIT ACCESSORIES AND OPTIONS II

Equipment	Expansion Slots	Wt	Cost	Code
Heads-Up Display, 2D	H1	-	400	4-C1
Heads-Up Display, 3D	H1	-	550	5-C2
Food Dispenser	H1	0.5	50	4-E0
Lights				
20/90	H0	-	10	3-E0
50/45	H0	0.5	20	3-E0
50/90	H0	1	35	4-E0
100/45	H0/M1	1	60	4-E0
100/90	H0/M1	1.5	80	4-E0
250/60	H0/M1	2.5	100	5-E0
Waldo Gloves	T2	2	500	5-E1
Pseudo-Hand, Heavy	T1	2	250	5-E1
Pseudo-Hand, Light	T1	1	175	5-E0
Gravity Boots	L1	2	500	5-D2
Reinforced Boots	L1	2	200	4-E0
Armored Boots	L2	4	400	5-E1
Integral MMU	M1	6	2000	5-E1
Advanced MMU	M1	6	3500	6-E1
External Re-Mass (10 BP)	M*	2	100	4-E0
Radiation Screen (100 rad/hr)	T1	2	500	5-E0
Radiation Screen (1000 rad/hr)	M1	3	1000	5-E0
Radiation Screen (10,000 rad/hr)	M1	5	1500	6-E0
Endurance Upgrade, Int.	M1	1.5	100	6-E0
Endurance Upgrade, Ext.	M*	2	125	4-E0
Recharge Port	T0	1	50	4-E0
Military Comm	H1	1	200	6-B2
Enhanced Comm	H1	1	150	5-E0
Sensor System	T1	*	200*	6-E0*
ECM	M2	4	2,000	6-B2
ECCM	M2	4	2,000	6-B2
Adaptive Fittings	*	4	5,000	5-E0

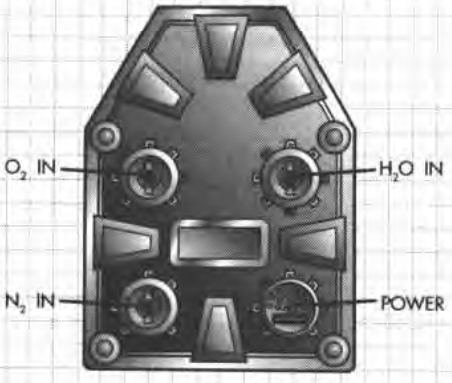
H = Helmet, T = Torso, L = Legs, M = Mission Pack

• See description on previous pages

CREW STATION CONNECTOR



SUIT RECHARGE PORT



▶ SPACE SUIT MAINTENANCE

2.4

Maintenance requirements for space suits are surprising low, but most users check components more often than required, especially if heavily used. Overpressure checks — increasing the pressure to seven psi for ten minutes to see if the pressure drops — before an excursion indicates whether the suit has any leaks.

Each space suit rack in the airlock white room, or any other suit storage location, has resupply lines for oxygen, nitrogen, water, power, and reaction mass hung in the suit locker to charge systems. The recharge sockets are located along the side of the mission pack.

Dusty surface environments require the regular and thorough cleaning of a space suit. Fouled joints and connections are the number one source of maintenance downtime from surface use. Surface habitat white rooms are equipped with a forced air chamber attached to the airlock entrance. The chamber blasts all returning personnel with 30 seconds of high pressure air to remove the majority of surface dust. A "duster" high-suction vacuum is also used for thorough cleaning.

▼ REPAIR

2.4.1

Depending on the nature of the damage, a space suit may or may not be repairable. Any electronic or mechanical part is easily fixed by replacing the part. Any extensive damage to the suit structure or polymers is not considered repairable due to concerns about failures from faulty repairs. In this case, the damaged section must be replaced. Even suits with arms or boots integral to the torso or legs, respectively, have rotation or connector rings that allow the arm or boot to be replaced individually.

Ideally, the replacement parts should be from the same suit model. If it becomes necessary to replace space suit parts with parts from a different suit model, the GM should decide what effect the replacement parts will have on the repaired suit's operation. Effects may include limited mobility, decreased duration, an increased chance of component failure, or simply an annoyance, like a restricted visual range or uncomfortable fit. Characters use the Tinker skill to determine the success of any jury-rigged repairs; replacing damaged components with the proper parts is a trivial task for anyone with a thorough knowledge of suit operations (Space Survival 2 or greater).

◇ WAYLAND INDUSTRIES DUAL SPRAY

Shrapnel has always been a threat in combat. In space that threat is compounded by the need to wear a space suit. Not only does shrapnel cause the loss of blood and atmosphere, the presence of a space suit means treatment of the first problem compromises the fix for the second problem. Dual spray is a polymer bonding agent and synthe-flesh combination that addresses both problems simultaneously.

Because of the dissimilarity between flesh and polymer, the two agents perform their function separately — the bonding agent secures the damaged suit, and the synthe-flesh closes the wound. The spray, applied directly to the puncture, quickly seals up to a fist sized hole. Bleeding and atmosphere loss are stopped or dramatically reduced. The spray patch hardens quickly, so a proper patch must be quickly applied.

Dual spray comes in cases of six canisters for 150 credits, and has a code of 4-E0.

◇ WAYLAND INDUSTRIES EMERGENCY PATCH

Some suit damage isn't nearly as life threatening as a puncture wound, but tears and rips are another common type of damage. The emergency patch is a half centimeter thick, 15 centimeter square with a folding grip on the back. To apply the patch, unfold the grip, cover tear with the patch, and twist the grip while pushing down. Twisting the grip releases the catalyst that "melts" the patch onto the suit to form an airtight seal.

Emergency patches come in boxes of ten for 50 credits, and have a Code of 3-E0.

▼ MODIFICATIONS

2.4.2

Each space suit is listed, under Expandability, with a number of expansion slots available (listed under the suit statistics as Expandibility). The slots represent how much room the suit has for accessories. Some items will simply replace existing suit equipment, while others will replace the existing system and require extra slots. Some items may also be attached without requiring a slot.

If the space suit is purchased with the modifications in place, the character doesn't have to worry about the quality of work. If the suit is retrofitted with a modification, a technician with the appropriate skill — Tinker, Mechanics, or Electronics, whichever is appropriate to the modification — makes a Skill Test against a Threshold of 4. If the test succeeds, everything works perfectly. If the test is failed or fumbled, subtract the Margin of Failure from six, treating a fumble as zero. This is the threshold to see if the suit suffers a failure under adverse conditions. A person trained in space suit operation can attach endurance upgrades and external reaction mass without incident.



CHAPTER THREE:

ORDNANCE AND ARMOR

RANGED WEAPONS ◄

Pistols and rifles are the most common form of ranged weaponry used in the solar system in the 23rd century. From the simple, reliable slugthrower to advanced laser and gauss weapons, these weapons are still used side-by-side with warships, exo-armors and fighters as the solar nations come into conflict. This section of *Ordnance and Armor* concentrates on advanced personal ranged weaponry. For those Player Characters who prefer a slugthrower as a personal weapon, low tech options available though the use of *Special Ammunition* (page 28) can provide flexibility and function equivalents to any high-tech solution.

While personal sidearms are not as strictly regulated as more powerful rifles and heavy weapons, the general public associates weapons (of any type) with either law enforcement and the military, or with criminals and mercenaries. The public trusts that law enforcement and military personnel are properly trained to minimize damage and show restraint in their use of firearms; however, the same cannot be said for anyone else. Unless a character is clearly identifiable as acting for a law enforcement agency or the military, the public will go to great lengths to avoid people carrying weapons, and will report them to law enforcement officials at the first safe opportunity. Life in space is dangerous enough already.

JOVIAN OPTICS PULSAR LASER WEAPONRY ◇

The Jovian Optics Pulsar-Alpha Laser Pistol is a pulse laser weapon. To achieve a higher rate of fire, two standard power cells are used to balance the heat generated by the rapid power drain; each power cell alternates feeding power to the lasing chamber. Each Damage Multiplier listed in the table consumes 2, 4 or 8 energy units, respectively; against non-reflec armor, halve the armor's normal Armor Rating. The Pulsar-Alpha is restricted to the first two Damage Multipliers listed when fired in pulse mode to conserve energy.

The Jovian Optics Pulsar-Delta Laser Rifle is the big brother of the Pulsar-Alpha. The Delta uses the same alternating power method to achieve a higher rate of fire, except that it uses a special dual-sectioned power cell. Each Damage Multiplier listed in the table consumes 4, 8 or 16 energy units, respectively; against non-reflec armor, halve the armor's normal Armor Rating. The Pulsar-Delta is restricted to the first two Damage Multipliers listed when fired in pulse mode to conserve energy.

"The accurate and deadly quality of a laser combined with a rate of fire normally reserved for chemical guns makes the Pulsar the premier laser weapon system in the Solar System" — Jovian Optics Sales Material

NAKIMA H4 HEAVY LASER PISTOL ◇

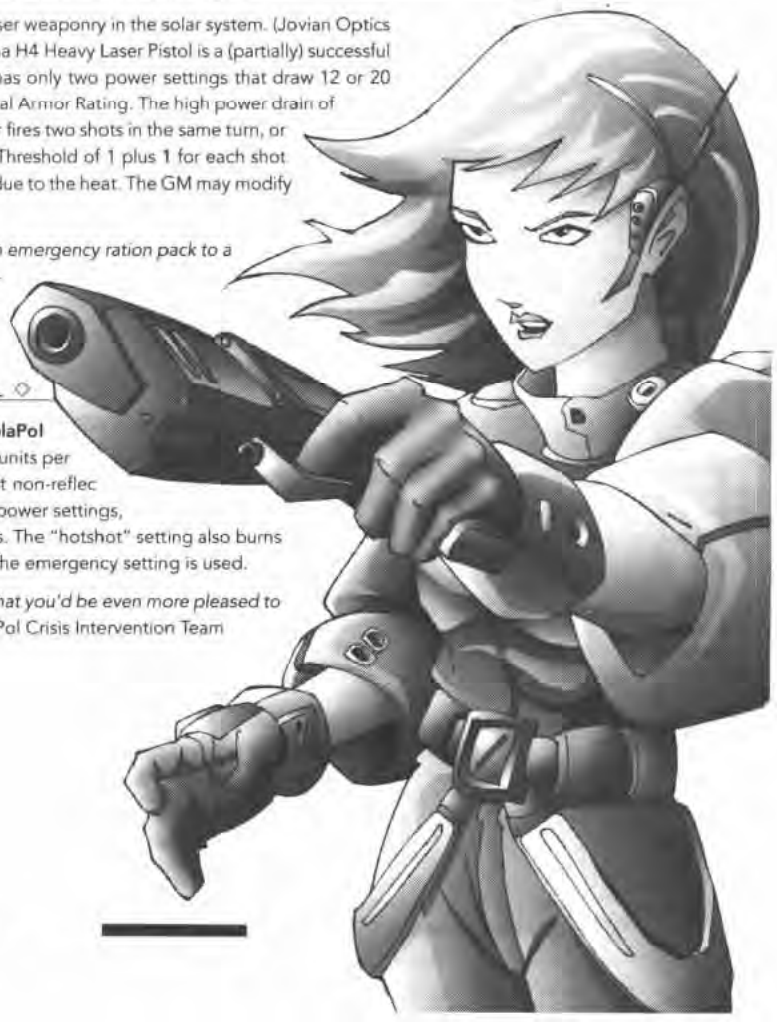
Nakima is a Venusian company, and one of the leading manufacturers of laser weaponry in the solar system. (Jovian Optics would say that is only because Nakima has stolen their designs.) The Nakima H4 Heavy Laser Pistol is a (partially) successful attempt to build a laser pistol that can inflict laser rifle damage. The H4 has only two power settings that draw 12 or 20 energy units, respectively; against non-reflec armor, halve the armor's normal Armor Rating. The high power drain of the H4 means the power clip and pistol can become very hot. If the attacker fires two shots in the same turn, or fires single shots for two or more consecutive rounds, a WIL test versus a Threshold of 1 plus 1 for each shot after the second is made. A failed roll means the character drops the pistol due to the heat. The GM may modify or ignore this roll if the character has something protecting their hands.

"When they say it can get a little warm, they mean warm enough to heat an emergency ration pack to a palatable temperature. Mind you, the person on the receiving end isn't exactly expecting to be quite so thoroughly cooked by a mere pistol either."
— Anonymous Weapons Dealer

DESSA HOTSHOT-5 LASER PISTOL ◇

The Hotshot-5 is a scaled down version of the Hotshot-3 assault laser rifle (**SolaPol Sourcebook**, p.115). The three primary power settings use 3, 6 or 9 energy units per shot, corresponding to the Damage Multipliers listed in the table; against non-reflec armor, halve the armor's normal Armor Rating. In addition to three normal power settings, the emergency "hotshot" anti-armor setting (x80) consumes 25 power units. The "hotshot" setting also burns out the pistols quickly, reducing the Accuracy and DMs by one each time the emergency setting is used.

"If you've ever had the pleasure of using the Hotshot-3, let me assure you that you'd be even more pleased to have the Hotshot-5 to back it up." — Field Agent Laurence Williams, SolaPol Crisis Intervention Team



◇ ARES WAFFENFABRIK AR-4 GYROC ASSAULT RIFLE

Building on the success of their A-4 gyroc autopistol, Ares Waffenfabrik created a larger assault rifle version: the AR-4. The negligible recoil of the AR-4 makes this weapon increasingly popular with law enforcement, marine units, and, unfortunately, pirates. The weapon uses a bullpup configuration to keep the weapon compact without sacrificing accuracy to a shortened barrel. Waffenfabrik has also redesigned the AR-4 rounds for increased effectiveness versus armor by using an explosive-driven penetrator. This reduces the Armor Rating of the target's armor by 10 points. The first (lower) Damage Multiplier is used against targets at Short range.

◇ AREA WAFFENFABRIK GS-1 SNIPER GYROC RIFLE

Building on their expertise in gyroc weapons, the engineers at Ares Waffenfabrik continue to create unique applications for gyroc weaponry. The GS-1 Sniper Gyroc Rifle uses a shortened bullpup configuration with targeting scope and UV targeting laser. The shell uses two-stages to increase the rifle's range over a standard gyroc. The shell is also equipped with a semi-active guidance system to home in on a target painted with the laser. In game terms, the shooter must make two To-Hit rolls against the target. The first To-Hit roll is to ensure the targeting laser (+1 Accuracy; ranges as listed in table) is on target when the gyroc round is fired; apply Aiming bonuses to this roll. After the laser To-Hit roll is made, immediately roll to hit with the gyroc round. If the targeting laser roll was successful, the guidance system in the gyroc acquires the laser, and the shooter gains an additional +1 bonus for the gyroc round; apply Aiming bonuses to this roll also.

If the shooter is careful not to move the aim point too radically, the shell can actually be steered around obstacles with a fair degree of success. One clever assassin used this feature to his advantage by making the round strike from an angle that led security personnel to descend on an adjacent building, thus gaining enough time to make good his escape. Pressure by law and government agencies has forced Ares Waffenfabrik to restrict the production and sale of the GS-1 to law enforcement and military personnel only.

"The GS-1 is so simple to use a ten-year-old kid could make a living as an assassin." — Pietr Hoffman, Former Ares Waffenfabrik Sales Manager (quoted shortly before his termination from the company.)

◇ HOLT EXTERMINATOR PISTOL

The Holt Exterminator Pistol fires a large caliber, hypervelocity round. While the term "hand cannon" has described numerous large caliber handguns since the 20th century, the Exterminator has owned the title since the mid-22nd century. Truly unsuitable for use in space, the Exterminator has a fearsome reputation that goes beyond the 15 millimeter short round it fires. The Exterminator was, and still is, the favored sidearm of CEGA assault troops on Earth, whose acts of barbarism shocked both enemies and allies. The large muzzle diameter, top-mounted box magazine, and side-mounted ring sights make the Exterminator easily identifiable, especially when it is pointed at you.

"If you think the view from the business end of this pistol is intimidating, you should see the guys that carry them. I mean, you need to be that big just to carry the thing." — Anonymous

◇ WALTER-STROMM POLICE SPECIAL SIDEARM

The Walter-Stromm Police Special Sidearm is the standard sidearm of many patrol officers in colony cylinders and other contained environments. The Police Special Sidearm is an over-under sonic stunner-laser combination that uses a common power cell. The accuracy of the laser decreases the chances of stray shots that can damage important structures and, more importantly, innocent bystanders. The integrated sonic stunner also provides the option for non-violent apprehension. The power cell connection is just in front of the trigger guard. The cell itself carries a larger charge than a normal laser or stunner cell, and lays along the underside of the laser barrel.

The laser has two energy settings of 2 and 5 power units; against non-reflec armor, the Armor Rating is halved. The sonic stunner has power settings of 1 to 10, each draining the corresponding amount of units. The victim of a sonic stunner must succeed in a BLD roll against the weapon's power setting plus the attacker's Margin of Success. A failed roll means the victim is stunned (-2 modifier to all rolls) for a number of rounds equal to the Margin of Failure. On a Fumble, the victim is knocked unconscious for a number of minutes equal to the MoF; a Health test is rolled against the MoF to avoid a permanent -1 PER.

"The PSS is real friend to have as a police officer. It's a little nose-heavy with the power cell up front, but it's easy to overcome by modifying your grip and stance slightly. The accuracy and dual response in a single weapon makes it my favorite." — Constable Craig Harriman, Orbital Settlement Police Officer

◇ COLT-SILVER 9MM MACHINE PISTOL

The Colt-Silver 9mm Machine Pistol is a larger version of their 9mm autopistol design with larger magazine capacity and higher rate of fire. The high rate of fire in a small package effectively gives the machine pistol the operation of a submachine gun. Serious military personnel scorn the lightweight weapon, but it has found favour with criminal elements that are looking for easily concealed firepower.

ANACHRONISM WEAPONRY CROSSBOW ◇

Anachronism Weaponry is a Mercurian manufacturer of low technology weapons with high technology materials. The Anachronism Weaponry crossbow is a marvel in its use of technology. The materials for the stock are lightweight. The bow is constructed of pizeo-electric material that not only provides excellent range and penetration of the bolt, but also incorporates an automatic draw-and-cock mechanism for easy reloading.

RANGED WEAPONS STATS ◫

Weapon	ACC	DM	Range	RoF	Ammo	Cost	Wt
Jovian Optics Pulsar-Alpha Laser Pistol	+1	x8/14/20	8/16/32/64	+1	60	1100/20	1
Jovian Optics Pulsar-Delta Laser Rifle	+1	x13/22/35	100/200/400/800	+2	180	1900/25	3
Nakima H4 Heavy Laser Pistol	+1	x22/35	6/12/24/48	0	60	1500/20	1
Dessa Hotshot-5 Laser Pistol	+1	x10/16/22	8/16/32/64	0	60	1400/10	1
Ares Waffenfabrik AR-4 Gyroc Assault Rifle	+1	x20/30	40/80/160/320	+1	30	1500/40	3.5
Ares Waffenfabrik GS-1 Sniper Gyroc Rifle	+1*	x25/45	200/400/800/1600	0	4	1500/100	5.5
Walter-Stromm Police Special Sidearm (Laser)	+1	x6/14	8/16/32/64	0	60*	850/15	1.5
(Sonic Stunner)	+1	spec.	4/8/16/32	0	60*	-	-
Holt Exterminator Pistol	0	x40	6/12/24/48	0	4	500/15	2
Colt-Silver 9mm Machine Pistol	0	x15	12/24/48/96	+2	50	600/30	2.5
Anachronism Weaponry Crossbow	+1	x18	8/16/32/64	0/2	1	500	2

* See weapon description for special rules.

RANGED WEAPON AVAILABILITY AND LEGALITY ◫

Weapon	M	V	E	Or	L	Mf	Mr	N	J	S
Jovian Optics Pulsar-Alpha Laser Pistol	6-B2	7-B2	9-B3	7-B3	8-B3	7-B2	6-B2	6-B2	5-B2	7-B2
Jovian Optics Pulsar-Delta Laser Rifle	6-B3	7-B3	9-B4	7-B4	8-B4	7-B3	6-B3	6-B3	5-B3	7-B3
Nakima H4 Heavy Laser Pistol	7-B3	5-B2	7-B2	6-B2	6-B2	6-B2	6-B2	8-B3	7-B2	10-B2
Dessa Hotshot-5 Laser Pistol	5-B3	6-B3	7-B4	6-B4	6-B4	6-B3	6-B3	8-B3	6-B3	9-B3
Ares Waffenfabrik AR-4 Gyroc Assault Rifle	6-B3	6-B3	6-B3	6-B3	6-B3	6-B3	5-B3	4-B3	6-B3	9-B3
Ares Waffenfabrik GS-1 Sniper Gyroc Rifle	9-A5	9-A5	8-A5	9-A5	9-A5	8-A4	7-A4	10-A5	9-A5	11-A5
Walter-Stromm Police Special Sidearm	4-C2	4-C2	8-C2	4-C2	4-C2	6-C2	6-C2	5-C2	4-C2	8-C2
Holt Exterminator Pistol	8-B3	8-B3	5-B2	7-B3	8-B3	6-B2	7-B2	10-B3	9-B3	10-B3
Colt-Silver 9mm Machine Pistol	7-C2	7-C2	4-C2	6-C2	7-C2	5-C2	6-C2	8-C2	7-C2	10-C2

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn



▶MELEE WEAPONS

In the high tech universe of **Jovian Chronicles**, it would seem unusual to include melee-type weapons when there are much cleaner weapons like lasers available. It is often the case that melee weapons are less restricted and easier to obtain given their simple nature. Indeed, the close confines of ships, and some places in cylinders and surface habitats, make melee weapons the favored choice for combat in confined spaces, being that they are less clumsy, or random, as lasers.

◇BASIC WEAPONS

The naginata is an ancient Japanese spear with a short blade attached at the end of a seven foot shaft. The naginata is a weapon favored by the Venusians. A Hummer version — draining one power unit per full minute of combat — is also available. The HummerAx is favoured by marines since it gives them some exo-suit capabilities when wearing armored space suits. It drains one power unit per full minute of combat.

◇SNAP BLADES

Snap blades are short, spring-loaded blades that are attached to the back of the forearm. When they are released, the blade remains attached to the arm. People that use snap blades often wear gloves with armored backs to protect the hand; many snap blade models have spring-deployed cross guards. A Hummer version — draining one power unit per full minute of combat — is also available.

"These things give me nightmares. Anyone with a loose, long-sleeved shirt becomes a possible threat." — Field Agent Emily Fuhito, SolaPol Executive Protection Bureau

◇ASP

An asp is a metal telescopic nightstick. A quick flick of the wrist extends the asp from a collapsed length of 20 centimeters to more than 60 centimeters. A simple friction mechanism keeps the asp extended until the end is pushed back into the grip. An asp may not be electrified.

"Don't dismiss this — it's small but easy to hide, and it hits a lot harder than just bare fists." — Field Agent Emily Fuhito

◇STUN BATON

Stun batons use a combination of sonics and electricity to consistently achieve a long duration stunned or unconscious state when a target is hit, without permanent injury. The stun baton has power settings of 1 through 10, each draining the corresponding number of energy units. The victim of a stun baton must succeed in a BLD roll against two plus the weapon's power setting plus the attacker's Margin of Success. A failed roll means the victim is stunned (-2 modifier to all rolls) for a number of rounds equal to the Margin of Failure. If the victims MoF is greater than five, or on a Fumble, the victim is knocked unconscious outright for a number of minutes equal to the MoF.

"An effective crowd control tool, but one the bad guys aren't afraid to use either. Tap some lone person with a baton, and it's easy pickings." — Officer Dorothy Remy, Joshua Station Police

◇TELESCOPIC STAFF

The telescopic staff is a collapsible, composite quarterstaff. The collapsed staff has a diameter of six centimeters and a length of 50 centimeters; fully extended, the staff is two meters long. Two recessed catches lock each end of the staff into its collapsed or extended position. The end sections are weighted to give the staff extra momentum when it is swung extended. A telescopic staff may not be electrified.

