

STAR HERO



STAR HERO

SCIENCE FICTION ROLEPLAYING USING THE *HERO SYSTEM*

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Dedication

To all the *HERO System* fans out there who
keep flying starships, shooting rayguns,
and exploring strange new worlds.

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TABLE OF CONTENTS

INTRODUCTION	5
--------------------	---

CHAPTER ONE STARSHIPS, SPACEMEN, AND BUG-EYED ALIENS: THE SCIENCE FICTION GENRE

WHAT IS SCIENCE FICTION?	8
<i>THE FUTURE</i>	8
<i>SCIENCE AND HIGH TECHNOLOGY</i>	8
<i>SPACE AND OTHER WORLDS</i>	8
SCIENCE FICTION ELEMENTS	9
SCIENCE FICTION SUBGENRES	16
CYBERPUNK	16
<i>CYBERPUNK ELEMENTS</i>	16
<i>CYBERPUNK CAMPAIGNS</i>	18
EARTHBOUND SCIENCE FICTION	19
<i>EARTHBOUND SCIENCE FICTION ELEMENTS</i>	19
<i>EARTHBOUND SCIENCE FICTION CAMPAIGNS</i>	20
HARD SCIENCE FICTION	20
<i>HARD SCIENCE FICTION ELEMENTS</i>	21
<i>HARD SCIENCE FICTION CAMPAIGNS</i>	22
LOW SCIENCE FICTION	23
<i>LOW SCIENCE FICTION ELEMENTS</i>	23
<i>LOW SCIENCE FICTION CAMPAIGNS</i>	24
MILITARY SCIENCE FICTION	25
<i>MILITARY SCIENCE FICTION ELEMENTS</i>	25
<i>MILITARY SCIENCE FICTION CAMPAIGNS</i>	27
PLANETARY ROMANCE	27
<i>PLANETARY ROMANCE ELEMENTS</i>	28
<i>PLANETARY ROMANCE CAMPAIGNS</i>	29
POST-APOCALYPTIC	29
<i>POST-APOCALYPTIC ELEMENTS</i>	29
<i>POST-APOCALYPTIC HERO CAMPAIGNS</i>	31
RETRO-SCIENCE FICTION	31
SPACE OPERA	32
<i>SPACE OPERA ELEMENTS</i>	32
<i>SPACE OPERA CAMPAIGNS</i>	34
TIME TRAVEL	34
<i>TIME TRAVEL HERO CAMPAIGNS</i>	35
UTOPIAS AND DYSTOPIAS	35
<i>UTOPIA/DYSTOPIA CAMPAIGNS</i>	35
META-GENRES IN SCIENCE FICTION	36
COMEDY	36
HORROR	37
MYSTERY	37
ROMANCE	38
SATIRE AND SOCIAL COMMENTARY	39
TRAGEDY	39
STAR HERO AND OTHER GENRES	40
<i>CHAMPIONS</i>	40
<i>DARK CHAMPIONS</i>	41
<i>FANTASY HERO</i>	41
<i>PULP HERO</i>	42
<i>SWASHBUCKLERS</i>	42
<i>WESTERN HERO</i>	42
<i>OTHER ERAS</i>	42

CHAPTER TWO CITIZENS OF THE GALAXY: CHARACTER CREATION

RACIAL TEMPLATES	44
SPECIES TEMPLATES	44
CULTURAL TEMPLATES	49
ENVIRONMENT TEMPLATES	51
PROFESSIONAL TEMPLATES	55
CHARACTERISTICS	65
SKILLS	65
CHARACTER CREATION ELEMENTS	65
PERKS	69
TALENTS	71
<i>EXISTING TALENTS</i>	71
<i>NEW TALENTS</i>	72
POWERS	73
POWER ADVANTAGES	82
POWER LIMITATIONS	83
COMPLICATIONS	84

CHAPTER THREE THE UNIVERSE, PART 1: GALAXIES AND STARS

GALAXIES	90
THE MILKY WAY	91
OTHER GALAXIES	93
GLOBULAR CLUSTERS	94
STELLAR CARTOGRAPHY	95
STAR SECTORS	95
INTERSTELLAR PHENOMENA AND DANGERS	96
STARS	98
STAR SYSTEM TYPES	99
ORBITAL SEPARATION	99
STAR TYPES	99
<i>EXOTIC OBJECTS</i>	101
SAMPLE SECTOR	104