"Instant combat staff, just add water. At least that's the joke around here. If you have ever faced anyone with a modicum of martial art training wielding one of these, though, you may find it less funny." — Anonymous

◇RAPIER

Updated to the 23rd century, rapiers are manufactured with incredibly strong materials that allow them to penetrate most armor. Rapiers are considered to be Armor Piercing (which reduces the effectiveness of armor by half, rounded up.) A skilled duelist (Melee Skill Level 3 or higher) gains a +1 bonus to Accuracy because of their increased control over the tip of the blade. Rapiers are not available in Hummer versions since they lack a cutting edge.

Because rapiers are thrusting weapon, a laser rapier exists: the blade is hollowed to accommodate a fiber optic channel with the laser mechanism in the rapier's grip. The impact of a successful thrust activates the laser, which increases the rapier's effectiveness against armor even further (reduces the Armor Rating by half again, unless it is reflec armor). Each successful attack drains one power unit. The laser rapier is manufactured by Anachronism Weaponry.

THROWING WEAPONS ◇

A throwing star is a flat piece of hard material, usually metal, that is shaped into a star with sharpened edges. Because of their construction, throwing stars may only be thrown. Throwing knives are specially balanced for throwing. They are often manufactured from a single piece of material since it is easier to balance the knife. Because of their construction, throwing knives have an Accuracy of -1 when handheld — since they cannot be gripped properly — and +1 when thrown.

MELEE WEAPONS STATS

Weapon	ACC	DM	Range	RoF	Ammo	Cost	Wt
Naginata	-1	AD+12	close combat	n/a	n/a	100	3
Snap Blade	+1	AD+7	close combat	n/a	n/a	50	1
HummerAx	0	AD+18	close combat	n/a	30	450/10	2.5
HummerNaginata	-1	AD+19	close combat	n/a	30	800/10	3.5
HummerSnap Blade	+1	AD+13	close combat	n/a	30	400/10	1.5
Asp	0	AD+3	close combat	n/a	n/a	15	0.5
Stun Baton	0	AD+4/stun	close combat	n/a	30	50/10	2
Telescopic Staff	0	AD+9	close combat	n/a	n/a	65	3.5
Rapier	0	AD+6	close combat	n/a	n/a	200	1.5
Laser Rapier*	0	AD+6	close combat	n/a	30	750	1.5
Throwing Knife	-1/+1*	AD+3	Throw	0	n/a	5	0.1
Throwing Star	+1*	AD+2	Throw	0	n/a	3	0.1

* See the description of the weapon for special rules.

MELEE WEAPON AVAILABILITY AND LEGALITY

Weapon	M	V	E	Or	L	Mf	Mr	N	J	S
Naginata	6-D2	5-D2	7-D2	7-D2	7-D2	8-D2	8-D2	8-D2	9-D2	10-D2
Snap Blade	7-D3	7-D3	6-D2	6-D3	7-D3	7-D3	7-D3	9-D3	7-D3	10-D3
HummerAx	6-B2	6-B2	5-B2	6-B2	6-B2	6-B2	5-B2	8-B2	6-B2	10-B2
HummerNaginata	6-B2	5-B2	7-B2	7-B2	7-B2	8-B2	8-B2	8-B2	9-B2	10-B2
HummerSnap Blade	7-B3	7-B3	6-B2	6-B3	7-B3	7-B3	7-B3	9-B3	7-B3	10-B3
Asp	4-D1	4-D1	3-D1	4-D1	4-D1	4-D1	4-D1	5-D1	4-D1	8-D1
Stun Baton	5-C1	5-C1	4-C1	5-C1	5-C1	5-C1	5-C1	6-C1	5-C1	8-C1
Telescopic Staff	5-D1	5-D1	7-D1	5-D1	6-D1	6-D1	5-D1	7-D1	5-D1	9-D1
Rapier	6-D1	6-D1	7-D1	6-D1	6-D1	6-D1	6-D1	8-D1	6-D1	9-D1
Laser Rapier	6-C2	6-C2	8-C2	6-C2	7-C2	6-C2	6-C2	5-D2	6-C2	9-C2
Throwing Knife	5-D2	5-D2	4-D2	5-D2	5-D2	5-D2	5-D2	6-D2	5-D2	8-D2
Throwing Star	5-D2	5-D2	4-D2	5-D2	5-D2	5-D2	5-D2	6-D2	5-D2	8-D2

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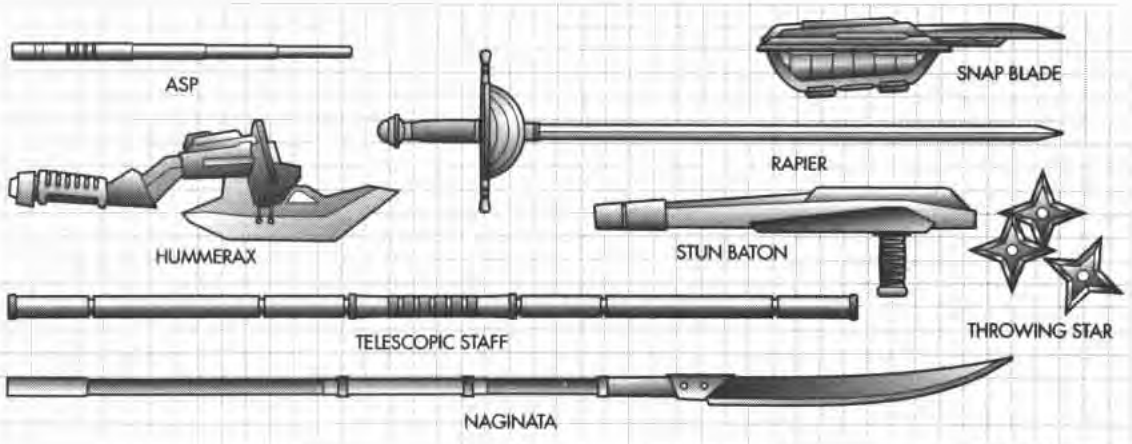

▶HEAVY WEAPONS

The proliferation of exo-suits and exo-armors requires that infantry and exo-suit forces carry heavy weapons. Not all heavy weapons can threaten exo-armor, but there are weapons that will make an exo pilot very cautious. Heavy weaponry is still widely deployed in the classic infantry support role of suppression, but advances in armor technologies means that anti-armor capabilities are also desirable. All heavy weapons are classified as military equipment for their exclusive use, though a limited number of these weapons are available to ESWAT units. The highly destructive nature of these weapons means that unless the weapon is in a proper transportation and storage case, and it remains there, Player Characters can expect problems not only from law enforcement officials, but anyone who knows they have a heavy weapon in their possession. (For example, ship captains will worry about a number of things, including hijacking and punctured hulls.)

◇NAKIMA ALX-2 ASSAULT LASER

The Nakima ALX-2 Assault Laser is a shoulder-fired, anti-armor laser weapon. The ALX-2 is a single shot laser that is two parts: the emiiter (a focusing and control unit) and the laser cartridge (a power pack and laser pulse generator). The laser cartridge is attached to the end of the emitter.

The power transfer to the laser pulse generator happens extremely quickly when the weapon is fired. This completely burns out the laser cartridge, but generates a very powerful laser pulse. Firing the weapon is also hard on the focusing mechanisms, so the emitter is only good for about a dozen shots before it requires refurbishment. The range is keep quite short to maximize the laser's power over the entire effective range of the ALX-2. At roleplaying scale against non-reflec armor, halve the armor's normal Armor Rating. At tactical scale, the ALX-2 is considered a HEAT weapon with a DM of x15.

"Even as a one-shot wonder, you can't do much better without an exo-suit. This means you have to mother your shots since you only get a few before the emitter wears out, and it's a slow reload. Even then there's nothing better to have on a boarding action." — Private Tan Riko, JAF Marine

◇JOVIAN OPTICS PULSAR-OMEGA LASER CANNON

The Jovian Optics Pulsar-Omega Laser Cannon is the equivalent of a laser machinegun. To achieve this level of performance, the Pulsar-Omega uses a variation on the technology that made the Alpha and Delta possible. To minimize heat generated by the high power requirements, power is drawn from a special quad-sectioned power cell. The Omega uses two focusing mechanism-lasing chambers in combination to alternate the firing cycle, offering a further increase in the Omega's rate of fire. Two sections of the cell power feed to each lasing chamber.

The Pulsar-Omega has two standard damage settings, and a third special setting; against non-reflec armor, halve the armor's normal Armor Rating. The first two settings drain 4 and 8 power units, respectively, and both settings are available at high rates of fire, though the second setting rapidly drains the non-standard power cell. The third Omega power setting is a "hotshot" setting that fires both chambers simultaneously. The "omega" setting has a Damage Modifier of x100 and drains 20 power units. Because the burst is split between the two lasing chambers-focusing mechanisms, it doesn't suffer the same performance degradation as the Dessa Hotshot-3. This feature has lead to a legal battle between Dessa and Jovian Optics over the "hotshot" option.

◇HADES NEMESIS MAN-PORTABLE PARTICLE CANNON

Hades Weaponry is an Earth-based company that managed to flourish in the conflicts of the Fall, and the reunification efforts of CEGA. Hades remains CEGA's primary suppliers of heavy weaponry to the Army. The Nemesis Man-Portable Particle Cannon (MPPC) is named for the ancient Greek god of revenge. Though man-portable particle weapons have some significant drawbacks, the benefits of low recoil and haywire effects balance the negatives.

The biggest drawback is the massive power requirements of the Nemesis. The weapon itself carries a fast charging/discharging capacitor to actually fire the weapon. To charge the capacitor, the user carries a backpack mounted microturbine generator that runs in a standby mode until the weapon is fired. The microturbine recharges the capacitor as quickly as possible. In game terms, this means the Nemesis MPPC can only be fired once every three turns. The generator carries sufficient fuel to fully charge the capacitor 12 times. If an exo-suit is available, technicians will mount the microturbine generator on the suit with an additional fuel reserve.

In addition to normal damage, the victim also suffers an Intensity 12 electrical attack plus the attacker's Margin of Success; against vehicles, this is equivalent to the Haywire characteristic. Energy dissipation effects increase at Long and Extreme ranges, reducing the Damage Modifier by 5 and 10 points respectively.

"It is difficult to conceive of a stronger moral indictment of CEGA than to simply point out their association with, and support of, the manufacturers of such lethal and barbaric weapons as were used to such murderous ends less than twenty-four hours ago." — Press release from the Agora following a terrorist incident that involved the use of Nemesis MPPC against an ESWAT team

ARES WAFFENFABRIK GAC-2 GYROC CANNON ◇

Ares Waffenfabrik has invested large amounts of resources in gyroc weapons research. In addition to new gyroc autopistol and assault rifles, Ares has improved upon a poorly received version of an anti-armor gyroc cannon. A larger round, and more powerful propellant, give the gyroc cannon decided advantages over the 24mm anti-armor gun, including low recoil and greater range. The GAC-2 uses a 20 round drum magazine of two-stage gyroc projectiles.

HADES WEAPONRY 30MM ROCKET LAUNCHER ◇

The Hades Weaponry 30mm rocket launcher is a poor man's missile. The hypervelocity, unguided, folded-fin rockets are loaded into five round magazines. Because the rockets are unguided, a longer launch tube is needed to ensure a certain level of accuracy. So the length of the weapon doesn't hinder movement and storage, the forward section of the launch tube telescopes into a shorter storage and transport position that reduces the length to two-thirds of its two meter length.

HADES WEAPONRY HA-IX "ARMAGEDDON GUN" ◇

The Hades Weaponry HA-IX (Heavy Assault) "Armageddon Gun" is a very heavy squad assault weapon. The HA-IX is an over-and-under 7.5mm machinegun and 40mm grenade launcher combination. The user must wear an exo-suit/skeleton or be exceptionally strong (BLD and STR +1 or greater) The weapons ammunition is carried in a pack-mounted magazine that carries both bullets and grenades. The rounds are linked together and feed to the weapon via a motorized feed mechanism. A special assault grenade round is carried for the launcher; a more powerful explosive in an improved shell (8/20 blast radius) provides increased effectiveness against hardened targets. This weapon is another favorite of CEGA assault troops.

"I can see why they call it the Armageddon Gun. I was watching from a ridge above this town when there was a skirmish between CEGA troops and a group of NAS mercenaries. The guys toting the AGs could have done the job single-handedly. What a slaughter." — Comments made by Toby Friza to the media before his disappearance.

HEAVY WEAPONS STATS ◫

Weapon	ACC	DM	Range	RoF	Ammo	Cost	Wt
Nakima ALX-2 Assault Laser	+1	x150	60/120/240/480	0/2	1	8000/100	7
Jovian Optics Pulsar-Omega Laser Cannon	+1	x25/35	75/150/300/600	+3	300	7500/100	12
Hades Weaponry Nemesis Particle Cannon	+1	x60+elec.	100/200/400/800	0/+3	15	15,000/100	25
Ares Waffenfabrik GAC-2 Gyroc Cannon	+1	x50/80	170/340/680/1360	0	20	12,000/150	14
Hades Weaponry 30mm Rocket Launcher	0	x80	50/100/200/400	0	5	4000/150	10
Hades Weaponry HA-IX "Armageddon Gun" (7.5mm)	0	x32	125/250/500/1000	+3	500	4500/100	19
(Grenade Launcher)	0	x48/25	40/80/160/320	+1	40	-/800	

HEAVY WEAPON AVAILABILITY AND LEGALITY ◫

Weapon	M	V	E	Or	L	Mf	Mr	N	J	S
Nakima ALX-2 Assault Laser Cannon	6-84	6-84	8-84	7-84	7-84	6-84	6-84	8-84	6-84	8-84
Jovian Optics Pulsar-Omega Laser Cannon	5-84	6-84	8-84	8-84	8-84	7-84	6-84	7-84	5-84	8-84
Hades Weaponry Nemesis MPPC	6-84	6-84	6-84	6-84	6-84	6-84	7-84	9-84	9-85	9-84
Ares Waffenfabrik GAC-2 Gyroc Cannon	6-84	7-84	6-84	6-84	6-84	5-84	5-84	7-84	6-84	9-84
Hades Weaponry 30mm Rocket Launcher	7-84	7-84	4-84	5-84	5-84	6-84	6-84	9-84	8-84	10-84
Hades Weaponry HA-IX "Armageddon Gun"	7-84	7-84	5-84	6-84	6-84	6-84	5-84	9-84	8-84	10-84

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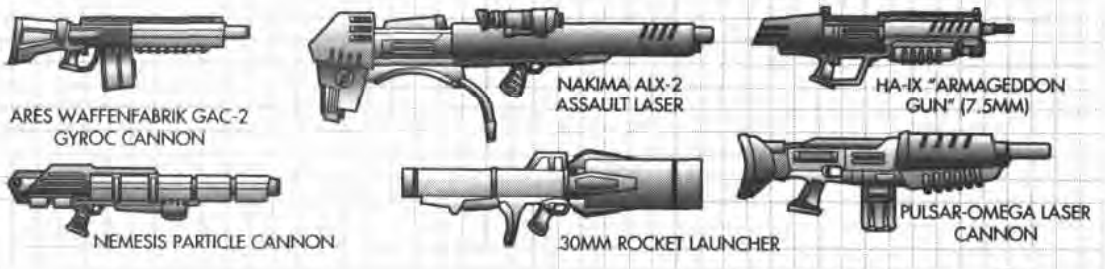


▶ SPECIAL AMMUNITION

Special ammunition is only available for ballistic-type weapons, with a single exception for energy weapons. While slugthrowers have some severe disadvantages compared to their high tech equivalents, special ammunition types can only partially overcome some of those flaws. For the sake of simplicity, a clip should only carry a a single type of ammunition.

◇ ARMOR PIERCING

Armor piercing rounds are specially designed to penetrate armor by one of two means: discarded sabot round or sub-round. Sabot rounds are a high-density dart with a collar that falls away once the round leaves the weapon's barrel. Sub-rounds looks like normal rounds except that the casing is a soft material that surrounds a penetrator rod; in this manner, the penetrator continues to travel into the target while the soft casing is shed on the armor's surface. Armor protects with only half of its normal Armor Rating against AP rounds. Armor piercing rounds are only available for chemical slugthrowers.

◇ BOOSTED AMMUNITION

There are two types of boosted ammunition: range and damage. Range boosted ammunition combines a lighter bullet or a more powerful propellant, or both, to increase the range of the round. Damage boosted ammunition is manufactured using one of two methods: increasing the round's density or using an shaped explosive charge. Either method provides a significant increase in the round's damage potential. Boosted ammunition is only available for chemical slugthrowers.

◇ CASELESS

Caseless ammunition increases the number of rounds carried in a magazine or clip by eliminating bulky metal casings. Technological advances have reduced the chances of misfires due to propellant deterioration, heat sensitivity, or moisture. Casless ammunition increases the effective magazine size by 25% (multiply listed Ammo by 1.25). Caseless ammunition is only available for chemical slugthrowers.

◇ ENERGY-HOMING

Energy-homing rounds are guided by the strong energy emissions of enemy communication and electronic warfare equipment. If the target made an Active Sensor roll, used communications or has any kind of ECM or ECCM active during the combat round when the energy-homing round is fired, the weapon gains a +1 to-hit. Energy-homing rounds are available for missiles and mortars only.

◇ FLECHETTE

Flechette rounds are an alternate ammunition for shotguns. Instead of pellets, a cloud of hardened metal darts is fired. The protective value of body armor is not doubled against flechette rounds (as it normally is against pellets). Only shotguns may fire flechette rounds.

◇ GUIDED

Guided ammunition has the ability to home in on targets "tagged" by a friendly unit. This allows the round to correct its course to the target mid-flight. Once the target is "tagged" by a friendly target designator, the round gains a +2 to-hit modifier. Guided ammunition is available for missiles and mortars only.

◇ HIGH-CAPACITY POWER CELLS

High-capacity power cells are available for most energy weapons; however, they are heavily restricted. They increase normal power cell energy units by 50%, and they are twice the normal cost. On a Fumble, there is a chance the cell will surge, destroying the cell and possibly shorting out the weapon. (Roll 1d6: a result of 6 means the weapon shorts out, rendering it useless. GM's discretion if it can be repaired.) High capacity power cells are only available for energy weapons.

◇ INCENDIARY

Incendiary rounds carry a chemical component that ignites upon impact. In addition to normal impact damage, the target also suffers an Intensity 6 fire attack that burns for two rounds; missiles and mortars attack at Intensity 10 for 5 rounds, but have their Damage Multiplier halved. Incendiary rounds are available for all ballistic weapons.

◇ LOW-VELOCITY

Low-velocity ammunition uses a less powerful propellant charge to decrease the power of the round. This reduces both its killing power and its penetration. Low-velocity rounds are only available for chemical slugthrowers.

RECOILLESS ◇

Recoilless ammunition is best described as a poor man's gyroc round. The smaller caliber of non-gyroc weapons reduces the damage and range compared to normal slugthrower rounds. The tradeoffs of range and damage compared to negligible recoil, decreased firing signature, and reduced likelihood of damaging important systems is considered acceptable Recoilless rounds are only available for chemical slugthrowers.

STUN ◇

Stun ammunition uses a thermo-kinetic sensitive mechanism to generate an electrical charge. The round is less dense than normal ammo, so the impact damage is significantly less. If the opponent is not wearing armor, he receives an Intensity 3 electrical shock; the victim will not suffer more than a Flesh Wound, no matter the result. When rolling side effects, fatal results are ignored but the Margin of Success is added to the Intensity. Stun rounds are only available for chemical slugthrowers.

TRACER ◇

Tracer rounds are only available for chemical slugthrowers. When a tracer round is fired, it leaves a visible streak of light. Knowing where the bullets are going, the attacker can "walk" the bullets onto the target. In game terms, using tracer rounds adds a +1 to-hit bonus per 2 points of Rate of Fire used. This only applies when the attacker can see where the bullets are going. (i.e. If the shooter is blinded or shoots blind around a corner, the bonus does not apply.) The Damage Modifier is also affected slightly to reflect lowering the shell mass for tracer chemicals.

SPECIAL AMMUNITION STATS

Ammunition	ACC	DM*	Base Rnge*	Ammo*	Cost*
Boosted, Range	n/c	x0.8	x1.4	n/c	x20
Boosted, Damage	n/c	x1.2	x0.8	n/c	x15
Caseless	n/c	n/c	n/c	x1.25	x5
EM Homing	special	n/c	n/c	n/c	x10
Flechette	n/c	n/c	n/c	n/c	x15
Guided	special	n/c	n/c	n/c	x20
HC Power Cell	n/c	n/c	n/c	x1.5	x5
Incendiary	n/c	spec.+fire	n/c	n/c	x10
Low-velocity	n/c	x0.75	x0.75	n/c	x5
Recoilless	n/c	x0.5	x0.5	n/c	x5
Stun	n/c	x0.1+elec.	n/c	n/c	x5
Tracer	special	-3†	n/c	n/c	x5

* Multiple by modifier and round off to nearest whole number.

† Subtract from normal weapon Damage Multiplier.

AMMUNITION AVAILABILITY AND LEGALITY

Weapon	M	V	E	Or	L	Mf	Mr	N	J	S
Armor Piercing	7-A3	7-A3	5-B2	7-A3	7-A3	6-B3	6-B3	9-A4	7-A3	10-A3
Boosted, Range	6-B2	6-B2	6-B2	6-B2	6-B2	6-B2	6-B2	8-B2	6-B2	10-B2
Boosted, Damage	7-A2	7-A3	5-B2	7-A3	7-A3	6-B3	6-B3	9-A4	7-A3	10-A3
Caseless	7-B2	7-B2	7-B2	7-B2	7-B2	7-B2	7-B2	8-B2	7-B2	10-B2
Electro-Optic	7-B3	7-B3	6-B2	7-B3	7-B3	6-B3	6-B3	9-B3	7-B3	10-B3
Fletchette	6-B3	6-B3	6-B2	6-B3	6-B3	6-B3	6-B3	9-B3	6-B3	10-B3
Guided	7-B3	7-B3	6-B3	7-B3	7-B3	6-B3	6-B3	8-B3	7-B3	10-B3
Hi-Cap Power Cell	5-B2	5-B2	7-B2	5-B2	5-B2	5-B2	5-B2	6-B2	5-B2	8-B2
Incendiary	9-B4	9-B4	6-B3	9-B4	9-B4	8-B4	8-B4	10-B4	9-B4	10-B4
Low-velocity	5-D2	5-D2	6-D2	5-D2	5-D2	6-D2	6-D2	7-D2	5-D2	8-D2
Recoilless	6-C2	6-C2	7-C2	6-C2	6-C2	7-C2	7-C2	7-C2	6-C2	9-C2
Smoke	6-C1	6-C1	5-C1	6-C1	6-C1	5-C1	5-C1	8-C1	6-C1	9-C1
Stun	6-D1	6-D1	7-D1	6-D1	6-D1	6-D1	6-D1	6-D1	6-D1	9-D1
Tracer	7-B2	7-B2	5-B1	7-B2	7-B2	6-B2	6-B2	8-B3	7-B2	10-B2

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn

▶WEAPON ACCESSORIES

For those people that are not completely satisfied with a weapon's base characteristics, certain accessories can make a weapon that special something to the owner. Most accessories listed here are performance-oriented, since most other changes are either a case of asthetics or personal preference in ergonomics.

◇SILENCERS

Silencers are specifically designed to quiet the loud retort of chemical slugthrowers, and are available for pistols and rifles. Silencers are available in two varieties: physical and electronic. The physical silencer is a baffled tube that is attached to the muzzle of the weapon, and has the added advantage of hiding the slugthrower's muzzle flash. Electronic silencers mount an omni-directional speaker that broadcasts black noise to cancel the noise of the weapon, but they do not block muzzle flash. In both cases, the noise is reduced to the level of a quiet finger-snap.