CHAPTER FOUR THE UNIVERSE, PART 2: PLANETS

PLANETARY SYSTEMS	106
ORBITAL DISTANCE	106
SYSTEM ZONES	106
SYSTEM ANOMALIES	107
PLANETS	108
ORBITAL EFFECTS	108
MASS	109
MOONS	111
PLANETARY ROTATION	113
ATMOSPHERE	114
CLIMATE	117
EXOTIC LIFE	119
LIFE	119
COMPLEXITY	120
INTELLIGENT LIFE	120
HYDROSPHERE	121
SURFACE	121
DOMINANT TERRAIN	122
RESOURCES	122
ASTEROIDS	125
OTHER OBJECTS	125
COMETS	126
SPACE HABITATS	126
<i>MEGASTRUCTURES</i>	127

CHAPTER FIVE THE UNIVERSE, PART 3: THE SOLAR SYSTEM

EARTH'S SOLAR SYSTEM	130
THE SUN	131
THE PLANETS	131
<i>MERCURY</i>	131
<i>VENUS</i>	132
<i>THE MOON</i>	132
<i>MARS</i>	133
<i>THE ASTEROIDS</i>	135
<i>JUPITER</i>	136
<i>SATURN</i>	137
<i>URANUS</i>	138
<i>NEPTUNE</i>	138
<i>THE KUIPER BELT</i>	139
<i>THE OORT CLOUD</i>	139
BEYOND SOL	140
<i>NEARBY STARS</i>	140
<i>FURTHER AFIELD</i>	141

CHAPTER SIX ALIEN AND FUTURE CIVILIZATIONS

FUTURE WORLDS	144
<i>UTOPIA</i>	144
<i>BIGGER TAILFINS</i>	146
<i>CULTURAL STEREOTYPES</i>	146
<i>CULTURAL FUSION</i>	147
<i>DYSTOPIA</i>	148
<i>POST-APOCALYPSE</i>	148
ALIEN ARCHETYPES	149
CREATING ALIEN SPECIES	149
ALIEN BODIES, ALIEN MINDS	152
CREATING PLAYER CHARACTER SPECIES	155
<i>TEMPLATE COMPONENTS</i>	156
ALIEN SPECIES AS NPCs	157
TECHNOLOGY	159
ALIEN CIVILIZATIONS	159
POPULATION	161
ECONOMICS	164
GOVERNMENT	169
<i>THE BASICS OF GOVERNMENT</i>	169
<i>INTERSTELLAR GOVERNMENTS</i>	172
<i>AGENCIES</i>	172
LANGUAGE	177
DIVERSITY	178
CULTURE	179

CHAPTER SEVEN COMPUTERS, BLASTERS, AND ROBOTS: TECHNOLOGY

TECHNOLOGY IN THE CAMPAIGN	182
TECHNOLOGY LEVELS	182
TECH SCALES	182
CREATING A TECH SCALE	183
ALTERNATE TECH PATHS	183
VARYING TECH PATHS	184
OBSOLETE, ADVANCED, AND ALIEN TECHNOLOGIES	184
PRIME DIRECTIVES AND QUARANTINES	184
TECHNOLOGY IMPROVEMENTS	186
RUBBER SCIENCE	187
WEAPONS	189
MILITARY TECHNOLOGY	189
DEFENSES	191
OTHER TECHNOLOGY	192
COMPUTERS	192
ROBOTS	196
BIOTECHNOLOGY	197
NANOTECHNOLOGY	199
POWER AND ENERGY TECHNOLOGY	200
REAL WORLD POWER SUPPLIES	200
SPECULATIVE AND RUBBER SCIENCE POWER SUPPLIES	202
TELEPORTATION	203
MISCELLANEOUS EQUIPMENT	205
ACQUIRING EQUIPMENT	206