◇MIRAGE ELECTRO-OPTICAL SIGHTS

Visionary Systems produces the Mirage Electro-Optical sight system for personal and military weapons. The basic Mirage is a telescopic sight that uses lenses grown in zero gravity to ensure optimal clarity and zero defects. In addition to the basic optical sight, three separate vision options, or any combination thereof, are available for added functionality: low light, ultraviolet, and infrared. In each case, the only visible addition to the basic telescopic sight is a narrow rectangular-shape on the top of the sight. Mirage EO sights are designated with the first letter of their added capability, to differentiate the different models. For example the Mirage-U is an ultraviolet sight, while the Mirage-ILU has all three sight options. In all cases, the sight system adds a +1 modifier to hit at Long and Extreme range.

Visionary Systems electro-optical sight systems use a special "flicker" mirror to allow direct vision, but at the same time they are directing the full light spectrum into the processing unit mounted on the top of the sight. The electronics process the image, according to the vision option they are designed for, before projecting a transparent false-color image onto the rear lens with a laser. Both the ultraviolet and infrared sight are equipped with a broad-beam laser — of the appropriate type — to increase the natural illumination for increased clarity. This does have its drawbacks, since it can be used to locate the sight's user via a passive UV or IR sight.

◇MAELSTROM PINPOINT LASER SIGHT

The Maelstrom Electronics Pinpoint Laser Sight is a small tube that mounts on the top of a pistol. The sight provides a +1 to-hit modifier at Short and Medium ranges. The ballistics of slugthrower pistols make the sight useless for longer-range shooting. Since laser pistols already benefit from a built-in system (the laser at low power), they cannot gain an additional bonus with the Pinpoint Laser Sight.

◇MAELSTROM TRUE-SIGHT™ SMART SIGHT

A smart sight combines a processor with a microwave rangefinder/motion sensor and several small gyroscopes to account for changing range and the motion of the attacker and target. Low light and infrared vision are also part of the system. The True-Sight uses a small display screen to show a magnified and enhanced view of the target. Range and relative target motion are displayed with a point that shows where the round will strike when the weapon is fired. The True-Sight makes a weapon as close to point and shot as ever was possible.

The sight's ability grants the attacker a +2 bonus per round of aiming instead of the normal +1 bonus; however, the weapon must be sighted properly beforehand to ensure its accuracy. Before a character can use the +2 bonus, he must spend two hours at a range to adjust the sight. After spending these two hours, the character must make a Small Arms test against a Threshold of 4. If the test is failed, the character uses the normal +1 aiming bonus; if the test is fumbled, the character loses all aiming bonuses until the sight is readjusted. Any hard jolt, weapon modification, or lack of use requires the True-Sight to be readjusted. Maelstrom Electronic's True-Sight™ Smart Targeter was the first smart sight produced. Since then a number of inner system companies have produced their own copies with various degrees of success.

◇STABILIZERS

Stabilizers are designed to compensate for weapon recoil and movement. The simplest chemical slugthrower stabilizer is the muzzle brake. Vents are added to the end of the barrel to redirect some of the firing gases. Gas recoil stabilizers effectively reduce the weapons recoil by directing firing gases into a cylinder. Both methods effectively reduce the slugthrower's recoil by half, making it much easier to handle.

Gyroscopic stabilizers effectively reduce all horizontal and vertical forces acting on the gun. While it does cancel out much of the weapons motion, it means that rapidly moving the weapon up/down or left/right while firing is near impossible. The wielder cannot use Walking Fire unless the gyro stabilizer is turned off. When a burst is used against a relatively stationary target (walking or slower), the attacker receives a +1 modifier to hit. The gyroscopic stabilizer is attached to the underside of the barrel of any rifle-sized weapon or larger.

SIDEARM HOLSTERS ◇

The ubiquitous holster for carrying a sidearm comes in numerous varieties, depending on the individual's need for accessibility or concealability. Ankle holsters carry the weapon around the ankle. Waist holsters carry the weapon at the lower back. Hip holsters are carried at the hip. Wrist holsters carry small pistols (one kilogram or less) at the wrist. Quickdraw holsters are carried low on the thigh. Shoulder holsters are carried under the arm along the side of the chest. There are also a couple of interesting holster variations.

The forward draw holster is a low hip holster that allows the weapon to be drawn out of the front of the holster. Carried with the weapon's grip at arm's length down the thigh, the forward draw holster allows the user to bring the weapon, and the arm, into a firing position with one quick motion. (There is no need to lift it out of the holster.) Since the front of the holster is 'open,' a safety strap keeps the weapon secure in the holster until released. Once the strap is released, the holster, custom fitted to the weapon, uses friction to keep the weapon in its place until drawn.

Snap draw holsters attach to the lower arm, and are activated by a quick muscle action. The motion releases a spring-loaded mechanism to extend the attached small pistol into a position easy to grasp. This requires the user to wear loose clothing around the wrist and forearm to accommodate the use of the holster. Snap draw holsters are named for the distinct snapping sound they make when extending.

HARNESS SYSTEM ◇

Harness systems are a step-down from the heavy weapon exo-skeleton (below). The system consists of the torso harness (a composite vest that supports the weapon's weight) and weapon support arm (which transfers the weight to the torso). The support arm uses a feedback system and actuators to assist the user in moving the attached weapon. With the weight of the weapon carried by the torso, the user can effective move the weapon as though it has zero mass. Ammunition can be attached to the back of the torso harness. The harness also has several gyroscopes to help keep the user balanced.

HEAVY WEAPON EXO-SKELETON ◇

In most of the solar system, the expense of a full exo-suit, and the training that is required to use it, is the domain of special operations, space-based marines, and ESWAT teams. Standard tactical doctrine still requires some heavy weapon support for infantry. The heavy weapon exo-skeleton is issued to regular infantry units to provide increased stability and mobility for the user of the squad's heavy weapon. The exo-skeleton is semi-enclosed to protect the user since he cannot wear standard body armor. To get into the exo-skeleton, the wearer steps back into the suit while placing their arms in to the skeleton's arms and gauntlets. The front panels are then closed along the outside edge of the skeleton.

In game terms, the exo-skeleton is effectively Maneuver 0 and Fire Control 0. It does not increase the wearer's movement rate, but it gives the wearer an effective Strength of +2. (If the character has a STR of 2 or higher, they gain no benefit to their STR.) Because of the ablative-coated plate armor, the exo-skeleton has an effective Armor Rating of 30.



WEAPON ACCESSORIES ◘

Accessory	Wt	Cost	Code
Silencer, Pistol	0.5	50	6-C4
Silencer, Rifle	1	75	6-B4
Visionary Systems Mirage EO Sight	0.5	750	5-C3
Infrared	-	+250	-
Low Light	-	+150	-
Ultraviolet	-	+250	-
Maelstrom Electronics Pinpoint Laser Sight	0.2	200	5-03
Maelstrom Electronics True-Sight(TM) Smart Sight	1	1500	6-B3
Muzzle Brake	0.1	30	5-C2
Gas Recoil Cylinder	1	80	6-C2
Gyro Stabilizer	1	150	6-C2
Holster, Hip	0.25	15	4-D0
Holster, Waist	0.25	15	4-D0
Holster, Shoulder	0.5	25	4-D1
Holster, Quickdraw	0.5	20	5-D0
Holster, Forward Draw	0.5	30	5-D0
Holster, Snap Draw	0.5	50	5-C2
Harness System	14	1500	6-B2
Heavy Weapon Exo-Skeleton	40	3500	6-B3

▶EXPLOSIVES

3.6

With the exception of Earth, where explosives are used to clear rubble left from the devastation of the Fall and skirmishes, explosives used in space are limited to weapons, mining, and some underground construction. Explosives remain an inexpensive choice for moving or loosening large volumes of rock and surface material. All legally manufactured commercial and military explosives include taggants — microscopic particles that are coded with a manufacturer identification code and lot number. When explosives do go missing, SolaPol and other intelligence agencies make tracking down the missing explosives a priority.

For safety reasons, all commercial explosives are immune to accidental detonation with exposure to flame — not always true of improvised or home-made types — to a minimum temperature (Fire Intensity 8) at which point they merely disintegrate Commercial explosives are also subject to minimum safe specifications for impact (100 points or greater Personal Scale Damage) and electrical (Electricity Intensity 4) sources.

▼STANDARD EXPLOSIVES AND SHAPED CHARGES

3.6.1

Compared to a normal explosive charge, shaped explosive charges have two distinct areas of effect: a primary and a secondary. In both cases, the distance from the explosion the area of effect covers is the same; however, the shape of the two areas of effect are different. Whereas the normal charge affects a 360 degrees area around the explosion, the shaped charge's primary area of effect covers a small portion of that area (less than 45 degrees), while the shaped charge's secondary area of effect covers the remainder of the area.

Explosives that can be shaped have two Damage Multipliers listed. The first DM is for the direction of a shaped charge's primary area of effect. The second DM is for a shaped charge's secondary area of effect or the explosive as an unshaped charge. The first number listed for area is the radius of the shaped charge's primary and secondary area of effect. The second area of effect is for a normal charge. The area of effect multiplier for large shaped charges is half of the normal multiplier.

◇COMPOUND C5

Compound C5 is a descendant of C4, a plastic explosive used during the late 20th and early 21st century. This explosive is used extensively in demolition work since it can be easily shaped to fit the application. Since C5 is more easily available for commercial sale, it has also become the explosive of choice for terrorist organizations.

◇DYNAMITE AND DYNAMITE-II

Dynamite is still a the workhorse of commercial explosives, but in its reincarnation as Dynamite-II. Advances in chemistry have increased the detonating force and stability of Dynamite-II through various means. Dynamite's primary use is in mining and construction. The relative ease with which the original dynamite can be manufactured means it is one of the explosives more commonly used by "poor" terrorist organizations.

◇DETONATING CORD

Detonating cord is a high velocity explosive in the form of a half centimeter diameter cord. Called det cord for short, it is used for initiating large explosive loads, and as a cutting or breaching charge for low density materials. It is available in spools 100 meters long. Detonating cord is made by a number of companies in the solar system. The statistics listed under the *Explosives and Grenades* table are per meter length of cord.

◇HOME-MADE EXPLOSIVES

Home-made explosives are easily manufactured with simple to moderately sophisticated chemical synthesis equipment that can often be put together using life support equipment spare parts. The chemicals required for most stable explosives are strictly regulated and sold only to approved and licensed buyers that require them for other lawful purposes. Less powerful explosives can be manufactured with more common and unregulated chemicals, however. Disappearances of chemistry equipment and chemicals are always promptly reported by companies due to the threat an explosion in space represents, and almost universal laws that require the reporting of any theft of, or missing, chemicals or equipment that may be used to manufacture explosives.

In either case, there is always a chance that something will not work properly — explosive material can be very unstable, especially when manipulated by improperly trained personnel with cobbled-together equipment. The proper reactions may not occur, rendering the explosives useless, or may go off prematurely, with devastating consequences. Without the right chemical processing equipment, uncontrolled reactions and side reactions are a very real danger.

MASER GRENADE ◇

Maser grenades use a microwave pulse, instead of explosives and shrapnel, to inflict damage. When the maser grenade impacts, it uses the weighted bottom (the high-density power cell) and a tiny gyroscope to orientate the microwave emitter into a vertical position. The emitter covers a spherical area within a ten-meter radius to within a few centimeters of ground level. Their main advantage is that they bypass most types of armor; polymer or composite-based armor protect with only half of their value. Against metallic armor, the damage of the maser grenade is transformed into an electrical attack whose Intensity is equal to half of the grenade's Damage Multiplier plus the attacker's Margin of Success.

NIGHT GLUE GRENADE ◇

The night glue grenade is a non-lethal grenade that with an interesting effect — everything gets stuck together. The glue is a black contact adhesive that contains a strong irritant and blocks a broad range of the visible and non-visible light spectrum, hence the "night" designation. Everything coated by the glue is turned black and deprived of sight. This means equipment and optics are rendered useless, and people that move or touch anything become stuck. The irritant is meant to ensure that persons react to it and become stuck as they attempt to remove the compound. Trying to clean the glue off of equipment achieves similar results.

Police or military personnel entering the scene spray a release solvent as they move to avoid sticking to things. People are released by selective spraying of the solvent. Trying to unstick glued flesh is not advisable, but it is possible. A successful Strength Test against a Threshold of 5 will free the person, but also inflicts an automatic Flesh Wound as skin is torn from the body. Regular clothing that is stuck will likely tear first, and armor isn't damaged by pulling it apart, but the chances are that whatever is freed will get stuck to something else. Exo-suits have the strength and protection to simply pull themselves free, but any sensors will be fouled by the glue, leaving the exo-suit blind.

RIFLE GRENADES ◇

Rifle grenades are the poor man's grenade launcher. Using blank rounds in a chemical slugthrower rifle, the firing gases propel the rifle grenade off a special adapter attached to the barrel. The damage and area of effect are equivalent to the grenade type. The rifle grenade's range is equal to half of the rifle's normal range values. A standard grenade cannot be launched from a rifle adapter.

SATCHEL CHARGES ◇

Satchel charges are designed for demolitions and sapping. They carry a shaped charge to be placed against the target, moving or still. When properly placed with the shaped charge facing the target, a satchel charge has a Damage Modifier is x150 (x15 vehicle scale). Improper placement, or anything on the opposite side from the shaped charge's direction of effect, is attacked with an effective Damage Modifier of x75 (x7 vehicle scale).

XDX ◇

XDX is the standard explosive charge used in military missile warheads. While quite powerful as a normal charge, XDX exhibits premier explosive properties when cast in a shaped charge, which makes it very attractive to the military. These properties also make it highly sought after by mercenaries and terrorists. While SolaPol is ever vigilant in tracking down stolen or missing explosive stores, the fact XDX is an exclusively military explosive means XDX can be recovered from combat salvage or unexploded missiles for sale on the black market. The price list under the Explosives and Grenades table is the black market value of one kilogram of XDX.

EXPLOSIVES AND GRENADES ◻

Type	ACC	DM	Range	Area	Cost	Wt	Code
Compound C5	-	x70/x40	-	2/5	75	1	6-C4
Dynamite	-	x28	-	2	20	1	7-C3
Dynamite-II	-	x36	-	3	30	1	6-C4
Detonating Cord	-	x25	-	1	10	0.1	6-C4
Maser Grenade	0	x20	Throw	10	30	1	6-B3
Night Glue Grenade	0	-	Throw	10	20	1	4-C2
Glue Solvent	-	-	-	-	5	0.5	4-C1
Satchel Charge	-	x150/x70	-	2/-	1500	3	6-B4
XDX	-	x100/x55	-	4/6	?	1	7-B5
Rifle Grenade	-1	+	+	+	x1.5	1	6-B3

+ DM and Area of Effect equal to Grenade type. Base Range equals half weapon's Base Range.

◑ EXPLOSIVES IN QUANTITY

Damage from large explosions comes as much from secondary effects like the seismic disturbance and sympathetic reactions. Flying glass and debris from an explosion is often just as deadly as the explosive itself. A building that loses a supporting wall can drag itself down under the weight of unsupported floors and their contents. Loose power cables spark, setting fire to flammable materials. Gamemasters should be sure to take into consideration the location of any explosion.

Explosives inflict damage because of the shockwave the explosion produces. By detonating more explosives, it is possible to increase both the force of the shockwave, and the range it can carry. For each power of two increase in the amount of explosive, multiply the area of effect by the power of two. There is also a small increase in the damage inflicted by a large explosion. The Margin of Success for a large explosion is increased by one for every threefold increase (divided by three, round toward zero) in the area of effect. For example, 150 kg bomb of C5 (see below) is detonated by a terrorist organization. The area of effect is multiplied by seven (bomb mass closest to $2^7 = 128$), so the everything within 35 meters is attacked. The terrorist Margin of Success is increased by 2 (7 / 3 = 2.333, rounded toward zero). Anything up to double the modified area of affect suffers half damage.

▼ EXPLOSIVES DISPOSAL

Bomb disposal suits are heavy and bulky to wear; however, the hands are left completely free to perform fine manipulations. This imposes a -3 penalty on any "physical" activities with the exception of any task that uses the hands. The suit has a frontal Armor Rating of 100, a rear Armor Rating of 10, and comes with a helmet. A bomb disposal suit costs 4000 credits, and its Code is 9-C2.

Bomb disposal tanks are large metal and composite spheres that are designed to absorb the force of an explosion. The interior of the sphere is a special polymer and ceramic material that pulverizes to absorb the force of an explosion. The exterior metal and composite casing is designed to absorb further energy and contain the explosion without fragmenting into lethal shrapnel.

◇ EXPLOSIVES KIT

An explosives kit contains everything needed to setup and detonate, or deactivate, an explosive device: detonators, blasting caps, tools, timers, switches, batteries, fuses, wire, primer, and boosters. Any attempt to set or deactivate an explosive charge without the proper explosives kit imposes a -2 modifier.

◇ BOMB DISPOSAL ROBOT

Most bomb squads will leave handling explosives to "Boom," the Bomb Disposal Robot. A variety of models are manufactured by a small number of companies, but they all have similar equipment and performances. The normal procedure is to blast the suspected bomb with the water cannon to disable it, or have the robot place it in a bomb disposal tank. "Boom" can work using its internal knowledge (usually a Demolition Module with two dice), or a human operator can direct the robot through the 500-meter tether.

◫ BOMB DISPOSAL ROBOT STATS

Threat Value:	26 (13,000 credits, Limited)	Crew:	0 (1 action)
Size:	1.2	Armor:	1
▼ MOVEMENT DATA			
Movement Mode	Combat Speed	Top Speed	Maneuver
Walker	2 (12 kph)	3 (18 kph)	-1
Deployment Range:	25 km		
▼ ELECTRONICS DATA			
Sensors:	0/1 km	Communications:	-2/1 km
Fire Control:	0		
▼ PERKS & FLAWS DATA			
Name		Rating	Game Effect
Autopilot		-	Acts as Level 1 pilot
Computer		2	PP 2, CRE -2, KNO -2
Manipulator Arm x 2		1	For detail work; cannot punch
Exposed Auxiliary Systems		-	"Aux" hits one step worse

▼ OFFENSIVE & DEFENSIVE SYSTEMS DATA

Qty	Name	Arc	Acc	DM	BR	Ammo	Special
1	Water Cannon	FF	0	x3	M	3	-

DEFENSIVE SYSTEMS ◄



These systems are employed almost exclusively on Earth and Mars. Since they are the only locations involving "active" ground warfare, these systems are used at key points in a defensive line or to defend important facilities. Because of their cost and weight, these systems protect fixed installations and defensive positions from attack.

While all colony cylinders, stations and commercial vessels are equipped with basic screens and point defense system for protection from space debris and particles, these units are sometimes mounted externally to provide additional protection against agression. With the increasing number of conflicts between solar powers and an increased threat from pirates and privateers, many independent captains are installing anti-missile systems on their ship's hull for protection against missile attack and boarding parties. Colony cylinders and stations are mounting both of these systems for the same reasons.

ANTI-MISSILE SYSTEM ◇

Available as a ballistic or laser system, the semi-portable anti-missile system is used to protect defensive positions from missile attacks. Operating either version of the system is easy. The controller does not actually choose targets or give the order to fire. He holds onto two "deadman" switches. While even one switch is held, the system is safed. The threat of attack is indicated on the control panel, and the person holding the switches releases them. The system automatically begins to engage any incoming targets according to its fire control algorithms.

The laser system uses ladar for targeting, while the ballistic system uses Doppler microwave radar. Only targets moving toward the system are targeted, so return missile fire by friendly units is not shot down. The laser anti-missile system is usually employed where it can plug into a larger power supply.

ANTI-LASER AEROSOL ◇

Anti-laser aerosol systems are relatively uncommon on the ground since it is far cheaper to employ ballistic weapons on Earth and Mars.The central anti-laser system is a reactive defense system that launches canisters of anti-laser gases from a central location. Detectors placed withing the system's effective radius determine the direction of the attack and fire a pattern of canisters to intercept the beams.

The perimeter version uses multiple detectors along a webbed layout of tubes equipped to spray jets of pressurized aerosol into the path of a laser. The system is very low profile, and can be easily camouflaged; however, it is very vulnerable to damage by ground vehicles and artillery attacks.

DEFENSIVE SYSTEMS ◫

System*	Arc	DM	Range	ACC	ROF	Ammo	Special	Wt	Cost	TV
Ballistic Anti-Missile	T	x2	1/2/4/8	0	+6	600	AM, Defensive, Smart2	1200	120,000	350
Laser Anti-Missile	T	x2	1/2/4/8	+1	+4	400	AM, Defensive, HEAT, Smart2	800	160,000	350
Central Anti-Laser	T	0	0/1/2/4	-1	+3	150	AE0, Aerosol, Defensive, Smart2	500	250,000	40
Perimeter Anti-Laser	T	0	0/0/0/0	0	0	50	AE1, Aerosol, Defensive, Smart2	400	200,000	40

*Note: These systems were created with the *Silhouette Vehicle Construction System*. To convert to human scale suitable for roleplaying, multiply the Damage Multiplier by 10 and the ranges by 50.

DEFENSIVE SYSTEM AVAILABILITY AND LEGALITY ◫

Weapon	M	V	E	Or	L	Mf	Mr	N	J	S
Anti-Missile System	10-B4	10-B4	5-B3	10-B4	10-B4	5-B3	5-B3	12-B4	10-B4	12-B4
Anti-Laser Aerosol	9-B3	9-B3	6-B3	9-B3	8-B3	6-B3	6-B3	12-B4	9-B3	12-B3

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn

▶ ARMOR

When people become engaged in violent activities, people get hurt. Armor, of some form, has become the normal means of protecting one's person from that violence. Some advanced forms of armor are available, and there are some methods which allow for greater utility of existing armor types. In each case, personal preference and money are the deciding factor to determine just how safe a person can be when violence erupts.

◇ PROTECH INC. CLOTHING

ProTech Inc. is based in the Orbitals, and manufacturing protective clothing is their primary business. The clothing carries inserts of Duraweave and ablative reflec. Duraweave is the same material in duraplast mail and shell armors formed in strands, and then woven into flexible plates that are less bulky than mail or shell duraplast. Ablative reflec is a flexible, polymer-like material, coated to the outer side of the duraweave, that vaporizes under laser fire to dissipate and diffuse the laser energy. ProTech clothing is an exception to the armor stacking rules in the **Jovian Chronicles Rulebook**. The clothing is, essentially, meant to be layered to increase its protective value. The only exception is wearing a ProTech long coat over a ProTech jacket, which imposes a -1 Encumbrance penalty to the wearer.

ProTech clothing is often worn by law enforcement officers on patrol. SolaPol's Executive Protection Bureau agents often wear ProTech clothing, and they have been known to make their charges wear it too (they always ask nicely.) VIPs from across the solar system are regular customers of ProTech, as is anyone concerned about their personal safety with the credits to spend. The upper and lower body suits are custom-fitted to wear beneath regular clothing.

Custom clothing incorporating duraweave and ablative reflec is also available from ProTech in the latest fashions from top designers. Incorporating the duraweave and ablative reflect into existing clothing costs three times the listed ProTech clothing equivalent piece. For example, a tuxedo refit is the equivalent of a ProTech jacket and pants. So the final refit cost is three times a ProTech jacket and pants, plus the tuxedo.

◇ HELMETS

The armor listed in the **Jovian Chronicles Rulebook** are considered complete suits, but they don't include helmets. To purchase a helmet for the corresponding type of armor, multiply the Armor Rating and cost of the armor type by the modifier list in the *Armor* table. The Code for the helmet is the same as the armor type. It is possible to wear a helmet of a different type than the body armor.