CHAPTER EIGHT TO SOAR AMONG THE STARS: STARSHIPS AND SPACE STATIONS

STARSHIP CREATION	210
GENERAL STARSHIP CONSIDERATIONS	210
A BRIEF HISTORY OF HUMAN SPACE TRAVEL	210
SPACE VEHICLE TYPES	211
OBTAINING A SPACE VEHICLE	212
BASIC SPACECRAFT DESIGN	213
POWER SYSTEMS	216
PROPULSION SYSTEMS	217
ACCELERATION	218
NORMAL PROPULSION	220
FASTER-THAN-LIGHT PROPULSION	223
WEAPON SYSTEMS	228
MISSILES	228
BEAM WEAPONS	228
GUNS	231
DEFENSES	231
OPERATIONS SYSTEMS	234
PERSONNEL SYSTEMS	238
COMPLICATIONS	240
HOVERCRAFT	241
MECHA	241
PLANETARY VEHICLES AND MECHA	241
SPACE STATIONS AND STARBASES	244
SPACE STATION TYPES	244
SIZE	244
LOCATION	245
EQUIPMENT	245
EXAMPLE VEHICLES	247

CHAPTER NINE YESTERDAY, TODAY, AND TOMORROW: TIME TRAVEL

TEMPORAL MECHANICS AND CONSEQUENCES	256
REAL-LIFE MECHANICS	256
METHODS AND EFFECTS	257
OPTIONS	259
PARADOXES AND COMPLICATIONS	259
FIXED HISTORY	260
MUTABLE HISTORY	261
TIME TRAVEL CAMPAIGNS AND ADVENTURES	262
ALTERNATE HISTORIES	264

CHAPTER TEN THE POWERS OF THE MIND: PSIONICS

PSIONICS CONSIDERATIONS	266
THE BASICS	266
HOW THEY DO IT	266
POWER LEVEL	267
AVAILABLE POWERS	267
RARITY	270
SOCIAL ISSUES	271
RULES CONSIDERATIONS	273
CAMPAIGN TYPES	275
PSIONIC CAMPAIGNS	275
EXAMPLE: PSIONICS IN THE TERRAN EMPIRE	277
EXAMPLE PSIONIC POWERS	279

CHAPTER ELEVEN A JOURNEY INTO THE UNKNOWN: GAMEMASTERING STAR HERO

CREATING A CAMPAIGN	284
CAMPAIGN THEME	284
CAMPAIGN TYPES	285
SUBGENRE	285
CAMPAIGN SUBJECT	287
SETTINGS	291
ADVENTURE STRUCTURE	293
RUNNING THE GAME	293
PLOTting	294
DEALING WITH DISCONNECTS	297
COMPLICATIONS AND HOW TO USE THEM	300
ALBEDO	305
GRAVITY	305
THE STAR HERO ENVIRONMENT	305
ZERO GRAVITY	308
VACUUM	309
ATMOSPHERES	310
EXPLOSIVE DECOMPRESSION	312
VILLAINS	313
VILLAIN QUALITIES	313
VILLAINS AND NPCS	313
VILLAIN ARCHETYPES	315
NON-PLAYER CHARACTERS	320
NPC ARCHETYPES	320

CHAPTER TWELVE ARGOS EXPLORATION

ARGOS EXPLORATION	324
ROBERT "KAITHON ARGOSINA" AVILLA	325
JENNIFER DEGRAFF	327
JASON GRIGORI	329
SEGARO KREZ'SHUL	331
KIRITHA TAL	333
MAJOR ALLYSSA BARTH	335
VILLAINS	335
BERTRAND DEVEREAUX	337
DARGEN	339
GHENAK VAA'RESH	339
ZEE'GANSH	342
MINION GALLERY	345
BIBLIOGRAPHY AND FILMOGRAPHY	352
AUTHORS' FAVORITES	354
JIM'S FAVORITES	354
JIM'S TOP FIVE FAVORITE NOVELS	354
JIM'S TOP FIVE FAVORITE SHORT STORIES	354
JIM'S TOP FIVE FAVORITE MOVIES	355
STEVE'S FAVORITES	356
STEVE'S TOP FIVE FAVORITE NOVELS	356
STEVE'S TOP FIVE FAVORITE SHORT STORIES	356
STEVE'S TOP FIVE FAVORITE MOVIES	357
INDEX	358

INTRODUCTION



A beginning is the time for taking the most delicate care that the balances are correct.

—advice from Princess Irulan in *Dune*,
by Frank Herbert

Ever since the australopithecines first looked up and saw the glittering lights in the night-time sky, Humans have been fascinated by space. The vastness of space, with its equally vast possibilities for other worlds, other forms of life, and even other people like ourselves, has held a special place in the Human mind that nothing has ever dispelled.

With the coming of the technological revolutions of the twentieth century, which made travel to the Moon and into near space possible, interest in Science Fiction broadened and deepened. Thousands of stories, novels, movies, and television shows featuring the bizarre aliens, almost magical devices, and powerful starships of “SF” became a part not only of American, but world, culture. Franchises such as *Star Trek*, *Star Wars*, and *Doctor Who* became icons, known to billions of people around the planet.

It’s only natural that gamers, many of whom were interested in Science Fiction long before they learned what roleplaying games were, would want to simulate the characters and adventures of Science Fiction in their campaigns. Some of the earliest RPGs were Science Fiction games, and numbered among them are many of the most popular games in the history of the hobby.

Given the interest in Science Fiction gaming, it’s only appropriate that the *HERO System*, a set of rules unmatched in its flexibility and adaptability to multiple genres, have a book devoted to the infinite opportunities for adventure the Science Fiction genre affords. *Star Hero* is a set of rules, guidelines, and advice you can use to run gaming campaigns in the style of your favorite Science Fiction. In other words, it’s a *genre book*, a “guidebook” to the genre of Science Fiction that shows you how to use the *HERO System* rules to create the sort of Science Fiction campaigns and characters you want — whether they’re like your favorite Science Fiction fiction, television shows, and movies, or some idea that’s entirely original to you.

HOW TO USE THIS BOOK

Star Hero is designed both for players experienced with Science Fiction roleplaying and those who are new to this style and genre of play. Nothing in these pages is secret or for the GM’s eyes only, so every reader can read it all the way through and then decide which portions he wants to utilize.

Chapter One, *Starships, Spacemen, And Bug-Eyed Aliens: The Science Fiction Genre*, describes the major subgenres of Science Fiction — Hard Science Fiction, Military Science Fiction, Space Opera, and so on — with notes about how to simulate them in *HERO System* campaigns. It also discusses common genre elements and “bits” (such as aliens, hyperspace, and robots), and applying “meta-genres” such as Comedy, Horror, or Romance.

Chapter Two, *Citizens Of The Galaxy: Character Creation*, covers the subject of creating *Star Hero* characters. It contains dozens of Species and Professional Templates, and a review of the Skills, Powers, and other elements of the *HERO System* as they pertain to Science Fiction PCs.

Chapters Three through Five are a brief tour through the wonders of astronomy as they relate to Science Fiction gaming. If you want to know how to create your own galaxies, star systems, and planets for your *Star Hero* campaign, these chapters show you how — and provide random generation tables for your use. Chapter Five looks at Earth’s solar system, both as an example system and as a possible setting for many Science Fiction games.

Chapter Six discusses alien life and alien civilizations. Aliens are one of the most common and important elements of Science Fiction, and this section of the book shows you how to create intriguing, plausible, and just plain fun alien species and societies for your *Star Hero* games. Again, there are random generation tables if you want to use them.

Chapter Seven, *Computers, Blasters, And Robots: Technology*, delves into the all-important subject of technology in *Star Hero*. It starts with general concerns — how to establish a “tech level” system for your game, how different species’s technologies might interact — and progresses to a review of the major categories of technology found in Science Fiction, with plenty of examples.

ABBREVIATIONS

This book uses the following abbreviations to refer to other *HERO System* books:

6E1: *The HERO System 6th Edition, Volume I: Character Creation*

6E2: *The HERO System 6th Edition, Volume II: Combat And Adventuring*

APG: *The HERO System Advanced Player’s Guide*

HSB: *The HERO System Bestiary*

HSEG: *The HERO System Equipment Guide*

HSG: *The HERO System Grimoire*

HSMA: *HERO System Martial Arts*

HSS: *HERO System Skills*

HSV: *HERO System Vehicles*

Additionally, to avoid cluttering the text too much, this book uses some abbreviations common to Science Fiction. The most common of these is FTL, which stands for “faster-than-light” (similarly, STL is “slower-than-light”).