◇ PARTIAL ARMOR

It is possible to buy some armor as partial sets, and sometimes that is all that is available. Depending on the type of armor, the level and cost of protection will vary. To find the level of protection, multiply the Armor Rating of the full armor suit by the indicated multiplier in the *Armor* table below. The same method is used to determine the weight and cost. If the character wears only the armor torso, or torso and arms, of any armor type with encumbrance, reduce the encumbrance by one. The method described here is rather simplistic, so Players and GMs can decide if they want to create a more complex system. The Code for any partial armor lowers the Availability Threshold by one or two points for the armor type.

◇ ASSAULT SHIELD

Assault shields are used to provide cover for advances and perform tasks while under fire. The shield is wide enough, and tall enough, to provide 100% cover to two people shoulder-to-shoulder, and more people if the attacker is within a narrow arc to the front of the shield. An armored viewing strip is located at head height so the users can see where they are going. There is an armored hatch at thigh level so the users can access a doorway, fire a weapon, or plant an explosive charge. Assault shields are commonly used by law enforcement to protect SWAT teams as they move into position.

An assault shield provides full coverage against ranged attacks for the two, or possibly more, people behind the shield. Ranged attacks against the assault shield count as being against a stationary target, but have a maximum MoS of 1 and the shield's Armor counts as armor for the defender. Because it is so large and heavy, moving the assault shield requires two people, and they may not move any faster than a walk.

◇ PROTECTIVE CASE

A protective case looks like a regular attache case. A thumb-released lock causes the case to spring open to reveal a series of connected armor plates covering a one hundred centimeter by fifty centimeter area. The panels are reflec coated, and some are even equipped with interference screens. Protective cases are often carried by bodyguards; at the first sign of trouble, the bodyguards release the lock and use the protective case to shield their charge. These shields are a favorite of protective services across the solar system.

STUN SHIELD ◇

Stun shields are riot shields with a built-in stun discharge system. The front of the transparent polymer shield has thin wires imbedded in it. When the activation stud is depressed on the handle, the wires are charged, and any person touching the shield is shocked. The power cell and controls are mounted below the shield grip.

The shield has power settings of 1 to 10, each draining the corresponding amount of energy units. The victim of a stun shield must succeed in a BLD roll against the weapon's power setting plus the attacker's Margin of Success. A failed roll means the victim is stunned (-2 Modifier) for a number of rounds equal to the Margin of Failure. On a fumble, the victim is knocked unconscious for a number of minutes equal to the MoF.



ARMOR ◫

Armor	Armor Rating	Encumbrance	Concealable	Mass	Cost	Code
ProTech Clothing						
Long Coat	8	0	yes*	2.5	400	5-01
Jacket	6	0	yes*	1.5	300	6-01
Vest	4	0	yes*	1	200	4-01
Pants	4	0	yes*	1.5	250	5-01
Upper Body	6	0	yes	1.5	500	6-01
Lower Body	4	0	yes	1.5	500	6-01
Custom Item	+	+	yes*	+	+	7-01
Helmets	x0.2	0	no	1	x0.3	+
Partial Armor						
Torso	x0.5	+	+	x0.5	x0.5	+
Arms	x0.25	+	+	x0.25	x0.25	+
Legs	x0.25	+	+	x0.25	x0.25	+

* The clothing itself is obvious, but the nature of the fabric is not.

+ See description

SHIELDS ◫

Shield	ACC	DM	Parry	Armor Rating	Encumbrance	Wt	Cost	Code
Protective Case	-3	AD	+1	25	-1	3	150	4-01
Assault Shield	-5	AD-3	0	60	-3	12	500	8-C1
Stun Shield	-2	AD+5/stun	+3	20	0	2.5	300	5-C1

ARMOR OPTIONS ▼

Generally, most armor suits come with few extras since they are already quite expensive when purchased in quantity. Since most buyers of armor are government funded — the military and law enforcement — the extra cost outweighs any benefits that might be gained from accessories. (Either they buy the additional armor they need, or they have fewer armor suits with accessories that only limited personnel have the training to use.) Most private users do not care about the cost, or believe the cost is worth it.

Armor accessories fall under two categories: electronics and stealth. The electronics additions are added to helmets, since the two most important senses in combat situations are sight and sound. Stealth armor is not widely available, being used most commonly by elite law enforcement units and military special forces units. Possession of stealthed armor outside these units requires special permits from law enforcement agencies, a task involving mountains of paperwork and personal interviews.

ELECTRONICS ◇

One of the most common modifications to any helmet is vision enhancement technology. Infrared and low-light are two of the systems available for helmets. Using systems similar to those mounted in space suit helmets, a 2D heads-up display is available. By adding microcameras around the helmet perimeter, a 360 degrees HUD compresses the surrounding image into a strip at the top of the users field of vision.

Normally, helmets don't allow for unimpeded hearing of sounds around the wearer. An optional external sound pickup can overcome this problem by providing three dimensional sound to the wearer. As a precaution against damaging the wearer's hearing, any extremely loud noise is automatically reduced to 80 decibels.

Internally mounted communicators are another common option. This is commonly done by refitting existing communication technology to the helmet. This increases the cost of the communicator being installed by 25%.

◇STEALTH ARMOR

Stealth armor features numerous modifications to hide the wearer from prying eyes. Stealth armor is available at three levels of sophistication; each adds the indicated bonus to any Stealth Skill Test. Stealth +1 uses a camouflage pattern, sound absorbing materials and thermal signature isolation. Stealth +2 adds to this with greater thermal signature and sound reduction, but it also adds a special coating to absorb active EM radiation for sensors. Stealth +3 offers complete sound and thermal signature suppression and an enhanced coating that also features limited mimetic abilities.

Stealth armor is only available in full suits; partial stealth suits have no effect. It is possible to refit existing armor for limited stealth (equivalent to Stealth +1), but anything more complex requires the armor suit be manufactured with stealth capabilities. Advanced stealth armor is less effective without a helmet. To reflect this, reduce the Stealth bonus by one if the wearer does not use a helmet.

◇STEALTHED ACCESSORIES

Stealth armor is only as effective as what you carry. Certainly, carrying a chrome-plated autopistol looks cool, but it is hardly complementary to the capabilities of a top-of-the-line suit of stealth armor. All stealthed armor comes equipped with numberous pockets and storage spots for items so they do not degrade the performance of the stealth capabilities. A forty to fifty liter volume integral storage pack is a common accessory that is included with stealth armor. (Stealth space suits carry a mission pack instead.)

Some weapons and other items are available with stealth capabilities comperable to each level of function. These items possess the same Code, and use the same cost multiplier. For obvious reasons, energy weapons are the preferred choice for stealth. To avoid the high cost and lack of availability, stealth-capable bags of various sizes and capabilities are available to hide non-stealth items until they are needed. Prices range from 500 credits for a 10 liter Stealth +1 bag to over 10,000 credits for a 100 liter Stealth +3 duffle bag.

◫ARMOR ACCESSORIES

Accessory	Wt	Cost	Code
Stealth +1	+1	x2	7-C3
Stealth +2	+2	x8	8-B3
Stealth +3	+4	x32	8-B4
Helmets Electronics			
Infrared	0.5	200	5-C1
Low Light	0.5	150	5-C1
2D Heads-Up Display	-	350	5-C1
360° Heads-Up Display	-	500	6-C2
HUD Video Input Jack	-	+20	5-E0
External Audio Pickup	0.01	75	6-C1
Internal Communicator	*	*	*

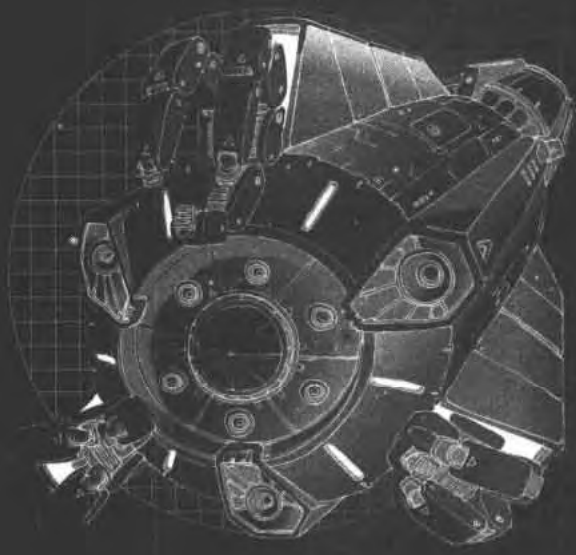
▼OPTIONAL RULE: ARMOR DAMAGE AND REPAIR

Any time a person is hit by an attack, and the location is protected by armor, the armor protection may be degraded. Depending on the type of attack, divide the weapon's base Damage Multiplier by the indicated modifier (rounding off). This value is subtracted from the armor's Armor Rating.

The difficulty of repairing armor is widely dependant on the type of armor material and the extent of the damage. As a guideline, the greater the damage to the armor is, the harder it is to repair. Player Characters with the Tinker skill can attempt to repair the armor if they have the necessary replacement materials and tools. Since armor suits are formed from several pieces, the simplest method of repair is to purchase a replacement piece for the damage section. Characters with the Tinker skill can easily replace the damaged section with the new section. Armor that is reduced to less that 25% of its original Armor Rating is considered unsalvageable.

◫DAMAGE TO ARMOR

Attacked by:	Damage to Armor
Heavy Weapon, Explosives	DM / 5
Melee (hacking & slashing), Chemical Slugthrower	DM / 10 (min. 1)
Melee (piercing), Laser, Gauss	DM / 20 (min. 1)
Incendiary	Add half of the Intensity to the above
Electricity, Stun, Maser	No damage



CHAPTER FOUR:

EMERGENCY EQUIPMENT

"Was that a good 'oops' or a bad 'oops'?"

EVACUATION ◄

Emergencies under the non-Earth conditions that exist throughout the majority of the solar system precludes the use of 'normal' evacuations. People require a safe haven in the case of emergency, and there are a number of options available depending on the location of the emergency. The following are the most commonly used evacuation methods in the solar system.

While there are numerous methods for saving lives in an emergency, the fragile nature of humans and the potential for minor damage to inflict major casualties means that no safety system can be one hundred percent effective in preventing the loss of life. Panic and fear are powerful emotions that must be overcome to survive an emergency beyond Earth's atmosphere. Military personnel, and anyone else who practices emergency drills on a regular basis, have a much higher chance of surviving an emergency in space than the average person. Unfortunately, the time and resources necessary to ensure an entire population receives adequate training in emergency procedures means that there will always be a high number of casualties.



4.1

SELF-CONTAINED EMERGENCY SHELTER ◇

The self-contained emergency shelter is for surface evacuations, and comes in two models: interior and exterior. The interior model features an extremely thick blast door. When an emergency alarm is activated, the blast doors to the shelter open and then are closed by the people inside or the independent emergency computer. The exterior model has a four person quick-cycle airlock that vents most of the airlock gas outside (the airlock has a dedicated air reserve for this purpose.)

In both cases, up to 24 people — most exterior shelters accommodate 16 people at most — can survive for a week in the shelter. Food, water and sanitation supplies are provided in several storage lockers that can be used as sleeping areas when emptied. Until some supplies are used or moved, there are folding bunks for half of the occupants. Interior shelter control systems are hardwired to connections at habitat external entrances where rescue crews can communicate and assess the situation inside the habitat and shelters. Exterior shelters are buried for insulation and radiation protection. On the Moon, well traveled routes have shelters placed along their length in case of emergencies like mechanical failure or solar flares.

DEPLOYABLE EMERGENCY SHELTER ◇

The deployable emergency shelter is a container that includes a reinforced, aluminized polymer habitat, atmospheric gas and recycler, emergency rations and water supply. These shelters are meant to be temporary since they can only support six people for 24 hours. The frame is inflated using a chemical reaction to generate gas. Once the survivors enter the shelter, the entrance is sealed and the atmospheric system activated. The entrance cannot be reopened without refilling the shelter atmosphere. At least two deployable shelters are located in exterior lockers by surface habitat airlock doors. Deployable shelters are used on Mars almost exclusively. Some vessels also carry them in case of emergencies. In this case, the shelter is deployed in a large common area.

MOBILE EMERGENCY SHELTER ◇

The mobile emergency shelter is a self-contained emergency shelter on wheels or tracks that moves the shelter a safe distance away from a habitat emergency. Mobile shelters are located at the outer perimeter of a habitat. On Venus, mobile shelters are lowered to the ground on winches from the lower surface, and around the edges, of the arcologies. The Moon and Mars have mobile shelters located along the perimeter of surface habitats.

ESCAPE TUBE ◇

The escape tube is used to transfer people between two ships with functional airlocks. The escape tube is made from an opaque, high-tensile polymer with reinforcing composite mesh, so it is extremely strong and flexible for its appearance. The escape tube can stretch up to fifty meters between two vessels, and is capable of being pressurized to a standard ship's atmosphere (five psi). Each end has a hard seal ring that is large enough to cover any standard-size airlock door. The inside of the tube has several lines for a person to pull themself through the tube.

Escape tubes can be dangerous if the situation is not entirely stable and static. In one case, a small deviation in ship vectors lead to the detachment of one end of a tube. The slow drift apart stretched the tube until the ring could not maintain the seal. Two people in the airlock at the detached end and three people in the tube were blown into space.

◇SURVIVAL BUBBLE

The survival bubble is a single-person environment for emergencies. Equipped with a four-hour oxygen supply, a person in a space suit can carry the bubble to a safe place on the ship or a rescue vessel. A single radio flare is included inside the bubble to signal rescuers if the bubble was pressure ejected from an airlock. Survival bubbles are located in or near airlocks in small lockers.

To get into a survival bubble, a person removes the locker cover and pulls the bubble out of the locker by the two handles. If the vessel is under gravity conditions, the person can step into the bag, kneel, and then seal the bubble by making a semi-circular motion with the arms over their head. In zero gravity, the bubble is pulled over the head while the legs are pulled into a fetal position, then sealing the bubble by the same motion under the legs. Once the bubble is sealed properly a glow light will activate inside, beside the oxygen mask which can now be placed over the head. Exhaled carbon dioxide is bled into the bubble atmosphere. In outer orbits, this helps to keep the bubble's occupant warm. In orbits closer to the Sun, bubble atmosphere is vented by an automatic valve to keep the occupant cool.

◇EVACUATION SUITS

An evacuation suit, or evac suit, is an evolution of the emergency space suit. A stored evac suit is slightly larger than an emergency space suit, so it is easy to tell if a ship is equipped with evac suits (the storage container extends about ten centimeters beyond the emergency space suit compartment.)

One of the keys to improved functionality is the partial atmosphere — only the upper torso and head are "inflated." A pair of grips located on the chest (just below the shoulders) simultaneously seal the upper torso and start the oxygen flow when pulled. Numerous straps and elastic panels are then adjusted to keep the fabric snug to the body, thereby improving the suit's articulation. The partial atmosphere increases the suit's duration to 60 minutes. (Rescue crews often refer to emergency space suits as "body bags" since panicked wearers use their air supply very rapidly.)

The remainder of the evac suit design is similar to an emergency space suit. Exhaled atmosphere is used to warm the rest of the suit, especially the hands and feet, before being bled off. This system does keep the air somewhat warmer than what is considered comfortable. A reflective coating and tear resistant material make up the skin of the evac suit. An emergency patch, can of dual spray, tether line and radio flare are included in a small pouch.

A military version of the evac suit is available for ship crewmembers that are caught without their duty space suit during emergency situations. *The military evac suit has a recharge port that allows the suit to be resupplied.*

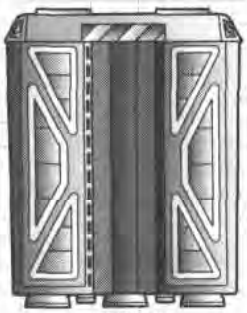
The number of 6-second combat rounds needed to get into an evacuation suit is equal to 5 minus the result of a Survival: Space Skill test. A minimum of one round is always required. A Fumble wastes an additional 1d6 rounds. Any physical action is at -1 while wearing the suit.

◇LIFE BOAT

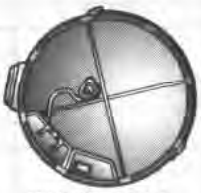
A life boat is a much larger version of the escape pod, with three man-days of consumables per occupant. Life boats range *in size from 24 persons to the huge 112-person boats on* CEGA's *Constantinople*-class ships. Accessed through one or more hatches in the ship's interior, the last person through the hatch hits the launch switch and gets strapped into a simple acceleration couch. Ten seconds after the hatch is closed a booster rocket pushes the life boat away from the ship.

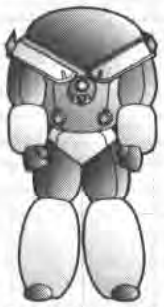
Each life boat has an independent maneuvering system to control its velocity. It is also equipped with at least two airlocks and docking collars to connect with other boats and escape pods. This arrangement means increased survivability and resources. Their independent mobility means life boats are the first to begin rescue operations. It is common practice to bring aboard injured from escape pods so they are more effectively cared for.


ESCAPE TUBE


LIFE BOAT


MOBILE EMERGENCY SHELTER


SURVIVAL BUBBLE


EVACUATION SUIT

DAMAGE CONTROL ◄

The emptiness of space, and the sometimes long travel times, requires a spaceship to be relatively self-sufficient in the event that it suffers damage. Since help could be weeks away, a ship must be able to contain and repair damage so that it does not threaten the safety of the ship and its crew, passengers, or cargo. Many years of space travel has taught humankind a great deal about ensuring the safety of the ship.

DAMAGE CONTROL SUIT ◇

Damage control suits are specially modified augmented hard suits for damage control crews. The most noticeable change is the smaller mission pack with a six hour air supply and larger power supply. The increased power supply allows the suit to continuously power rescue equipment for about two hours. The suit has a crew station socket and a recharge port. The suit is also fitted with a beacon for a damage control M-bot (described below) to follow.

The suit's outer layers are replaced with a fire resistant material (half Fire Intensity). A high-power radiation screen (10,000 rad/hr) is included for damage control in propulsion areas or under adverse solar conditions. An integrated damage control sensor suite incorporates all aspects of environmental monitoring. The two most commonly used feature are the temperature probe (to check for bulkhead and hatch hot spots) and a sensor that checks for ungrounded electrical connections. Gravity boots are also included to make moving in low gravity easier.

DAMAGE CONTROL M-BOT ◇

A damage control M-bot carries additional damage control supplies and equipment for crews. The M-bot follows a damage control crew using its thrusters or spider-like legs, which also stabilize the M-bot in zero gravity. It also carries a dedicated power source for emergency equipment. The M-bot is loaded with a detailed layout of the ship or installation for navigation, and follows the beacon of its assigned damage control team. The M-bot carries the following standard items: twelve foam bombs, twelve sealant bombs, two one meter expansion columns, numerous lengths of reinforcing beams, four square meters of sealing sheet and sheet tool (below), a kit of bonding adaptive adhesive and glue gun, a plasma torch, sas opener and powered shears (page 45).

M-BOT STATS ◘

Size:	1.4 (150kg)	Armor:	2
Movement:			Maneuver:
Space	2 (0.2 g)	4 (0.4 g)	0
Walker	2 (12 kph)	3 (18 kph)	-1
Deployment:	6 hrs	Reaction Mass:	30 RP
Communication:	-2/1km	Sensor:	-2/1km
Perks & Flaws: Autopilot, Cargo Bay (0.25m³), Computer (PP 2, CRE -2, KNO -2), Fire Resistant, HEP: Radiation (4), HEP: Vacuum, Fragile Chassis, Sensor Dependent			

FIRE FIGHTING ▼

Ideally, fires on ships are fought by evacuating the atmosphere from the section where the fire is. (Indeed, military ships remove all atmosphere to combat fires and explosive decompression.) However, smaller fires, or fires in heavily occupied sections that cannot be evacuated quickly, still require alternate methods of control and suppression.

FOAM BOMB ◇

Foam bombs are a common fire fighting tool. Foam bombs are spherical shape with recessed grips for handling. They can be set to explode the pressurized fire retarding foam on contact, when exposed to high heat, or on a timer. The ability to deliver fire retardant by indirect methods decreases the crew exposure to a dangerous fire. A crewmember can temporarily open a fire blocking door, toss in a couple foam bombs, and close the door again without risking injury or spreading the fire. Foam residue starts to break down within a few hours, leaving a powder film that is easy to clean up.

FIRE EXTINGUISHERS ◇

Chemical spray extinguishers are located along corridors to deal with small spot fires caused by electrical shorts and other causes. Most extinguisher chemicals are designed to be non-conductive, or form non-conductive residues, to inhibit further electrical fires. Extinguishers are colored red. Inert gas and chemical fire containment systems are common equipment throughout military ships; inert gas systems flood the affected room to smother the fire or dilute combustible gases. Chemical systems commonly use fire retardant foam, though traditional dry or wet chemicals are also available. Civilian vessels feature similar systems in vital areas like engine compartments and fuel storage, or anywhere flammable materials are stored.

▼STRUCTURAL REPAIR

Sometimes the damage suffered by a ship is structural in nature, and it must be repaired, reinforced, or even patched, to allow the ship to conduct the minimum required operations to reach a dock to conduct more permanent repairs. These are some of the most common methods and items for conducting temporary structural repairs on damaged space structures.

◇SEALANTS

Leaks of all kinds occur on a regular basis. Rapid hardening polymer **sealant sprays** are used by crews to temporarily seal atmosphere leaks in about five seconds. Most sealants are stored in varying sizes of extinguisher-shaped containers, which are colored green to avoid confusion with an extinguisher. A handheld irradiation unit is available to increase the sealant's setting rate, up to a second.

Sealant bombs are similar to foam bombs. Capable of sealing a small room (25 cubic meters), a sealant bomb is an inelegant, but quick, method of sealing any breaches in the room. Sealant bombs are spherical in shape with recessed grips for handling. They can be set to explode the sealant on contact or on a timer. Shortly after the sealant explodes, covering everything in the room, a flash irradiation unit in the bomb's center sets the sealant in about a second. This gives crews the ability to seal a room still undergoing decompression.

People trapped by a sealant bomb need to be cut free, or a spray solvent can dissolve the material. After the breach is repaired, the solvent is applied to remove the sealant. Non-essential items trapped in the sealant are left until the repairs are completed.

Sealing sheet is a metallized polymer sheet that is spread across a hull breach. Sealing sheet is more durable than polymer sealants, and is capable of temporarily sealing breaches up to one meter by one meter. The sheet can be cut with a special sheet tool to fit the breach. The sheet can then be unrolled, or placed, across the breach; beams can be laid across larger holes to support multiple sealing sheets. The special sheet tool also includes a contact welder that flash welds the sheet to the hull and beams. When sealing sheet and a hard polymer sealant are used in combination, a unpressurized section can be repressurized until more permanent repairs are made. Some foolish, and cash poor, civilian crews have even used laminates of sealants and sealing sheet to make "permanent" repairs.

◇EXPANSION COLUMNS

Expansion columns are self-contained hydraulic cylinders powered by a damage control suit or M-bot. The columns are used to reinforce deformed hull sections and structural members that are under stress. They are placed to relieve enough of the load so that further damage is not incurred. Each end of the column is equipped with special configurable grips to keep it from slipping out of position. Misplacing a column can have dire consequences, such as punctured bulkheads and crushed crewmen if the column slips. Expansion columns come in three lengths — one, two and four meters — that exert up to five tons of pressure. Each column can extend to three times its length. To correctly place an expansion column, a character rolls a Mechanics Test against a Threshold of 4. A failure or fumble results in further damage, and possibly injury of the personnel using the column.

◇REINFORCING BEAM

Reinforcing beams are simple metal or composite rods that are wedged or welded into position. Compared to the expansion column, reinforcing beams are an inelegant solution, but simplicity works. The beams are easily cut by powered shears to fit into any location. They are easy to weld or glue into place, and can be used in different orientations. Welding several beams into simple structures increases their strength and functionality beyond a simple rod of metal or composite.

▣DAMAGE CONTROL EQUIPMENT

Equipment	Wt	Cost	Code
Damage Control Suit	28	12,000	5-D2
Damage Control M-Bot	150	210,000	5-D2
Foam Bomb	4	50	4-E1
Fire Extinguisher	2	15	2-E1
Sealant Spray	2	20	3-E1
Sealant Irradiation Unit	1	25	3-E1
Sealant Bomb	4	50	4-E1
Sealing Sheet (1x1m)	1	30	4-E0
Expansion Column (1m)	20	350	4-E1
Expansion Column (2m)	35	600	5-E1
Expansion Column (4m)	55	1100	5-E1
Reinforcing Beams	2-10	15-75	3-E1

SEARCH AND RESCUE ◄

Trying to find a ship in distress within the Solar System is a monumental undertaking to begin with, akin to finding the proverbial needle in a haystack. Those who undertake such a task, however, never give up hope that they will make it on time. Once a ship in distress is located, and its crew and passengers are found to still be alive, they must be evacuated immediately if it is not safe for them to remain onboard. This task is a common one for military vessels, especially given the current tensions and skirmishes between the Jovian Armed Forces and CEGA Navy.

HUMMER RESCUE SAW ◇

The Hummer rescue saw has a special 30 centimeter diameter blade for cutting through nearly any material. Combining a regular circular saw with Hummer weapon technology allows the user to quickly cut through doors, bulkheads, and debris. The rescue saw uses a standard power cell and drains two power units per minute of operation. The saw can be used as a clumsy weapon (Acc -2, DM AD+8).

SAS OPENER ◇

The sas opener is used for forcing open locked or jammed doors and airlocks. It has a powerful motor and transmission coupled with a set of lockjaws. It takes 1d6 turns to set up properly, and will open the door or airlock with two turns. The power source has ten energy units. Opening a door with standard resistance takes one energy unit, while heavy resistance requires two energy units. A door that is intentionally welded or pinned will drain five energy units.

POWERED SHEARS ◇

Powered shears are a large pair of hyper-tough alloy scissors used for cutting though almost anything. Once the actuators are engaged, it takes about 1d6 minutes to finish cutting. The blades close too slowly, and the shears too cumbersome, to be used as a weapon. The shears have enough power for ten minutes of operation.

RESCUE JAWS ◇

Rescue jaws, referred to as the "jaws of life" by SAR techs, are combination sas openers and powered shears. This tool is capable of opening and closing its metal jaws with enough force to open jammed doors and snap beams. Use the same rules for the sas opener and powered shears. Beams require one energy unit per minute of operation. Rescue jaws have a large power supply of 15 energy units.

CATHIODE ELECTRONICS S&R SENSOR ◇

The Cathiode Electronics Search and Rescue sensor is a combination of several sensor classes. (See Portable Sensors on page 72 for stats and more about sensors.) The major function of the SAR sensor is environmental monitoring — atmosphere, hazardous materials and radiation. The most important function is the heartbeat detector. The human heart produces a distinctive electromagnetic (EM) field that is used by SAR teams to locate survivors. When the sensor is placed against a door or bulkhead, it detects the faint signal caused by a beating heart while sophisticated algorithms remove any strong or weak artificial EM fields. (See *Portable Sensors*, for further information.)

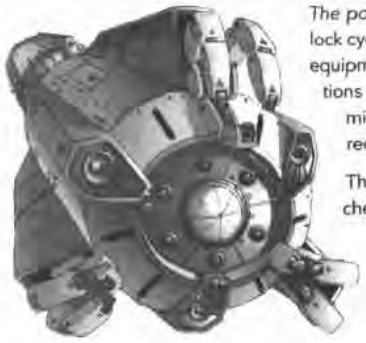
EMERGENCY ATMOSPHERE BUBBLE ◇

An emergency atmosphere bubble is an opaque polymer bag and a small oxygen bottle. The bubble is placed over the head of a victim without oxygen, and secured with a special polymer seal. The bubble's low-pressure oxygen supply lasts for about five minutes, and contains a mild analgesic and sedative (Potency 8, Onset Time 30 seconds) to keep the user calm. The inside of the bag is coated with an agent that traps exhaled carbon dioxide. This is usually sufficient to provide the rescuers a few more precious seconds to free a trapped person otherwise lacking oxygen.

EMERGENCY ATMOSPHERE GENERATOR ◇

Emergency atmosphere generators are complex biochemical reactors that produce oxygen for emergency purposes. An initial oxygen-nitrogen reserve is used to quickly repressurize a small volume (less than 20 cubic meters.) The atmosphere is then circulated through a biochemical filter of genetically engineered bacteria and chemical scrubbers to convert carbon dioxide into oxygen that is returned to the atmosphere. The unit has an operating lifespan of six hours. In habitats and ships where individual rooms and corridors can be sealed, an atmosphere generator is usually stored with other emergency supplies. This allows the area to be used as a temporary shelter in an emergency. The unit is composed of a gas cylinder and the rectangular scrubber unit with a carrying handle attached.

◇ PORTABLE AIRLOCK



The portable airlock is a container that includes a reinforced polymer airlock, atmospheric gas, and lock cycling machinery. The airlock is often used as a temporary replacement when the normal airlock equipment suffers failure. They are also used for gaining access to depressurized ship or station sections that cannot be accessed by a proper airlock. A portable airlock can be set up in under two minutes by personnel trained in its use. With regular replacement of lost gases and power system recharge, it is possible to operate the unit until it fails completely, albeit at reduced safety levels.

The airlock frame is formed by inflating cells in the polymer material with gas produced from a chemical reaction. The end of the airlock that is the inner door has polymer skirt that is attached to the access point with a spray adhesive. Both airlock doors use a special electrohesive zipper system to create an airtight seal. The airlock is large enough for two people to use each time it cycles. Since the airlock machinery is located inside the airlock, a remote control panel is secured outside each door. Depending on the airlock's pressure status, and whether personnel are entering or exiting, the airlock does not disengage the zipper system seal until it is safe to do so.

◇ OXY-LIFE

Oxy-Life is a slow release agent that provides oxygen directly to the blood stream while increasing the body's ability to use and retain oxygen in the blood. A small module (about 5 cm x 5 cm by 1 cm) is attached to the patient's chest, by an adhesive pad, above the heart. Unfortunately, Oxy-Life is only effective for about five minutes before it becomes harmful. Applying additional modules will keep the victim alive without breathable atmosphere, but each module after the first inflicts a Flesh Wound. If the patient's blood is not purified within an hour of application, the patient suffers a Flesh Wound each hour until their blood is purified. Blood purification is only available with proper medical facilities onboard ship, on colonies, or with a portable hospital unit.

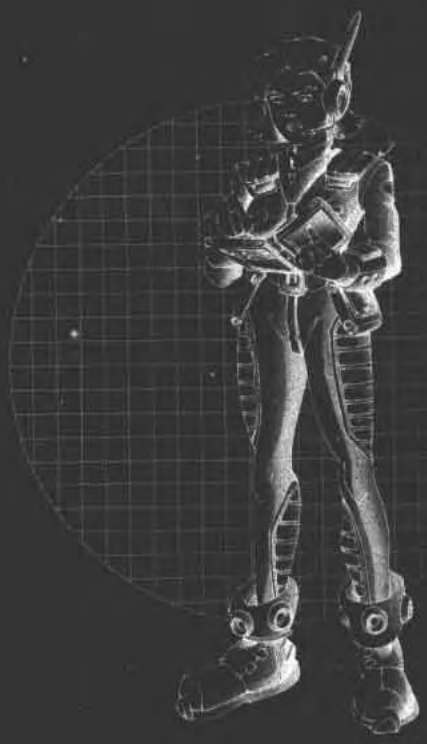
◫ SEARCH AND RESCUE EQUIPMENT

Equipment	Wt	Cost	Code
Hummer Rescue Saw	10	1000	5-E1
Sas Opener	15	1000	5-E1
Powered Shears	15	1000	5-E1
Rescue Jaws	20	1500	5-E1
Emergency Atmosphere Bubble	1	100	5-E1
Emergency Atmosphere Generator	10	400	4-E1
Portable Airlock	20	2000	5-E1
Oxy-Life	0.1	100	5-02

◇ SEARCH AND RESCUE POD

Add:	Lab: Space Survival (RO; Detachable airlock), Lab: Medical (RO), +300 BP
Remove:	Plasma Cutter
Change:	Size to 5 (3.1 tons), Deployment Range to 20 hours, Increase Passenger Seating to 15
Modified TV:	950 (950,000 credits, Mass Produced)

Search and Rescue pods look like Piranaha assault pods (**Jovian Chronicles Companion**, page 95), but with exactly the opposite intent: saving lives. An extra section is welded into the middle of an assault pod to increase the internal space and make room for more reaction mass tanks. A detachable, hard seal airlock replaces the plasma cutters, allowing access at non-standard points on the hull. Basic emergency medical equipment is installed to ensure safe transport of injured survivors. The SAR pod also allows the transportation of victims without requiring emergency bubbles and EVAs.



CHAPTER FIVE:

ELECTRONICS

COMPUTERS ◄

Computers are everywhere. They are in restaurant tables, advertising signs and behind the scenes, running the colony cylinders and arcologies that are home to humanity's spaceborne population. The three parameters that define computer capabilities each reflect certain specific facets of computing hardware in the twenty-third century. The KNO Attribute represents the sophistication of the computer's classical processor (how well it handles integer and floating point operations) that determines how well it performs simple linear algorithms. CRE reflects a different faculty altogether: the ability to use fuzzy logic and neural nets to develop new approaches to problems. Most civilian computers use the same processor for both KNO and CRE operations, and as a result few civilian machines have a CRE score above -2. Military machines, and some premium civilian models use a separate processor, one optimized for the more complicated computations represented by CRE, and any value may be assigned proportionate to price. Processing Power (PP) represents how much data the computer can process at any given time. As a general rule the sum of a computer's Attributes does not exceed its Processing Power.



5-1

TERMINALS ▼

5-1-1

While people are constantly in the midst of computers, the machines that they most explicitly interact with are terminals. Terminals are the aspect of computing technologies most associated with the term 'computer.' Many of these terminals are datapads — slave terminals designed as a point of access to the local PAN. They are still powerful resources; between the SysInstruum and the control of distant peripherals, a PAN connection opens many options. Other machines are true computing devices in and of themselves, capable of running software Modules and making sophisticated decisions. Only the very poor do not own a terminal of their own, and it is not uncommon for the typical person to own up to half a dozen.

XP-400/800 ◇

The XP line is a popular personal terminal brand manufactured in the stations above Mercury. It has followed the Merchant Guild wherever they have gone and become a system-wide standard in economy computing. The 400 model is a glorified datapad with above average input/output options but little in the way of advanced computing capability. The 800 is far more powerful, possessing a basic optronic processor for running simple programs. The 400 and 800 models of the XP line are both manufactured by several Mercurian firms, lending a generic feel to the ubiquitous machines.

DATASTORM SERVER ◇

DataStorm Information Systems burst onto the Jovian computer scene in 2189 by being the first to take advantage of the stability of the Olympian communications network — selling servers that they did not deliver to the customer. Instead, the machine was hosted at one of several central locations. The customer could request that it be delivered at any time, but the round the clock technical support and expert system administration kept most customers happy with the initial arrangement. Confidence in DataStorm's services has recently been shaken: a team of unknown commandos broke into the Elysée node and stole the machines of several important clients whole.

BLOCH PROLINE ◇

Bloch Computing caters to an extremely small client base of power users. Fewer than one in every twenty thousand computer owners has a Bloch, and the ProLine is even rarer than that. Only the most intensive of applications require the immense power of the ProLine, and more often than not it is the under-utilized tool of the very rich. There are those who do make full use of the machine are usually professionals in demanding areas such as VR production or those engaged in complicated physical or chemical simulations. The average person could no more dream of using the power of a ProLine than they could find the money to purchase one. Orbital-based Bloch has been remarkably successful in selling to this niche market, it has achieved better than fifty percent market share system-wide.

TERMINAL PRICING AND AVAILABILITY □

Model	PP	KNO	CRE	Price(credits)	Mass(kg)	Availability Code
XP 400	N/A	N/A	N/A	400	1	2-E0
XP 800	1	-1	-3	800	3	3-E0
DataStorm Server	4	0	-2	17,500	50	5-E2
Bloch ProLine	4	1	0	24,000	20	8-E2

▼PERIPHERALS

Most personal terminals come with a limited array of built-in peripherals, but there are also many peripherals that may be purchased to enhance or add new functions to the machine. Nearly all peripherals are controlled through the computer's PAN adapter, leaving the few physical hardpoints on the average machine free for use by bandwidth hungry devices, such as memocard slots and digital video tools.

Modern computer displays are all in the form of high-definition flat screens. Most computer displays (and other video formats) have standardized around a 1.66:1 width to height aspect ratio. Color reproduction is uniformly excellent; only the particularly talented can consciously perceive the difference between the tens of millions of colors used by an inexpensive display, and the billions of RealTone™ VR display. This is not to say that the eye does not know the difference. Just as people can unconsciously detect the shifting frames of a moving image to a point far below their conscious flicker-fusion threshold, color depth has a similar effect of encouraging unconscious acceptance of a given image.

◇SELECRON 60-D MULTIPURPOSE DISPLAY

The Selecron is an extremely successful Lunar export. It is light enough to be manufactured in central locations on the Moon, and still be reasonably priced after shipping to the rest of the solar system. Mars imports a large number of Selecrons of varying models each year. Selecrons use a high-resolution LCD screen embedded in a case of lightweight foamed plastic. The 60-D model is so named for its sixty-centimeter diagonal measure.

"The Selecron name was the first word I saw every morning for eleven years, right until the case split apart and crumbled on me. I'd get a new one, but even without the case — and more than a decade old — it still works fine." — Norma Watkins, Nomad asteroid miner

◇MOBI COMPACT DISPLAY

The Mobi was once the latest and greatest from the Jovian peripherals firm Hashimi. Now, fifteen years after its introduction, it is just one among many names competing in the foldable ultraflat market. Named after the whale pursued by Ahab, it is reportedly the end result of a decade-long research campaign on the part of CEO Kathleen Hashimi. Company engineers like to claim that, for all the money spent researching the folding screen technology, the real break in the Mobi's development came when an advanced military prototype was accidentally delivered to a Hashimi employee's home. Just a millimeter thick, it can be folded or rolled with impunity to a minimum radius of a half centimeter. The device is 24 centimeters on a side, the lower ten of which converts into a compact touch-sensitive keyboard when one is unavailable.

◇OBSIQUA EVERWRITE

The Obsiqua is a common Venusian printer, and designs almost indistinguishable from it are sold throughout the solar system. Print quality is the industry standard 500 dots per centimeter, in vivid color. The main sheet feeder can take polysheet stock up to forty centimeters in width, and it can accurately feed up to a meter in length. The Obsiqua, and other printers using a similar business model, achieve their remarkably low price by way of a tamper-proof speaker that quietly intones advertising slogans whenever the printer is in operation.

◇KELLER IMAGO

The Keller Imago is a multipurpose digital imaging tool. Combining a standard CCD imager, a bank of precise ranging lasers, and an inertial orientation system, it is capable of creating a three-dimensional model of any object. The Imago can act as a still camera, a videocamera, or a full-fledged scanning modeller, but the true capabilities of the machine can only be seen where the three modes join. When used in 'snapshot' mode, the Imago retains both the image at the selected moment, and degraded data for ten seconds before and after. Combined with a Visual Art Module, this data can be used to accurately rebuild the still, placing the point-of-view at a new and more dramatic angle. The Imago has become the standard tool of still photojournalists, quickly replacing the low-end Newsman A/V recorder. Reputable organizations like ZONet will only accept retouched photography from an Imago; less discerning organizations will simply retouch any image to their liking without regard to physical accuracy.

◇ARCHIVE CRYSTAL

When vast quantities of data need to be archived, secure from both data theft and hardware failure, archive crystals are used. They are very specialized items; the average person is unlikely to ever encounter one. Each is ten centimeters square by twenty long. A special peripheral (3500 credits) is needed to read/write to an archive crystal. Each archive crystal can hold up to 100 dice in Modules, but Modules must be transferred to regular memory before they can be run.

PERIPHERAL PRICING AND AVAILABILITY ◫

Model Name	Price (credits)	Mass (kilograms)	Availability Code
Selecron 60-D	60	2	3-E0
Mobi LE	200	.2	5-E0
Obsiqua EverWrite	80	7	3-E0
Keller Imago	2500	2	5-E1
Archive Crystal	30,000	.5	6-E0

ENCRYPTION ▼

5.1.3

Encryption is at the heart of both personal privacy and institutional secrecy. Encryption has remained a strong bulwark against data piracy in large measure due to the Edicts, which have banned the use of the quantum computers that would render large-key cryptography nearly useless. Despite the Edicts, it is believed that all the solar governments maintain quantum computing devices for intelligence purposes, and to secure the most important of diplomatic messages. Solapol overlooks these violations as a matter of USN policy; so long as the situation does not explode into a cryptographic arms race it is believed that a modest level of espionage actually promotes interplanetary trust.

In less exotic cases, large-key integer encryption has maintained its position as the strongest freely available form of encryption. Key size has been steadily growing as long as the method has been in use, and modern keys are truly massive. No matter how large keys grow, it will always remain possible to attempt to break them. Encryption is rated on a six-point scale; the lowest level, one, is inherent in all computer communications. The next three levels are available to ordinary citizens at will, and provide increasingly good protection against all but the most dedicated of snoops. Levels five and six are only possible with the resources of governments or, possibly, very large corporations. Decryption checks do not require a specific module; the check is considered to be KNO-based and is rolled with however many dice have been allocated to the task since the decryption attempt began. There are no bonuses for machines attempting to decrypt in parallel, but each machine is allowed a separate decryption check. When attempting to decrypt information, the initial Threshold is always 12 and drops by three with every check. The Threshold can never fall below three. The table below determines the time between decryption checks.

DECRYPTION TIMETABLE ◫

Encryption Level	Typical Use	Time Between Decryption Checks
1	unsecured communications	6 hours
2	typical casual encryption	3 days
3	paranoid personal/typical corporate encryption	12 days
4	paranoid corporate/typical military encryption	60 days
5	paranoid military/diplomatic encryption	1 year
6	state secrets	3 years

SPECIALIZED MODULES ▼

5.1.4

The Modules listed in the **Jovian Chronicles Rulebook** and **Companion** are generic programs. Specialized versions of these Modules are available. This means their area of knowledge is more limited, but the gains in performance and narrow focus are beneficial. Treat specialized Modules like Skill specializations: choose a specific specialization for the Module. The Module gains a +1 bonus in the area of specialization, but suffers a -1 penalty in all other areas of the base competency. For example, a specialized Physical Sciences: Solar Physics module gains a +1 in solar physics, but a -1 to all other Physical Sciences. Specialized Modules cost three times the normal price per die. A Module can have multiple specializations, but the price doubles with each additional specialization. Where applicable, refer to the corresponding Skill for possible Module Specializations. Academic Modules are the most often specialized.

Modules should not be treated as generic and faceless servants. While hardware and vehicular Modules will be largely transparent to the character using them, academic Modules will usually be very commercial products with a widespread reputation. Specializations are a good way of differentiating between the products of competing companies and assigning them their own particular character.

PLUG-INS ◇

Third parties often issue plug-ins for some of the more common Modules. These software assistants act in concert with the original program, and provide benefits similar to those of a specialization without the penalty to the base competency. Each plug-in program takes up one die that can not be rolled, but provides a +1 to any roll in its area of expertise. The type and number of plug-ins to be run must be chosen when a Module is loaded, and cannot be changed until it is reloaded. Plug-ins cost double the price of the original Module at one die.

▼PROGRAMMING MODULES

At its most basic level programming is simply a matter of asking a program, known as a compiler, to create an application with a set of look-up tables and basic algorithms for accepting requests and finding an answer, or an algorithmic method for finding one. These Modules can be programmed by anyone, but are subject to limitations. Such Modules must be Academic KNO-based programs. They are limited to one die and take no benefit from a positive KNO score. It takes approximately six hours to prepare such a Module.

More involved programming requires actual knowledge of computer algorithms and protocols. This is represented by the Computer Skill. A typical professional programmer could be expected to have the Computer Skill at level 2, with a specialization in Programming. Programming a typical application (PP1, no specialization) has a default Threshold of 3. A successful skill test in this case means a six-month development cycle before the project is complete. For each additional Module die one is added to the Threshold, and three months are added to the development time. In the event of a failed Skill test, each point of MoF converts to two weeks of wasted effort before the programmer realizes they need to start anew.

Programming for Academic Modules is simple; most of the formulae, equations and display utilities needed are available in the public expert systems. It is far more important with Academic modules that the programmer develops the nature of the answers that they seek. Hardware and Vehicular Modules are somewhat more challenging to program; they require at least some knowledge of the machine for which the program is being developed. If no copy of the relevant hardware is available for test, one die must be used to simulate the machine and its environment for development purposes; this die is removed from the pool available to the Computer Module for assisting in the programming.

The databases from which look-up tables are compiled are very sophisticated. Most of them are actually government maintained expert systems that passively solicit new information from all their users. After a brief screening to verify the data, it is added to the system for anyone to reference. Of course, there are significant incentives not to disclose cutting edge information without compensation, and as a result there are also parallel expert systems that charge for consultation, in order to fund the payment of those who submit new and up-to-date information. These systems vary in completeness across the solar nations; almost all strongly restrict information about weapons and explosives with more oppressive governments enforcing even harsher restrictions. For example, the Martian Federation's expert systems, public and private, contain very little information on advanced electronics as part of the Federation's wish to maintain control over the means of communication. Expert systems can provide two benefits to any programming effort, represented by a Skill modifier, and a time modifier. The time modifier subtracts its rating multiplied by the level of the Module being programmed from the default development time in months.

◘EXPERT SYSTEM RATES

System Rating	Charge per Level of Module	Skill Modifier	Time Modifier
Public Access	Free	0	0
General Interest Commercial	2000	+1	0
Specialist Commercial	5000	+1	1
Military Access	Free*	+2	2

* User must be authorized to access the expert system.

▼NETWORKS AND PARALLEL COMPUTERS

Computers are universally networked; the thought of using a machine that could not interface with the local PAN, and through that to the SysInstruum, is near unthinkable. Distributed computing is now the norm, and has merged with classical parallel processing to form a new paradigm for supercomputing. Modern supercomputers are little more than mainframes networked at the most basic level, capable of accessing information from the next processor as fast as they can access their own.

Supercomputers are often physically distributed and redundant. The computers that control colony cylinders are a good example. Each and every one is unique, assembled to the desired specifications by one of the major construction contractors. Between ten and one hundred computing nodes are distributed throughout the entirety of the cylinder, linked by special high-bandwith lines. While designed to work in concert, each node is capable of running the primary functions of the cylinder should another be disabled.

◘DOWNLOADS/NODE TRANSFERS

Connection	Module Dice Per Minute
Wireless PAN	2
Domestic Hardlink	4
Institutional Hardlink	8
Distributed Supercomputer	72

ADVANCED COMPUTER SECURITY ▼

The solar system is alive with the flow of information, and it is just as alive with information crime. These rules for advanced computer security build upon those presented in the **Jovian Chronicles Companion** (pp.140-141). The basics of computer operation and security do not change. In essence, advanced computer security is treated as an analog of 'real' actions.

It is strongly suggested that the Gamemaster make all rolls and keep the exact results secret. (Player Characters are unlikely to be aware of exactly what is happening until the computer has finished its task.) The PCs may get some indication of what is happening, like a progress bar or seeing data file names being listed. The GM can reveal what happened exactly after the computer is finished through the details of the computer's activity logs.

DEFEATING COMPUTER SECURITY ◇

Each computer "combat" round, called a Pulse, is one second long. This means the operator may make a Skill Test to assist the computer only every sixth Pulse. To account for the lag between the computer's actions and the operator's actions, the operator should provide the GM with a list of what the computer will do, and the order in which the actions are carried out. Since the operator gets to act every sixth Pulse, a new set of instructions can be given to the computer when the operator acts. (The computer will report which tasks it has, or has not, completed.)

Second, a computer is considered the Attacker if it succeeds in defeating the other computer on any Opposed Roll. This means that if the Attacker fails to defeat the Defender's security Module, the next round the Defender becomes the Attacker and may now make an attack of its own. For example, if Yukia's computer doesn't defeat the Defender's Labyrinth Module with its Battering Ram Module, the next round the Defender can attack with its Trace Module, or another Module, until Yukia turns off her computer or her computer defeats the Trace Module.

Third, the Attacker may load new Modules, or reallocate Dice for existing Modules, at the beginning of each Pulse. Any loaded Modules do not take effect until next Pulse. (See *Performing Actions*, below, for more details.) The Defender can only use Modules existing in memory, and it may not reallocate any dice between Modules.

Finally, in conjunction with the second and third distinctions, the Defender is considered to be unaware of the intrusion by the Attacker if it loses the Opposed Roll. The Attacker has a number of rounds equal to its Margin of Success to perform actions (see below) in the Defender's computer system before the defense Module can attempt another Opposed Roll to detect the Attacker.

PERFORMING ACTIONS ◇

There are a number of actions that an attacking computer can perform once it has gained access to the target system. Each action takes one Pulse to perform.

Find Data searches for files that meet the requirements (20 words or less) the operator provides prior to the attack. A feasible Find Data search requirement could be, "Find any files referring to secret genetic research projects." The GM sets a Difficulty Threshold for locating the data, if it exists. The attacking computer uses the dice allocated to attacking Module to make a KNO test against the Threshold. Success indicates the specified files have been found. A failure does not locate the requested files, but a Fumble alerts the Defender to a possible intrusion; immediately make an Opposed Roll between the Attacker and Defender using their security Modules.

The Upload and Download actions transfer data between the two computers. The GM should decide how many Pulses this requires, dependent on the volume of data. If the Defender has a chance to detect the Attacker before the transfer is completed, make the normal Opposed roll during the required round. If the Attacker succeeds, the transfer continues uninterrupted. If the Defender succeeds, any remaining data is not transferred.

The Modify and Delete actions are very similar. In both cases, the Attacker and Defender make a normal Opposed Roll. If the Attacker succeeds, the appropriate data is modified or deleted. If the Defender succeeds, the Attacker is detected and another Opposed Roll is made to see if the Defender can lock out the intrusion.

ACTIONS SUMMARY □

Action	Description
Reallocate Dice	The Attacker may exchange the number of dice in any Module it is currently running.
Load Module	The Attacker loads a new Module into active memory. The Player must designate how many dice are being allocated to the new Module, and from which active Modules the dice are coming.
Use Module	The Attacker uses a Module (running on the Defender's or Attacker's computer) to perform an action.
Find Data	The Attacker computer searches for information fitting a predefined set of requirements.
Download Data	The Attacker copies data files from the Defender's computer to its own computer.
Upload Data	The Attacker copies data files to the Defender's computer.
Modify Data	The Attacker modifies data files in the Defender's computer.
Delete Data	The Attacker deletes data files in the Defender's computer.

◇ ADVANCED COMPUTER SECURITY EXAMPLE

Grissick is on the run from the law and needs a new identity to get off the station safely. Luckily, he still has his favorite hacking computer with him. Grissick's computer is a powerful PP6, CRE+4, KNO +3 machine, and he has the Battering Ram and Forgery Modules loaded with 5 dice and 1 die, respectively. The Customs & Immigration computer is also a PP6, CRE +2, KNO +4 machine (it's more dedicated to record keeping and retrieval), and has the Virtual System and Administration Modules running with 3 dice each.

Grissick determines he wants to get into the computer, use his Forgery Module to create a new identity, delete his old identity, and then upload the new identity into the C&I computer. Each operator rolls for their bonus to assist their computer; Grissick gets an MoS of 3 and the C&I operator gets an MoS of 1. Making the Opposed Roll, Grissick achieves a MoS of 4, so his computer has four rounds to get things done. Lots of time.

First, Grissick's computer creates the forged identity (Use Module action). The dice allocated to the Forgery Module are rolled with a result of four. (The GM notes the result to see if the customs official will notice the forgery.) The second round Grissick's computer tries to delete the old identity (Delete Data action) on the C&I computer. Grissick's computer barely wins the roll, but successfully deletes the file. Finally, Grissick's computer needs to upload the new identity (Upload File action). It will only take one round. (It's a small file.) Grissick's computer wins another opposed roll, the file is uploaded. Time for Grissick to shutdown and get off the station.

◇ DATA SPIKE

A data spike is a single-use, artificial intelligence computer that *mutates* (rewrites) itself to escape detection and lock out by defending computer security Modules. Its sole purpose is to find and retrieve data. The data spike is a computer with PP 7, CRE +6, KNO +4, but is also considered to be the Module, always using the full Processing Power, and its own operator.

The data spike requires a direct hardlink (i.e. physically connected) to the target computer to function properly. Before it is connected, the data spike is given a detailed set of requirements for a data search and retrieval (which should be written down, maximum 25 words.) The Gamemaster must decide upon a Retrieval Threshold for the data spike to find and retrieve the specified data. If there are multiple search requirements, the GM may impose multiple thresholds with the lowest threshold data being retrieved first.

When the data spike is activated, use the normal Opposed Roll to determine if data spike can access the target computer. If the security Module wins the Opposed Roll, the data spike mutates to escape the security Module (the Defender cannot counterattack next turn) and attempts another attack next round. Each mutation reduces the data spike's Processing Power and Willpower by one. All other aspects of the data spike conform the *Advanced Computer Security* rules above, except that it can only perform Find Data and Download Data actions.

While the data spike is working, a single blinking red light indicates it is active. A green light indicates it is finished. A steady red light means the spike has been defeated without retrieving all the data. A data spike will cost at least 500,000 credits with Code 10-A5. It cannot be used more than once under any circumstances. A standard PAN connection allows the download of retrieved data to another computer.

▼ MODULES

These new Modules are for skill areas not previously covered, and to allow for the greater flexibility and options of the *Advanced Computer Security* rules. A complete listing of all published Modules is included with the table at the end of the new Module descriptions. Along with the Module options presented in this section, the electronic toolbox of Player Characters, and Non-Player Characters, is considerably larger.

◇ COMPUTER (KNO)



Type:	Academic
Frequency of roll:	On request
Cost:	2500 per die

The Computer Module consists of a suite of related applications; typically, a program compiler and a pair of hardware and software diagnostics are minimum. Both diagnostic programs are actually sophisticated expert systems in their own right. Premium programs offer even more assistance, in the form of specialized applications tailored to specific hardware configurations. At the upper end of the spectrum (PP4 and above) the program can attempt to fix hardware faults in any computer other than the one it is running on, if given access to the appropriate robotic manipulator peripheral.

FORGERY (KNO) ◇

Type:	Academic/Hardware
Frequency of roll:	On request
Cost:	12,000 per die



More often sold by the euphemistic name 'Document Enhancer,' the Forgery Module is a sophisticated program designed to add the needed authenticity to fake documents. In addition to the tools needed to create documents, the Forgery Module also possesses the software needed to run complex printing hardware (5000+ credits) needed to mimic some of the most basic anti-forgery techniques.

MUSIC (CRE) ◇

Type:	Academic/Hardware
Frequency of roll:	On request
Cost:	1500 per die



Music Modules are more than just sheet music generators; they are as much an assistant orchestrator as anything else. A typical program contains a diverse library of musical samples, and extensive synthetic sound capabilities. Using vast aesthetic databases they can critique compositions and offer alternatives, but they are not capable of true creativity.

VISUAL ART (CRE) ◇

Type:	Academic/Hardware
Frequency of roll:	On request
Cost:	2000 per die



The unending growth of the digital medium has led to a blending of artistic modes. No longer is it possible to adequately separate painting and sculpture. This has been reflected in the software aides for visual artists. All the major suites for this market combine powerful vector and bitmap graphic programs as well as full-featured three-dimensional modellers.

RECON (KNO) ◇

Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	6000 per die



The Recon (short for reconnaisance) program simply monitors the target computer's activity. If the attack succeeds, the nature of any action by the target computer is relayed to the user of the attacking computer. Specifically, the attacker is told the how many dice are in each active Module and the total PP of the target computer. No attributes are revealed.

VIRTUAL SYSTEM (CRE OR WIL) ◇

Type:	Computer Security, Defense
Frequency of roll:	Event-driven
Cost:	5000 per die



The Virtual System security Module analyzes the intruder's access attempts, and then leads it into an image of the target areas. This essentially creates a false copy that the intruder can access without affecting the operations of the real system. If the intruder doesn't distinguish the copy from an actual system, the host system has additional time to track down the intruder and alert authorities. (Defender has MoS Pulses to perform actions.) Virtual System Modules can be set to mirror the contents of files, or to fill them only with garbage. The former option is more convincing to intruders, but provides no security for sensitive information. Most corporations keep an edited version of the machine's file system available for ghosting, so as to avoid this dilemma.

CORRUPT (CRE OR WIL) ◇

Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	10,000 per die



The Corrupt Module attacks active Modules in the Host computer. The Attacker MoS is subtracted from the target Module's dice. If the target Module's dice falls to zero or below, the target module is completely corrupted and unable to function.

◇ FEEDBACK (CRE OR WIL)



Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	10,000 per die

Once an intruder is detected in the system, the Feedback security program starts to shovel garbage data at the intruder connection, attempting to force the intruder to shutdown. If the Attacker roll succeeds, the Defender crashes. If the Defender is running the Backup Systems Module, add the Attacker's MoS to the Threshold for maintaining processes. If the Defender fumbles, or the Attacker's MoS is greater than the defending computer's Processing Power, the Defender's system suffers a major failure, and is rendered inoperative. The GM determines the nature of the failure, either hardware or software, or both.

◇ TRACE (CRE OR WIL)



Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	30,000 per die

The Trace Module is used to track down attacking computers; a successful trace gives the location, both physical and informational, of the attacking machine as well as any information known to the network. Such information typically includes affiliation, and a five minute history of activity. The Trace Module is really a function of the network itself, designed to allow the duly authorized to report the origin of an intrusion to the authorities.

These heavily restricted programs are specially coded with an identifier tag to interact with communications systems. Ideally this means that the governments and corporations authorized to run trace routines can be held accountable for each and every trace that they perform. In practice it has only meant that a particular organization is blamed for the use of trace routines operating under cracked identifier tags. Despite the concerns of many privacy advocates system-wide, only the Martian Free Republic has disabled the trace system in their networks. The going black market rate for a copy of trace software and a set of five cracked identifier keys is 75,000 credits per die.

◇ PIGGYBACK (CRE OR WIL)



Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	7500 per die

The Piggyback Module uses any pre-existing datalink to establish a point-of-entry into a target system. This allows a hacker to gain entry to machines that do not otherwise announce their presence on the network. Datalinks that may be piggybacked include any public data broadcast, the attempted use of attack Modules, and standard communication links. The Gamemaster should assign a Threshold difficulty for the attempt based on the target's stealth, skill and resources. A successful Piggyback attack gives the Attacker the ability to find the Defender until such time as the Defender closes its current PAN connection and opens an unrelated one. Unlike Trace, the Piggyback Module does not inform the user of any information other than the route through the network to the target.

◇ DOPPELGANGER (CRE OR WIL)

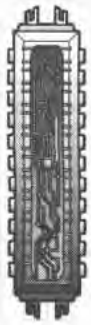
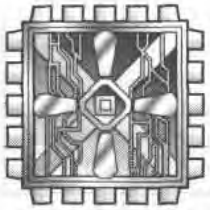
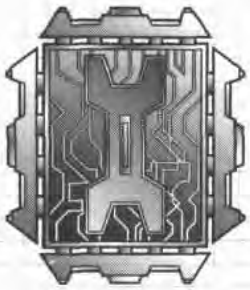
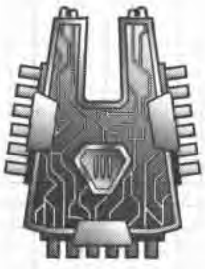


Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	12,000 per die

The Doppelganger Module is a sophisticated program designed to forge the headers of data blocks, bypassing the security Modules that watch over the input to the target computer. The Module has two modes: penetrate and capture. The penetrate mode forges the header to allow the attacking computer access to the target computer's data. The capture mode intercepts data traffic destined for the target machine, captures the data blocks with the desired information (passing on everything else), and forges new headers and data blocks for the stolen data blocks that it then passes onto the target computer. This Module is especially effective when used in combination with the Recon Module.

MODULES II

Module	Attribute	Type	Frequency	Cost	Specialized?	Availability Code
▼ New Modules						
Music	CRE	Academic/Hardware	Request	1500	Y	3-E0
Visual Art	CRE	Academic/Hardware	Request	2000	Y	3-E0
Forgery	KNO	Academic/Hardware	Request	12,000	Y	10-A4
Recce	CRE/WIL	Attack	Event	6000	N	8-C4
Corrupt	CRE/WIL	Attack	Event	10,000	N	8-B5
Virtual System	CRE/WIL	Defense	Event	5000	N	8-D2
Feedback	CRE/WIL	Attack	Event	10,000	N	8-B4
Trace	CRE/WIL	Attack	Event	30,000	N	10-C4
Piggyback	CRE/WIL	Attack	Event	7500	N	5-C3
Doppelganger	CRE/WIL	Attack	Event	12,000	N	8-B4
▼ JC Rulebook Modules						
Autopilot	CRE	Vehicular	Event	2000	Y	6-D3
Communications	KNO	Academic/Hardware	Hourly	1000	Y	3-E2
Defense Systems	CRE	Academic/Vehicular	Request/Event	2250	Y	6-C4
Earth Sciences	KNO	Academic/Hardware	Request/Daily	1500	Y	3-E0
Electronics	KNO	Academic	Request	900	Y	3-E2
Electronic Warfare	KNO	Academic/Hardware	Request/Event	1500	Y	6-D3
Fire Control	CRE	Academic/Hardware	Request/Event	1500	Y	6-C4
Foreign Language	KNO	Academic	Request/Event	100 to 4500	Y	3-E0
Life Sciences	KNO	Academic	Request	1500	Y	3-D3
Mechanics	KNO	Academic	Request	1250	Y	3-E2
Medicine	KNO	Academic	Request	3000	Y	4-D4
Space Navigation	KNO	Academic/Vehicular	Event	2500	Y	4-D3
Physical Sciences	KNO	Academic	Request	1400	Y	3-E0
Sensors	KNO	Academic/Hardware	Request/Event	2000	Y	3-E2
Surveillance	KNO	Hardware	Event	1000	Y	3-C3
▼ JC Companion Modules						
Administration	KNO	Academic	Request/Quarterly	500	Y	3-E2
Law	KNO	Academic	Request	1500	Y	3-E1
Naval Navigation	KNO	Academic/Vehicular	Event	1900	N	4-D2
Social Sciences	KNO	Academic	Request	1200	Y	3-E1
Backup Systems	CRE	Special	Event	500	N	5-D0
Demolitions	CRE	Special	Request	1700	Y	4-B4
Guest	CRE	Vehicular	Special	5000	N	3-C4
Investigation	CRE	Academic	Request	3000	Y	3-C3
Manipulator	CRE	Hardware	Event	900	N	3-E1
Psychology	CRE	Academic	Request	5000	Y	3-E1
Tactics	CRE	Academic	Request	2000	Y	4-B3
Battering Ram	CRE/WIL	Attack	Event	2800	N	4-B4
Labyrinth	CRE/WIL	Defense	Event	1500	N	4-D2

▶ COMMUNICATIONS

Communications and regular exchanges of information are crucial to the continued well-being of any technological civilization. They are also the most practical means of keeping the human family together over the immense distances of the Solar System. Communications equipment in the 23rd century varies from small, simple links to large, expensive communication networks. Since many comm units fall under common and distinct categories of performance and quality, there are also various options available to modify and improve a comm unit's base performance.

Emitters are given a basic range that is used on the ground and other ubstructed areas, such as the surface of a planetoid. Raising the emitter above ground, such as taking it aboard a plane or climbing a tall mountain, will increase the range ten-fold. In space, where there is nothing to impede the propagation of the signal, the basic range is increased a hundred-fold.

◇ MASUO C-LINK

The Masuo C-Link is the civilian version of its military M-Link. The two models are identical except for the civilian model's lack of an emergency burst mode and improved channel roaming for remote PAN connections. The C-Link retains the time report, multiple alarm, and audio message features. The C-Link establishes its position every five minutes by triangulating its position from PAN remote access nodes. The C-Link uses standard remote access protocols for communicating, so the user can set the C-Link to duplicate the user's existing communication identifier, or acquire a separate comm identifier for the C-Link.

◇ PUBLIC COMM TERMINAL

Vidphones are the most common home and public telecommunications device. A touchscreen and 2D-video camera with sound are combined into a single unit. Public comm terminals charge a small fee for use, so they have a money card slot. Public terminals also offer access to the SysInstruum, again, for a fee. The average public use rate is one credit per five minutes. The terminal also includes a port for a data pad or portable computer for remote access and data transfers. Public terminals are located around communication system nodes. Finding the terminals in a crowd is easy; simply look for the node's transmitter above people's heads. This arrangement simplifies maintenance and reduces the complexity of the system overall.

◇ TERRA ORBITAL LASER COMM

The Terra Orbital Laser Comm system is a line-of-sight/point-to-point laser system that allows for secure and undetectable short range communications. The system is a small fist-sized unit that encases the laser and comm system, and a subvocal microphone (see next page). It looks like a small pair of binoculars, and functions in a similar manner. Looking through the unit's eye piece, the user sees a dot at the point where their unit's laser will hit. The receiving unit, in position to receive, has a glowing circle — only visible with another Laser Comm unit — that indicates where to aim the dot. When both users have their opposite member "hit" (the dot in the circle), a secure connection is established.

◇ INTERLINK SYSTEMS HYDRA COMM NETWORK

The InterLink Systems Hydra Communications Network is an intelligent, military-grade communications system. The system is a broadband, encrypted, frequency-agile system. The system uses three distinct comm units as part of the network: a command unit, a platoon unit and a transmitter station. The command unit coordinates a section of the overall network. The command staff can selectively monitor any part of the network, or communicate directly with a single unit. Under the direction of the command unit, the transmitters within the network can triangulate the position of any friendly comm unit within range of the system. This feature is especially useful for commanders since they can instantly locate any contact with a hostile force by the reporting unit's transmission alone.

The transmitter station is a link in the communication chain. The station is both a retransmitter that extends the reach of the overall network, and a traffic controller that intelligently handles communication priority and volume. The optimal network setup requires each station to be capable of connecting to two or more other stations. If part of the network is ever disrupted, the transmitter stations redirect comm traffic around the disrupted section. Transmitter stations are only used in rear-areas and fixed deployment zones, though some units adapt them to vehicles for increased comm network stability for mobile actions.

The platoon unit is the smallest, a cylinder 40 centimeters long and 20 centimeters in diameter. The unit acts as a central node for squad/platoon level communications. The individual troops are issued military comm links keyed to this unit. The platoon unit is video uplink capable for providing command staff with realtime information. In the case of a mobile conflict, individual platoon units act as transmitter stations within the network, or connect directly with a command unit.

COMMUNICATION ACCESSORIES ▼

While some features are common to all communication devices, other features are not incorporated for reasons of expense, lack of demand, or regulatory restrictions. The following accessories are the most frequently used options for those who want or need expanded capabilities for their communication devices.



VOICE SCRAMBLER ◇

Voice scramblers are commercial versions of military "light" encryption systems that attach to existing non-military communicators. The scrambler takes normal speech, encrypts it, and then sends it out as "static" using the normal unencrypted communicator frequency. The person on the receiving end of the link also requires a voice scrambler to decrypt the static into normal speech. Each voice scrambler is capable of using one of several thousand encryption codes, so the people involved must agree on the code to use before the call is placed.

SIGNAL SCRAMBLER ◇

Many military communications contractors offer their equipment to the public as scaled down versions of the military system. Signal scramblers are small chips with the necessary encryption/decryption algorithms built-in. The chips are small enough to fit inside all but the smallest communicators. The truly paranoid often find methods for using the scrambler chips as additional encryption in their other "valuable" items. While it doesn't make blocking the transmission harder, it does make a significant difference in deciphering the encyrpted transmissions over normal routines. The military does not like this practice, but there is little they can really do about it.

SIGNAL REPEATER ◇

Signal repeaters, placed at regular intervals, extend the range of radio frequency communications by re-transmitting the signals they receive. Some sophisticated versions of the repeater receive the radio signal and send a point-to-point laser to another repeater that broadcasts the received signal. Colonies and arcologies often use repeaters in areas with poor transmission and reception without the need to install a full communication node. Several communication companies — Nakumacom, Cello Technology, Commtronics — produce signal repeaters, while JVD Electronics and Terra Orbital produce top of the line laser repeaters.

SIGNAL BOOSTER ◇

Signal boosters are a power pack and antenna that increase the signal strength by broadcasting the signal through the improved transmitter. This means the range and quality are improved measurably. The signal booster is installed by hardwiring a connection to the communicator's antenna leads, though disconnecting the original antenna is not required. The communicator can still transmit using its normal antenna, activating the signal booster as required.

SUBVOCAL MICROPHONE ◇

Subvocal microphones allow a person to use a radio with barely a sound. Subvocalization is like whispering, except it is much quieter, with the sound barely passing a person's lips. The microphone rests against the person's throat and is activated by the person "speaking" or by a button on the unit. Subvocal microphones are meant for stealthy communications, so they are not something the public regularly uses.

COMMUNICATIONS ◫

Item	Rating	Range	Wt	Cost	Code
Mesuo C-Link	-4	2km	0.1	90	3-E0
Public Comm Terminal	-	-	-	*	1-E1
Terra Orbital Laser Comm	+1	500m	0.25	250	6-82
InterLink Systems Hydra Comm Network					
Command Unit	+1	150km	25	2500	7-83
Transmitter Station	+1	150km	8	1500	6-83
Platoon Unit	+1	15km	3	600	5-82
Voice Scrambler	-	-	0.25	300	5-02
Signal Scrambler	-	-	-	600	6-C2
Signal Repeater	-3	5km	2	75	4-D0
Laser Repeater	+1	10km	3	300	5-01
Signal Booster	+1	+5km	0.5	150	5-D0
Subvocal Microphone	-	-	0.1	10	5-01

▶AUDIO-VISUAL

The size and power of audio-visual systems have reached a point where almost anything is possible — for a price. Anyone who can afford to has a wide selection of audio-visual options available to them; the close quarters of space life requires some time spent in solitary diversions.

Thumping bass was left behind on Earth; it is the only thing that the soundproofing systems of modern habitats have trouble dealing with, and there is no place in space for the invasion of another's personal space. Accordingly, most audio devices are designed as simple earphones for individual use. Music is sold exclusively through network outlets; there is no need to purchase it as a physical medium.

Cameras are available in digital and film models, with digital models making up the majority of the consumer market. A quality digital camera is far less expensive than its film analog. Film grain is still admired for the character it lends photography, but most artists choose to simulate the effect digitally. Those who disagree are very vocal and dedicated in their loyalty to film.

◇BASIC EARPHONES AND PLAYERS

Earphones are simple wireless devices that use a PAN interface to communicate with a designated media player. A player is little more than a memocard-sized sleeve, usually with some kind of clip-on attachment, and a PAN interface. Each memocard can store ten times its rating of high-quality music. (A ten-minute memocard becomes a 100 minute audio memocard.) Users can place anchors anywhere in the music for quick reference to their favorite portions.

◇SPEAKER SET

Sometimes a more encompassing audio solution is needed. Usually, this means a standard speaker set: a brace of a dozen or so small speakers, barely larger than earphones, that can be mounted anywhere in a five meter radius to provide a complete audio environment. For best performance the playing device must be set for the precise location of each speaker. The most powerful of these systems are usually found in workpods and small utility craft, giving them a 'trucker' image.

◇TRENT 240X CAMERA

The Trent 240X is an entry-level camera for the casual user. It is very small and lightweight, measuring six by ten by two centimeters, and massing less than a tenth of a kilogram. Performance is satisfactory, though the advanced options of higher-end cameras are missing entirely.

◇MICROCAMERA

Microcameras are produced by many companies to remarkably similar specifications. Nominally they are for use in other consumer products, like displays and headsets, which often have basic cameras built into them for video communications. When sold individually they are intended for use as replacement components. In fact, most such sales are to private investigators, or just plain unlicensed snoops, seeking to use them as a poor man's spy device. Microcameras are cylinders about a five millimeters long and two across. To be used as a spy device, a microcamera must be equipped with a recording peripheral or transmitter.

◇VIRTUAL REALITY

The possibilities of virtual reality technologies have lead to the quick adoption of a wide variety of hardware, suited to the needs and affluence of varying demographic groups. Limited virtual reality still remains the most common, with immersive VR a distant second. The barrier for immersion technology is the vast expense of the feedback suit, which has proven prohibitive to all but the most dedicated VR fanatics. Much more common than the immersion suit is a simple set of trackers placed at key points on the body, that allow the user to move normally in the virtual environment, albeit without any tactile feedback. Most VR sets have enough interactivity to be used for mechanical telepresence over a short range, before speed-of-light communications lag makes it impractical.

◇VR SUIT

The first thing a neophyte will notice when putting on a VR suit is the mass of the suit; the combination of sensors and feedback devices needed to provide a convincing tactile illusion are heavy. The item wears much more like a military flight suit than anything else. Each VR suit comes with a small onboard processor block that determines the suit's reactions to the environment. Suits that provide more than pressure and texture feedback are extremely rare, and more than ten times as expensive as the standard type. VR glasses are needed to complete the suit and cost an additional 150 credits.

SURVEILLANCE ◄

Information is a very valuable commodity a technologically advanced society. Large amounts of information are exchanged every second as light, electrons, or sound. The ability to capture someone else's information can give a person or business an edge on a competitor, or destroy their reputation; it can also be used to protect innocent people from harm. Which ever way information is used, there are numerous means to gathering that information.



MICROPHONES ◇

Not all listening devices are minute packages planted in a fixed location. Advances in technology have improved surveillance microphone systems that can pickup sound vibrations through walls. Any microphone system only operates effectively at fairly short ranges; any distance further than 100 meters lessens the reception quality qeometrically.

Directional microphones are strictly line-of-sight; any intervening object will block sound reception. Both microwave and laser microphone detect vibrations of sound against surfaces like external walls and windows. Windows are the favored target for these devices, since any wall thicker than ten centimeters greatly degrades the reception quality.

DATALINE TAPS ◇

Dataline taps require a physical connection to the dataline. This means placing the tap in the transceiver for a radio signal, into the fiber optic line, or rarely, the conductive wiring. In each case, the dataline tap uses a recorder or burst transmitter to relay the information collected, though the recorder requires the data be physically collected. Some systems — especially those on Earth — still use conductive wiring for datalines. The wire tap is connected to exposed wire or leads by clips to detect the pattern of electrical impulses.

The fiber optic tap is the most difficult to place since a data loss of more than a few microseconds will, at the least, alert the operator to a possible maintenance problem. Longer disruptions are viewed even more suspiciously. The unit fits around the target line, and once it is securely in place, a special optical blade cuts into the fiber optic line. The blade is a few microns thick, and is photo-sensitive, so each pulse of data is translated into a small electrical charge of the blade that the unit stores for collection or transmission.

The transceiver tap is a actually a sophisticated transceiver of its own. The tap need only be connected to, or place in close proximity to, the receiving or transmitting antenna. A uni-directional antenna ensures that burst transmissions by the tap don't interfere with the transmissions of the tapped antenna.

DISCRETION DEVICES ◇

Discretion devices are designed to disable listening devices and systems. They are usually quite small, and are often disguised as jewellery. There are three types of discretion devices for defeating different eavesdropping technologies. These devices are available individually, though some high quality designs do incorporate one or more of the devices. (Add together the cost of the devices included.)

White noise, or "static noise," generators are the most common discretion device. They emit sound that does not interfere with conversation, but does garble any attempt to listen to a conversation with a bug or microphone. The white noise effectively blankets the normal conversation, making it very difficult to sort out what is said. A variation on this device produces randomized vibration "static" in contact with a wall or window. The contact discretion device effectively masks the vibrations that conversations produce, thus defeating laser and microwave microphones.

Many listening devices broadcast the sound they pickup to another receiver close by. The radio frequency (RF) discretion device is a miniature radio static generator that covers a wide range of the RF band. Since the transmitting device doesn't use much power, the RF discretion device uses sufficiently low power that it does not interfere with normal broadcast RF traffic.

DATALINE SCANNERS ◇

A dataline scanner uses the cable's signal noise to detect a tap on the line. Dataline taps connected to conductive wiring can generate feedback that is detectable. The scanner sends out its own signal and analyzes how it changes. The most foolproof method to scan a dataline is visual inspection of the hardlines. The visual dataline scanner, or VDS, is actually a small, remotely controlled robot that can travel through dataline conduits looking for physical tampering. This is the only way to defeat a correctly placed fiber optic tap.

◇LISTENING DEVICE SCANNER

Listening device, or "bug," scanners detect the minute transmissions and power signature of listening devices. The scanner is a wand antenna that is passed over a surface to detect any transmissions or the device's minute power signature. The system is not infallible, however, since some advanced listening devices include a sleep mode or remote activation. Even when a scanner doesn't detect a bug, it is still prudent to use discretion devices to ensure the privacy of any conversation.

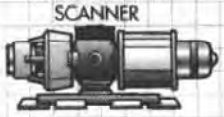
SURVEILLANCE EQUIPMENT

Equipment	Wt	Cost	Code
Directional Microphone	0.25	50	5-D2
Laser Microphone	0.5	75	6-C1
Microwave Microphone	0.5	75	6-C1
White Noise Generator	0.1	25	4-D1
RF Discretion Device	0.1	30	5-D1
Vibrational Discretion Device	0.1	30	5-D1
Fiber Optic Tap	0.1	200	7-B3
Transceiver Tap	0.1	150	6-B3
Wire Tap	0.1	75	4-C3
Listening Device Scanner	0.2	100	6-C0
Dataline Scanner	0.5	60	4-D1
Visual Dataline Scanner	0.1	150	6-D2

AUDIO-VISUAL EQUIPMENT

Item	Price (credits)	Mass (kilograms)	Availability Code
Earphones	15	.02	2-E0
Audio Player	40	.05	2-E0
Speaker Set	90	1.2	3-E1
Trent 240X Camera	30	.75	4-E0
Microcamera	5	.005	4-E2
VR Suit	2500	5	6-E0
VR Glasses	150	.1	4-E0


VISUAL DATALINE SCANNER


SIGNAL REPEATER

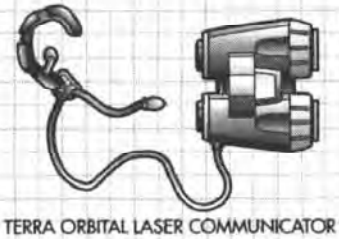

MICROPHONE


SIGNAL BOOSTER


DATALINE TAP


DISCRETION JEWEL


SIGNAL SCRAMBLER CHIP


TERRA ORBITAL LASER COMMUNICATOR


DISCRETION JEWEL


SUBVOCAL MICROPHONE



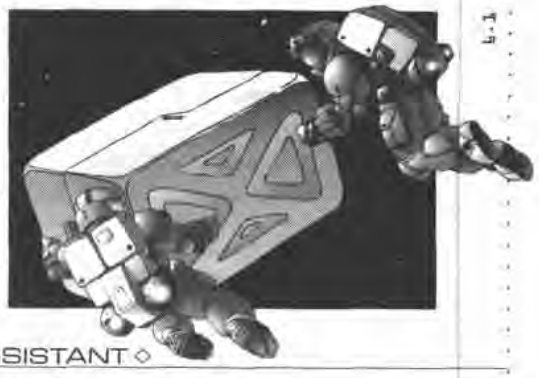
CHAPTER SIX:

SPACE EQUIPMENT

PERSONAL EQUIPMENT ◂

People need certain tools to carry out their daily lives. Whether at home, work or play, individuals rely on certain items to make tasks easier, or allow them to do things quickly and efficiently. It is impossible to list every thing that a person could want or need, so Players and GMs must compromise on the level of detail they want to include in their game. These are some of the more common items available in the 23rd century Solar System.

These are some of the more common personal items available on the market. The items have been selected in regard to their usefulness to adventurers more than anything else; it is obvious they represent only a very small fractions of the tools that exist on the open market.



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ABRAHAM MICROGRAVITY ASSISTANT ◇

When CEGA gained control over the Orbitals, the resultant influx of untrained personnel resulted in a pressing need for an efficient navigational aide for the less graceful immigrants. Abraham Microgravity Assistants are small drones intended to help people move about in low gravity environments. When a user signs up for Abraham service, they are issued a unit, the design of which changes whenever new specifications are issued or when the unit is returned to a dealership for quarterly servicing. Not content to simply let these devices serve as navigational assistants, the designers also incorporate increasing functionality with each new revision.

The latest revision of the Abraham is an eighteen-centimeter sphere with four small handgrips and six vectored air/cold-gas reaction fan-thrusters. Most people just use the Abraham to cushion their arrival at a far wall, or to get them moving again when air resistance has brought them to an unintended stop (+2 to Z-Gee Skill tests), but the device would have long ago passed into obscurity if that were all it was capable of. More than a simple utility device, the Abraham is now a cultural phenomenon. Many children grow up with one (which is usually painted in a brightly colored livery designed to keep the child's attention) that teaches them how to move in microgravity and rescue them when stranded. With the help of a small video screen, an Abraham unit can display short messages or animations, not to mention its whimsical, almost playful mode of interaction. Many children become attached to it, treating it as an immortal and ever-adaptable pet. Other versions of Abrahams can help perform a wide range of housekeeping chores. At least five per cent of the Orbital population has a well-loved Abraham unit, either in their quarters, or by their side.

BREATHING APPARATUS ◇

A respirator is a face mask that covers the nose and mouth to provide oxygen when a full suit is unnecessary. The respirator can use an independent air supply, or it can use filters and chemical scrubbers to provide clean air from the immediate environment. Short trips into the Martian atmosphere are possible with a respirator; however, proper clothing and goggles are required to prevent excessive UV radiation exposure.

Filter masks prevent dust and particles from entering the lungs. Filter masks do not provide air to breath, they simply filter the indigenous atmosphere. The emergency breather is a full mask that covers the entire face and head. Slipping the breather over the head, the user seals the emergency breather around the face by several straps at the sides of the breather. A two hour air supply is included in a tank carried on a shoulder strap.

BEACONS ◇

The Rock Industries Claim Beacon is used to identify ownership and claim status of asteroids and geographic locations on moons and planets. The beacon is a simple radio transmitter that broadcasts a repeated message declaring ownership and claim file number, and the pertinent details related thereto. On more than one occasion disputes over the status of a valuable asteroid or area has arisen from the relocation or disabling of claim beacons. As a precaution, claimants usually place additional hidden and inactive beacon(s) to backup the original.

The Personal Emergency Locator Transceiver (PELT) is a compact version of a ship ELT. Combining a transmitter and receiver, a lost or injured person can be located by other party members or searchers with greater ease. The rescue beacon on a space suit is equivalent to a PELT. OzoneTech is the leading manufacturer of PELTs.

LIGHTING ◇

Sinclair GlowRods are a brighter, two-hour version of the company's glow stickers, packed five per box. Bending the polymer tube initiates the chemical reaction that produces the light. The Illuminator lamp is a vacuum-capable area light. Whether running on an internal or external power source, it provides bright light over a circular area with a 100 meter diameter. The lamp sits on top of a four-meter post connected to a base containing the power source and external connections. All flashlights and lamps can use special ultraviolet and infrared filters to provide alternate illumination options.

◇ CLIMBING GEAR

Climbing gear is used on planetary surfaces and to help move about on planetoids. The auto-piton is a climbing aid that fires a metal anchor into rock. It is easy to use with a single hand. The powered ascender is used to carry a person up any line or cable capable of handling the weight; it looks like a large flashlight with a slot down the side for inserting the line. A handle, with the ascender controls, and a long tether long enough to put around the foot, complete the unit.

◇ VISIONARY SYSTEMS IMAGER DEVICES

Laser imagers use multiple laser emitters and receivers to construct an accurate holographic representation of the area within a 90 degrees arc, up to 250 meters. The imager accepts standard memocards to save copies of the scans. Completing multiple scans from different points of view allows the imager to create and display a 3D representation on a holographic projector. The laser imager unit is 30 by 20 by 10 centimeter and comes with a stabilized tripod mount for accurate operation. A military version that uses microwaves to see through poor weather conditions and smoke is available.

Thermal imagers detect the differences in heat emitted by objects. The relative temperatures are displayed as a false-color image on the unit's display, or a video output connection can send the information to a screen. The imager looks like a large pair of binoculars with a small control pad attached. It accepts standard memocards to save copies of the scans.

◇ STORAGE AND TRANSPORTATION CASES

Storage and transport cases are smaller versions of their larger cousins, cargo containers. Storage cases have a volume of 0.25 cubic meters and small data panel for listing the inventory of the case. They have a lock that is opened by a numeric code, but the lock is not adequate to deter a serious thief (STR versus Threshold 4 to pry open). The secure storage case uses a thumbprint scan to open the lock (Electronics versus Threshold 5 to bypass), and the lock mechanism is much more durable (STR versus Threshold 9 to pry open). Transport cases are sealed against vacuum, and made of stronger materials. They have a large 0.5 cubic meter volume and the same data panel and lock system as a storage case. The secured version uses the same security system and lock as a secure storage case.

◇ RESTRAINTS

Rugged polymer sheets and nets feature multiple attachment points, varying sizes, plus options like camouflage patterns and reflective coatings, make them extremely useful. Smaller nets are often used to secure personal items in zero gravity conditions. Velcro is widely used in microgravity environments. Reusable and permanent adhesive backed strips and patches are available in a wide range of sizes and colors. Until the late 21st century, velcro was used to secure people to a ship's "floor". As the human occupation of space increased, and people adapted to the microgravity environment, this practice passed out of usefulness since the majority of the space population didn't require such "amateur methods" for moving about.

Elastic cords and arresting tethers are commonly used to keep a person stable in microgravity. An elastic cord will stretch to allow some freedom of movement, but moving too quickly without being prepared can lead a person or item to smack into a wall or console. Arresting tethers are a gentler solution to remaining relatively immobile. The special tether reel is set at a particular length by a switch. Any tension, while the switch is engaged, is countered with a geometric increase in the tethers resistance. If the tether becomes slack, the reel takes up the slack and then releases it until it reaches the set point.

Composite tape, a descendant of 20th century duct tape, is an indispensable tool with excellent adhesive qualities and composite reinforced backing. It is widely used for making temporary repairs and securing items. Composite tape is available in 20 meter rolls and comes in a wide variety of colors. It is manufactured almost exclusively by the RG Tape Company.

◇ SPORT TRANSPORTATION EQUIPMENT

Parafoils are a regular sight in colony cylinders. People not daring enough to fly the high speed, or muscle-powered, flyers will opt for the parafoil to experience flight. Parafoils are parachutes that are built with an airfoil profile. The leading edge of the parafoil is open, allowing air to fill the chambers that give the parafoil its lifting shape.

Bicycles are common personal transportation in colony cylinders and surface habitats. In many places, using a bicycle gains the user a small rebate on their housing fees. They are available in both single and double rider versions. Some bicycles come with an electric motor in a small housing over the rear wheel. When the rider isn't pedaling or applying the brakes, the motor takes over at the push of a throttle switch to drive the bike at a maximum speed of 30kph. When the rider pedals, the batteries are automatically recharged from the drive wheel in contact with the rear tire.

◇ MARS TENT

The Mars tent is a two-person shelter for use on Mars. The aluminized polymer tent is inflated by directly pumping Martian atmosphere into the frame and floor. The same system also pulls oxygen and nitrogen from the atmosphere into the tent, so an occupant can remove his Mars suit. The entire tent is extremely robust, and any malfunction triggers a loud alarm, giving the occupants plenty of time get into a suit. The system requires recharging after three nights of use.

PERSONAL EQUIPMENT ◫

Equipment	Wt	Cost	Code
Abraham Microgravity Assistant	4	150/quarter, 450/year	2-E0
Sinclair Glow Rods (box of 5)	0.5	10	3-E0
Illuminator Lamp	6	50	5-E0
Infrared Light Filter	-	5	5-D0
Ultraviolet Light Filter	-	5	5-D0
Visionary Systems Thermal Imager	1	300	6-C2
Visionary Systems Laser Imager	2	400	5-D2
Visionary Systems Microwave Imager	2	500	6-B2
Storage Case	3	20	3-E0
Secure Storage Case	3	35	4-E1
Transport Case	6	50	4-E0
Secured Transport Case	6	65	5-E1
Polymer Sheet (2x2m)	2	10	3-E0
Polymer Net (2x2m)	1.5	8	3-E0
Velcro Patch (Box of 5)	0.1	1	2-E0
Arresting Tether	0.5	10	3-E0
Elastic Cord (0.5m)	0.1	1	3-E0
Composite Tape	0.25	2	2-E0
Parafoil	8	100	4-E1
Personal ELT	0.25	80	4-E0
Auto-Piton	0.25	30	4-E0
Mars Tent	5	200	4-E0 (Mars only)
Powered Ascender	1	40	4-E0
Respirator	1	15	4-E1
Filter Mask	0.1	1	3-E0
Emergency Breather	1.5	40	5-E1
Bicycle (one person)	8	150	3-E1
Bicycle (two person)	14	250	3-E1
Bicycle (powered, one person)	11	200	4-E1
Bicycle (powered, two person)	18	300	4-E1
Rock Industries Claim Beacon	20	1000	5-D1

MANNED MANEUVERING UNITS ◂

Every movement in freefall is governed by Newton's Laws of Motion: "for every action there is an equal and opposite reaction." Spacers sometimes refer to the laws as "Newton's Curse" when running low on reaction mass and performing complex orbital maneuvers. For people involved in long duration extra-vehicular activities, the simple act of moving a tired arm brings about Newton's Curse as the body moves in the opposite direction to keep the center of gravity at rest. Manned Maneuvering Units (MMUs) are a tool to help EVA personnel perform their jobs quickly and efficiently while keeping control of their motion and position in space. From the simple to the complex, a variety of MMU models are available depending on the situation and the user's needs.

MMU OPERATIONS ◇

The controls for MMUs are standardized between every model of MMU manufactured in the Solar System. A programmable switch is tied to each of the six basic motions: rotation about the x-axis (roll), y-axis (pitch) and z-axis (yaw), and translation along the x-axis, y-axis and z-axis. By default, the left hand controls rotation, and the right hand controls translation; however, the user can reverse which movements are controlled by each hand. A failsafe switch built into the controls ensures that the MMU does not activate when a switch is unintentionally hit. The most common control used is a large rocker switch that releases a controlled burst of reaction mass (producing a small fraction of a gee acceleration) for a single activation. The switch must return to the neutral position before another command is activated. This method allows for great control since a single burst that starts a motion in one direction can be cancelled by a single burst in the opposite direction.

MMUs can also be operated by voice commands. The degree of control allowed by the MMU is dependent on whether it is equipped for standard or advanced commands. In both cases, the voice commands can be deactivated prior to use. The MMU Voice Commands table on the following page lists the voice commands usable with each level of control. Basic switch-activated MMU motions are also available for vocal hands-free operation on advanced models. Regardless of the control system used, the MMU's computer attempts to make the most efficient use of the available reaction mass.

MMU OPERATIONS (CONT.)

Voice commands are given in a specific sequence of commands with pauses, and no other sequence will activate the system. First, the voice command system is brought to an active stateby the spoken word, "Move," informing the system that the movement command and parameters will follow. Since communication channels are normally opened by speaking, an active MMU voice command system temporarily routes all speech throught an internal buffer that filters conversations to avoid accidental activations. The next word spoken is the actual command the MMU will perform. Some commands also require parameter information, following the command word, to function. The MMU Voice Command table summarizes each command and its parameters. Parameter options are divided by "/" to indicate the options available; commands with parameters will not function without the proper parameter information. In case a command is misspoken or incorrect, "Cancel" will clear the command sequence queue (i.e. the user must use the command "Move" before using another command.) Commands are executed one at a time in sequence. (i.e. The user can give another command while the MMU executes the first command sequence in the queue.)

The standard commands encompass a variety of MMU movement control issues that can be very hard to overcome without a great deal of practical experience. "Stabilize" provides the user with a quick and easy way to stop any rotation, and is the most common command used by personnel new to EVA operations. "Stop" is another useful command for rookies, allowing them to quickly cancel their motion. Users new to MMU operations are always strongly cautioned to only use the voice commands if they get into trouble controlling the MMU. Most organizations provide extensive training in a safe environment prior to actual EVA operation, and then rookies are always paired with a more experienced user.

In addition to all the standard commands, advanced voice commands allow for normal movements with precision control via an inertial navigation control system. Providing the motion command and a motion parameter, the navigation system moves the user as specified. "Translate" moves the user along one of the three axis that defines a direction relative to which direction the user is currently facing. Translation along the "X"-axis moves the user forward ("Plus") and back ("Minus"). Translation along the "Y"-axis moves the user right ("Plus") and left ("Minus"). Translation along the "Z"-axis moves the user up ("Plus") and down ("Minus"). "Rotate" turns the user about one of the three axis . Rotation about the "X"-axis turns the user on their side, turning to the right ("Plus") and left ("Minus"). Rotation about the "Y"-axis moves the user forward ("Plus") and backward ("Minus"). Rotation about the "Z"-axis moves the user right ("Plus") and left ("Minus"). The "Hold" command cancels any an rotation about, or translation along, a specified axis. The "Rapid" command is used in place of the "Move" command to specifiy the MMU carry out the maneuver at quickly as possible, thus consuming reaction mass at quadruple the normal rate (four BP per one MP).

◫ MMU VOICE COMMANDS

Standard MMU Command	Action	Command Syntax
Move	Prepares system to receive commands	"Move."
Cancel	Clear command sequence queue	"Cancel."
Stabilize	Stops any rotation about axis	"Stabilize."
Stop	Zeroes relative motion along axis	"Stop."
Command	*Turn voice command movement on/off*	"Command. Activate/Standby/Deactivate."
Advanced MMU Command	**Action**	**Command Syntax**
Translate	Shift along an axis	"Translate. X/Y/Z. Plus/Minus (distance in meters)."
Rotate	Rotate a fixed arc about axis	"Rotate. X/Y/Z. Plus/Minus (number of degrees)."
Hold	Maintain absolute position	"Hold. Lock/Unlock."
Rapid	Perform high energy movement	"Rapid. (Command). (Parameters)."

◇ MANEUVER ROD

Maneuver rods are simple devices for emergency movement in zero gravity. The rod is actually a cylinder of compressed gas with a special valve. Each time the valve's control is pressed, a controlled burst of gas is released. As the gas is released, the internal pressure decreases, leading to reduced thrust the more it is used. Two wrist straps are attached to the maneuver rod's exterior to ensure the user doesn't lose control of it. Effectively using the maneuver rod requires some training and practice. A character with the Survival (Space) skill can use a maneuver rod effectively. Untrained characters achieve less than consistent, and sometimes painful, results.

◇ MOBILE SUIT SYSTEMS "BROOMSTICK"

The Mobile Suit Systems "Broomstick" is a long rod with a pair of foot holds and a pair of hand grips. At each end of the rod is a cluster of thrusters and reaction mass tanks. Each hand grip has three buttons to choose the thruster command, and twisting the grip activates the thrusters. The left grip controls yaw, pitch, and roll. The right grip controls translation along the x-, y-, and z-axis. Each time a button is selected, and the grip twisted, a controlled burst of gas is released. This allows easy control since a single burst that starts a motion in one direction is stopped by a single burst in the opposite direction.

MOBILE SUIT SYSTEMS WANDERER MMU ◇

The Mobile Suit Systems Wanderer MMUs fit the mission pack of any standard space suit design. The MMU consists of an upper and lower set of thrusters and reaction mass, with a pair of side panels that secure the MMU to the mission pack and mount the controller arms. The thrusters are set into the ends of diagonal extensions at each corner of the MMU. The Wanderer Series uses heated nitrogen for reaction mass.

The MMU controller arms have a keypad at each end with the arms extending to the front of the user at waist height. A switch locks out keypad inputs to prevent accidental thruster bursts. The left keypad controls yaw, pitch, and roll. The right keypad controls translation along the x-, y-, and z-axis. Each time a key is pressed, a controlled burst of nitrogen is released. This allows easy control since a single burst that starts a motion in one direction is stopped by a single burst in the opposite direction.

MOBILE SUIT SYSTEMS EXTENDER SERIES ◇

The Mobile Suit Systems Extender MMU is a large unit that encompasses the entire mission pack of any standard space suit design. The MMU has a "socket" that fits a standard mission pack when the user backs into; lifting the controller arms into position at each waist locks the MMU onto the mission pack. Because the MMU is so large, the upper thrusters are simply placed in the corners, while the lower thrusters are placed on two extensions from bottom on the left and right side.

The MMU is operated in the same manner as the Wanderer; however, the Extender also connects to the resupply sockets on the mission pack. This increases the suit's effective endurance with additional power and air supplies carried by the Extender MMU. (Adds four hours to the suit's endurance.) This makes the Extender popular with construction companies since the individual modifications to the suit of every employee would be prohibitive (since they're not all working at the same time and can rotate the use of the MMU.)

ORBITAL SYSTEMS INC. CREW MANEUVERING UNIT ◇

The Orbital Systems Inc. crew maneuvering unit (CMU) is large scale version of the individual manned maneuvering unit. The CMU was designed to accomodate moving an EVA crew working on the same job or in close proximity without requiring multiple MMUs or more expensive means of transportation. Available in five and nine person models, the CMU has an open control position at the front of the unit, with controls similar to an MMU, but it also has additional docking points for additional people along a spine. Each person locks into a position a position, with the operator taking the forward position.

Instead of carrying passengers, the CMU can carry cargo, equipment or specialized modules in a crew position. Power supply and space suit recharge modules are the two most common modules available. A module carrying additional reaction mass for the CMU is a common inclusion for extended duration EVA due to time or distance requirements. Cargo modules have sufficient room for approximately one cubic meter of equipment and supplies, and do not sustain an indepedent atmosphere.

ADVANCED CONTROL OPTION ◇

Advanced MMUs are identical to a normal MMUs in every aspect except the degree of control. Advanced voice commands and inertial navigation allow the user greater flexibility and precision control of the MMU. Some of the commands available include precise rotation and lateral movements, stability and orientation correction (constant or specified), and moving at specific rates. Advanced MMU are only available to expert users since it is very easy to quickly deplete the onboard re-mass.

MANNED MANEUVERING UNITS ◇

MMU	Thrust	Re-Mass	Wt	Cost	Code
Mobile Suit Systems "Broomstick"	2	20	4	200	4-01
Maneuver Rod	2	4	1	30	4-01
Mobile Suit Systems Wanderer	3	40	10	400	4-01
Mobile Suit Systems Extender	3	80	20	900	5-01
Orbital Systems Inc. CMU					
Five Person	3	160	200	5000	6-01
Nine Person	3	160	400	12,000	6-01
Power Module	-	-	60	750	6-01
Recharge Module	-	-	55	1200	6-01
Cargo Module	-	-	15	100	5-01
Remass Module	-	+80	50	500	6-01
MMU Advanced Control Option	-	-	-	+500	-

▶ CONSTRUCTION EQUIPMENT

Humankind is forever building things, from houses to monuments of human greatness; all of this building is accomplished with tools. While it could be argued that anything a person touches is a tool, these tools are specific to the construction and maintenance of the artificial environments required for people to live in the space. This section does not list the mundane tools that have existed since humans began the climb up the technology curve to its current position.

Most solar nations follow the Standardized Space Construction Codes (SSCC) for building colony cylinders, space stations, ships and surface habitats. The SSCC specifications for fasteners, life support and power systems, and construction methods minimize the number of tools while maximizing the number of repair and construction jobs that can be carried out with them. Since the SSCC pre-dates the Fall, the codes have been updated numerous times. Some friction has developed in how to maintain consistency, since the Fall led to several variations on the SSCC as the solar nations were left to fend for themselves. This has caused problems as the Jovian SSCC Committee members don't approve of CEGA recommendations, and the Mercurians are resistant to any Venusian standards. Of course, these feelings are reciprocated.

◇ ADAPTABLE ADHESIVES

Advances in chemistry that led to advanced polymers and composites has also led to a broad range of adhesives for just about any application. If a factory supplied formula with the required properties is unavailable, the technician can create a custom formula with specific properties by varying the proportions of common base components, or modifying an existing adhesive. Modern glue guns carry several types of adhesive in different cartridges for ready use. The most advanced adhesives form a molecular weld between two surfaces. These adhesives are quite expensive and available for only a few materials. Because of their very specific properties, molecular adhesives cannot be modified.

Adding a catalyst for varying an adhesive's setting time is the most common alteration made. Depending on the proportions, an adhesive can set upon contact, or it can take days to fully cure. The general rule is that the less time it takes to set, the weaker the bond is; applications that require a high strength bond are left for the longest period of time possible.

Another frequent property commonly adapted is the adhesive's internal strength. For applications that require a lot of flexibility, an adhesive can imitate various degrees of rubber-like qualities. Exo-armor technicians often use a combination that provides near weld-strength compression and tension properties for quick repairs when things are rushed or equipment is short. A catalyst for increasing the adhesive's volume is also available, though this tends to decrease the strength in proportion to the increase in volume.

With the proper mixture of "doping" agents, adhesives can adopt physical properties not normally associated with polymers and composites. Depending on the additives, adhesives can conduct electricity, or transmit light like a fiber optic cable. Temperature resistance is another common modification.

◇ POLYFOAM™ CONCRETE

PolyFoam Concrete is a polymer foam that hardens to the consistency of concrete. The material is applied under pressure by a specialized spray applicator. Prior to spraying, a catalyst is mixed with the PolyFoam that causes it to harden quickly. The time it takes to harden is proportional to the amount of catalyst used; it takes between two and twenty seconds to set. PolyFoam cures to concrete consistency in one hour. Special fillers also allow for additional hardness and strength.

Because of the spray application and variable set time, PolyFoam is extremely versatile. Spraying PolyFoam into molds allows numerous shapes and possibilities for use. Special applicators let the PolyFoam be extruded onto a surface with a smooth finish. After a sealant is applied to excavated passages and chambers, Nomads sometimes apply a layer of PolyFoam™ to their corridors for structural integrity and smooth finish. An extruder for laying surface building foundations and roadways is also available.

▼ EVA TOOLS

Tools used during extra-vehicular activities and in microgravity feature several modifications that make them easier to use. The first change is the addition of a small clip and tether system for attaching the tool to a tool harness. Second, any high-speed/high-torque rotational power tools are geared down to make them easier to handle, specifically drivers and drills. This modification involves a smart processor that regulates the gearing, or else the tool would quickly start the user spinning. Finally, the tools are designed to be multi-functional without being clumsy. This usually involves a special internal cartridge of bits and driver heads.

◇ POWER DRIVER

Power drivers are specifically designed for the space construction industry. A power supply base attaches to ship or station components with an electrohesive system. The actual driver unit, with its associated controls, is connected to the power supply with an articulated arm. The unit carries a set of standard bits internally that can be changed at the press of a button. The fasteners are fed into the unit in cartridges that make them easy to handle, and eliminates losing the fasteners, in microgravity.

PORTABLE POWER SOURCES ◇

Portable power sources are used to run electronics, sensors, life support systems, lamps and just about anything else that uses electricity. Depending on the location and use, power sources vary from stored power packs to actual generation units. In the inner system, high-efficiency solar cells provide power for smaller applications. Larger applications use solar cells as a means of replenishing or supplementing other power sources. The vast capacitors of Mercury are used on a smaller scale for many tasks on the planet's night side. Hydrogen/oxygen fuel cells are the most common power source since the "waste" water is easily electrolyzed back into hydrogen and oxygen by more abundant, and permanent, power sources at a base.

TORQUE FRAME ◇

Used with normal powered tools in microgravity, a torque frame has adjustable legs with different feet to use cracks, edges and fastener heads as a brace for power tools. After clamping a power tool in to the frame, the legs are set to counter the torque and speed of the tool. This eliminates the need to have special power tools for microgravity, though these tools are still available (see EVA Tools, below).

MODULE FRAME ◇

A module frame is a variation of the torque frame that uses electrohesive pads and adjustable expanding frame to handle larger components and modules when a M-Pod is not available. Attached to a bulkhead or other structural component, the articulated arms help to counter the components inertia. Internal components are often mounted on rails to facilitate easy replacement and repair. Some of these modules are quite heavy, so a module frame is used to handle removing and replacing units on rails in a gravity environment.

WELDING EQUIPMENT ◇

Modern materials require high temperatures to join them with a weld. Though there are still some applications that require lower temperatures, the oxidation of gases is considered very old-fashioned and a waste of resources when electricity is readily available and cheap. Laser welders are the normal low-temperature welding equipment. By varying the intensity and pulse frequency, a laser welder can easily weld low melting point metals. They are also used to cut low-density materials. Small laser welders are used for soldering electronic components.

The plasma welder is capable of reaching higher temperatures — in excess of 10,000 degrees C — than laser devices, but is still capable of lower temperature applications by varying the intensity and pulse rate of the plasma arc. The power source for the welder is a superconducting battery in a rugged case. Welders that run on fuel cells or an external power socket are also available. The short range and large power pack make the plasma welder useless as a weapon.

Molecular welders use directed, modulated radiation to force pieces to form, or break, a bond at the molecular level. This only works for two pieces of the same material, but it does allow joining of materials that would otherwise require weaker physical fasteners, or material that is extremely thick. Molecular welders are extremely expensive and slow.

CONSTRUCTION EQUIPMENT ◫

Item	Weight	Cost	Code
Power Driver	12	400	5-E0
Portable Power Supplies			
Solar	0.5	20	4-E0
Capacitor	4	100	5-D0
Fuel Cell	5	75	5-D1
Torque Frame	8	200	6-D0
Module Frame	30	650	6-D0
Laser Welder	1	75	5-D1
Plasma Welder	2	200	5-D2
Molecular Welder	20	250,000	8-D2
Glue Gun	2	100	4-E0
Adaptive Adhesive Kit	4	1500	4-E1
Molecular Adhesives	1	10,000	8-D1
PolyFoam Concrete Kit	1	10	5-D1
Applicator Devices	2-500	50-25,000	5-D0
EVA Tools	-	x1.5	-

▶ PORTABLE SENSORS

Portable sensors are used throughout the solar system for a multitude of tasks — scientific research and exploration being the two most common. Sensors are designed to collect and organize data for the user, and then present it in a useful manner. All portable sensors are equipped with a mem-card slot, or a computer connection, for data recording. The operating ranges of a sensor unit can vary from light-years (astronomical) to a few hundred meters (geological) to an internal analysis chamber (biological or chemical).

Portable sensors operate in a manner similar to computer Modules. The types of sensor systems are divided into functional classes that correspond to Character Skills; Earth Sciences, Electronic Design, Electronics, Life Sciences, Mechanical Design, Mechanics, Medicine, Physical Science, and Survival are the most common general use sensor classes available, though the Players and GM may agree to add more. Using a sensor unit, the Character can gain information about things related to the sensor's class that are not otherwise obvious or observable.

Each sensor unit has a Rating. When a Character uses a sensor to gain more information, the Gamemaster sets a Threshold appropriate to the type of information. The Player makes a Skill Test using their Electronic Warfare skill, or their skill related to the functional class (whichever is higher), using the sensor unit's Rating to modify the result. If the skill roll succeeds, the Character gains details pertinent to the information being sought. A failed test provides inconclusive data, but a fumble gives completely incorrect information. If appropriate to another task the Character is performing, the GM can use the MoS to modify a related Skill Test. The actual time to complete a sensor scan is left to the GM's discretion.

◇ ROCK INDUSTRIES MODEL 5A PROSPECTOR

The Rock Industries Model 5A Prospector is a geological sensor for conducting mineralogical surveys. It is capable of identifying samples, examining geological structures, stress testing, and measuring seismic activity, to name a few. The Prospector is often referred to as the "Rock" or "rock hound" by prospectors and miners.

◇ BENFORD ENGINEERING SERIES

Benford manufactures several models of sensors corresponding to the different engineering disciplines. They are commonly used for monitoring experiments, diagnosing problems, and detecting early signs of system failure. Benford sensors are representative of the standard engineering sensor.

◇ LIFETECH INDUSTRIES GENETIC SCANALYZER

The LifeTech Industries Genetic Scanalyzer is a standard piece of equipment for bio-genetic research and observation. The sensor can analyze and report preliminary findings about a DNA sample within minutes, with a complete deconstruction taking a few hours. A basic database of genetic identifiers can identify the DNA type, but more detailed information is only available in conjunction with a computer running a Life Sciences Module.

◇ CHEMLOGIC MARK IV CHEMICAL ANALYZER

The ChemLogic Mark IV Chemical Analyzer uses a variety of chromatography and spectroscopy tests to catalog and identify the chemical components of a sample. The Mark IV cannot provide data beyond the name and structure of a chemical, but it does provide a reference number for the Solar Chemical Reference Index. If the chemical cannot be identified by name, then the determined structure and test data are displayed.

◨ PORTABLE SENSORS

Model	Class	Rating	Wt	Cost	Code
Rock Industries Model 5A Prospector	Earth Science	0	3	1200	4-E0
Benford Series 131 Sensor	Electronic Design	0	4	4000	6-D1
Benford Series 223 Sensor	Electronics	0	2	600	4-E0
Benford Series 334 Sensor	Mechanical Design	0	6	5000	6-D1
Benford Series 419 Sensor	Mechanics	0	4	900	4-E0
LifeTech Industries Genetic Scanalyzer	Life Science	0	4	3500	5-B1
ChemLogic Mk IV Chemical Analyzer	Physical Science	0	2	2500	5-D1
Cathode Electronics Search and Rescue	Survival	+1	1	250	5-E1

CHARACTER SHEET

▼ PICTURE

▼ IDENTIFICATION

NAME:
PROFESSION:
RANK:
NATIONALITY:
UNIT:

▼ DESCRIPTION

AGE:
EYE COLOR:
HAIR COLOR:
HEIGHT:
WEIGHT:
HANDEDNESS:

▼ ATTRIBUTES

AGI	APP	BLD	CRE	FIT
INF	**KNO**	**PER**	**PSY**	**WIL**

▼ SECONDARY TRAITS

STR	HEA	STA	UD	AD

▼ PHYSICAL STATUS

INJURY	SCORE	ARMOR	PENALTY	#
FLESH				
DEEP				
DEATH				

JOVIAN CHRONICLES

▼ SKILLS

NAME	CPLX	LVL	+/-	NAME	CPLX	LVL	+/-

▼ WEAPONS

NAME	ACC	DAM	RANGE	AMMO	ROF

▼ EQUIPMENT & NOTES

▼ SYSTEM SHOCK

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VEHICLE SHEET

▼NAME

▼CREW DATA

CREW:	
ACTIONS:	

▼HULL DATA

SIZE:	
DEFAULT SIZE:	
STACKING SIZE:	
ARMOR:	
LIGHT DAMAGE:	
HEAVY DAMAGE:	
OVERKILL:	

▼MOVEMENT DATA

MOVEMENT MODE	COMBAT SPEED	TOP SPEED	MANUVER
WALKER:			
SPACE:			
DEPLOYMENT RANGE:			
REACTION MASS:			

▼PRODUCTION DATA

THREAT VALUE:	
OFFENSIVE:	
DEFENSIVE:	
MISCELLANEOUS:	
COST:	
PRODUCTION TYPE:	
INDV. LEMON DICE:	

▼ELECTRONICS DATA

SENSORS:	
COMMUNICATIONS:	
FIRE CONTROL:	

▼PERKS AND FLAWS

NAME	RATING	GAME EFFECT	AUX

▼WEAPONS

Qty	NAME	FIRE ARC	DM	BR	ACC	ROF	AMMO	SPECIAL	MS	WC	AC

▼NOTES

JOVIAN CHRONICLES

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SPACESHIP SHEET

▼ NAME:

▼ OVERALL PRODUCTION DATA

THREAT VALUE:	
OFFENSIVE:	
DEFENSIVE:	
MISCELLANEOUS:	
COST:	
PRODUCTION TYPE:	
INDV. LEMON DICE:	

▼ MOVEMENT DATA

MOVEMENT MODE	COMBAT SPEED	TOP SPEED	MANEUVER
SPACE:			

DEPLOYMENT RANGE:	
REACTION MASS:	

▼ SECTIONS

▼ OFF. & DEF. SYSTEMS

▶ SECTION NAME:

COST:	
CREW:	
ACTIONS:	
HULL SIZE:	
DEFAULT SIZE:	
STACKING SIZE:	
INDV. LEMON DICE:	
ARMOR:	
LIGHT/HEAVY/OVERKILL:	

MOVEMENT MODE	COMBAT SPEED	TOP SPEED	MANEUVER

Deployment Range:	
Reaction Mass:	
SENSORS:	
COMMUNICATIONS:	
FIRE CONTROL:	

▼ PERKS AND FLAWS

NAME	RATING	GAME EFFECT	NAME	RATING	GAME EFFECT

▼ OFFENSIVE & DEFENSIVE SYSTEM DATA

Qty	NAME	FIRE ARC	DM	BR	ACC	ROF	AMMO	SPECIAL	MS	WC	AC

▶ SECTION NAME:

COST:	
CREW:	
ACTIONS:	
HULL SIZE:	
DEFAULT SIZE:	
STACKING SIZE:	
INDV. LEMON DICE:	
ARMOR:	
LIGHT/HEAVY/OVERKILL:	
MOVEMENT DATA:	
DEPLOYMENT RANGE:	
SENSORS:	
COMMUNICATIONS:	
FIRE CONTROL:	

▼ PERKS AND FLAWS

NAME	RATING	GAME EFFECT	NAME	RATING	GAME EFFECT

▼ OFFENSIVE & DEFENSIVE SYSTEM DATA

Qty	NAME	FIRE ARC	DM	BR	ACC	ROF	AMMO	SPECIAL	MS	WC	AC

▶SECTION NAME:

COST:	ARMOR:
CREW:	LIGHT/HEAVY/OVERKILL:
ACTIONS:	MOVEMENT DATA:
HULL SIZE:	DEPLOYMENT RANGE:
DEFAULT SIZE:	SENSORS:
STACKING SIZE:	COMMUNICATIONS:
INDV. LEMON DICE:	FIRE CONTROL:

▼PERKS AND FLAWS

NAME	RATING	GAME EFFECT	NAME	RATING	GAME EFFECT

▼OFFENSIVE & DEFENSIVE SYSTEM DATA

Qty	NAME	FIRE ARC	DM	BR	ACC	ROF	AMMO	SPECIAL	MS	WC	AC

▶DRIVE SECTION

COST:	MOVEMENT MODE	COMBAT SPEED	TOP SPEED	MANEUVER
CREW:				
ACTIONS:	Deployment Range:			
HULL SIZE:	Reaction Mass:			
DEFAULT SIZE:	SENSORS:			
STACKING SIZE:	COMMUNICATIONS:			
INDV. LEMON DICE:	FIRE CONTROL:			
ARMOR:				
LIGHT/HEAVY/OVERKILL:				

▼PERKS AND FLAWS

NAME	RATING	GAME EFFECT	NAME	RATING	GAME EFFECT

▼OFFENSIVE & DEFENSIVE SYSTEM DATA

Qty	NAME	FIRE ARC	DM	BR	ACC	ROF	AMMO	SPECIAL	MS	WC	AC

▶SECTION NAME:

COST:	ARMOR:
CREW:	LIGHT/HEAVY/OVERKILL:
ACTIONS:	MOVEMENT DATA:
HULL SIZE:	DEPLOYMENT RANGE:
DEFAULT SIZE:	SENSORS:
STACKING SIZE:	COMMUNICATIONS:
INDV. LEMON DICE:	FIRE CONTROL:

▼PERKS AND FLAWS

NAME	RATING	GAME EFFECT	NAME	RATING	GAME EFFECT

▼OFFENSIVE & DEFENSIVE SYSTEM DATA

Qty	NAME	FIRE ARC	DM	BR	ACC	ROF	AMMO	SPECIAL	MS	WC	AC

▼NOTES

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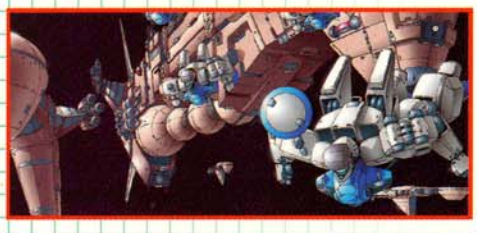



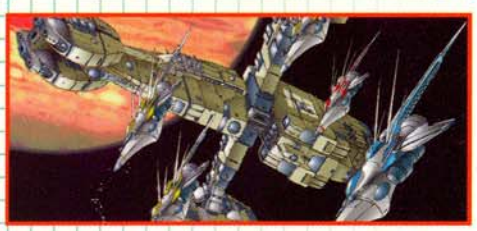





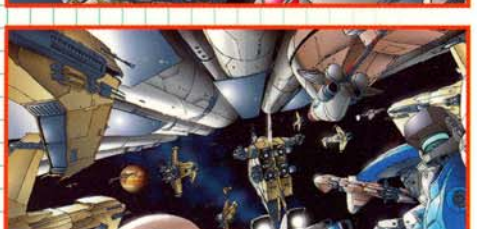

JOVIAN CHRONICLES

With lightning speed, Chris spun her Pathfinder about and brought her particle cannon to bear on the incoming missiles. The verniers of her exo-armor swiveled obediently at the quick strokes of her deft fingers and she jerked forward against the restraints of her linear frame as the machine backed up at full throttle. Pressing control keys and twisting command sticks, she zigzagged backwards, shooting a suppressive hail of hyperspeed ions at the missiles. They detonated in a chain reaction, bright balls of light erupting on her screen. She instinctively averted her eyes, although the display automatically dimmed the intensity of the explosions.

She tapped on a few keys, and the stars and ships in the background stopped spinning. So did her machine. All around her, the battle raged on, blazing beams of energy streaking past the combatants against a backdrop of Jupiter. CEGA and JAF fighters were locked in a deadly dance, missiles spiraling around each other as they arced toward their mark. Mammoth ships were slowly coming about to face each other for more lightning strikes. Further behind Jovian lines, the point defense systems on Elysée station were hard pressed to counter wave after wave of high-explosive rockets.

"Seek CEGA," she whispered, and her combat screen came alive at once, targeting several enemy Wyverns and Wraiths. She discarded the smaller targets and selected one of the CEGA ships. Her Pathfinder thrust forward on an intercept vector, the gees pushing her into her seat.

A war was about to erupt and there was nowhere to run. She felt sick and she felt like a hero.

She had to make a difference...

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