The chapter also includes a section on acquiring technology and establishing prices for it.

Chapter Eight, *To Soar Among The Stars: Starships And Space Stations*, covers both those subjects, plus ground vehicles such as hovercraft and mecha. It features detailed rules for creating spacecraft and the like.

Chapter Nine, *Yesterday, Today, And Tomorrow: Time Travel*, looks at the intriguing subject of traveling through time. It discusses theories on how time travel might work, possible methods, the perils and pitfalls of influencing the time-stream, and how to set up a “Time Hero” time travel campaign.

Chapter Ten, *The Powers Of The Mind: Psionics*, discusses the nature and role of mental powers in Science Fiction generally, and Star Hero campaigns in particular. It reviews the types of powers psis tend to possess, their role in society and the campaign, and other relevant factors. It includes a look at how to build psionic powers with the right “flavor” for Science Fiction games, with plenty of sample powers to get you started.

Chapter Eleven, *A Journey Into The Unknown: Gamemastering Star Hero*, offers suggestions and ideas for creating and running Star Hero campaigns. It includes information and rules about common Science Fiction environments, such as high and low gravity, unusual atmospheres, and the like.

Chapter Twelve, *Argos Exploration*, contains some sample characters from Hero Games’s “Terran Empire” setting — five heroes and five adversaries. You can use these as starting characters for your own players, or simply as examples of ways to build Star Hero PCs. The chapter also has some “generic” NPC writeups GMs can use.

The book closes with a bibliography of the authors’ favorite Science Fiction, and other books of use to Star Hero gamers.

So, get your blaster and your energy sword, strap into the pilot’s seat, and get ready to fly out amongst the stars. It’s time for Star Hero adventure!

SCIENCE!

Moreso than most games, Science Fiction RPG campaigns have to pay at least some attention to scientific reality. You need a certain amount of verisimilitude, even if it’s just to create realistic-sounding technobabble, to preserve the feel of the genre. If the GM starts talking about purple stars, or gives the wrong size for the Milky Way Galaxy, the obvious scientific errors may taint players’ enjoyment of the game.

That being said, roleplaying games are ultimately about fun and adventure, not scientific accuracy. Except for the hardest of Hard Science Fiction settings and campaigns, a little fudging of the facts or a few minor mistakes shouldn’t cause any trouble. Don’t spend so much time worrying about scientific reality that the game suffers because of it.

Star Hero strives to present just the right level of scientific realism for good gaming — enough that players and GMs don’t make ludicrous errors, but not so much that the players need astronomy textbooks to figure out what’s going on or start to question the existence of FTL drives. Throughout this book, you’ll find plenty of suggestions and ideas on when, and when not, to use “real science.” Where necessary, the book presents rules for simulating “realistic” activity, but in some cases those rules are slightly tweaked or fudged to make them easier to use in play. If you know enough to spot the technical inaccuracies, and to be bothered by them, you probably know enough to fix them for yourself.

For example, beginning on page 218, you’ll find rules for “realistic” acceleration and movement in space. While these rules are a lot more realistic than the standard *HERO System* movement rules, they’re still not truly “realistic.” A truly realistic movement system would involve acceleration per Segment per Segment, requiring 1440m of movement per Turn to achieve 1 G of acceleration. That’s reaching the point where there’s too much work involved; it begins to slow down and hinder the flow of the game. If you really want that level of detail, you can make the necessary changes to the rules, but the average gamer does just fine with the “more realistic, but not totally realistic” system.

Another good example of stressing playability over “realism” can be found in the rules for gravity. The rules on page 238 set a rate of 5 STR Telekinesis to equal one gravity (1 G) worth of “pull” (an arithmetic progression), even though the lifting capacity of STR doubles for every 5 points (a geometric progression). This works better for gaming because it’s easy to remember, allows for a fairly broad range of effects for gravitic weapons, and works more like a Grab would when it comes to determining how characters cope with high gravity. But it’s easily changed if the GM prefers more “realism.”

On a related point, the results provided by the random tables in Chapters Three through Six should be taken as guidelines. No random system can account for every variable in the universe, so if you find the outcome not agreeing with what you want, make whatever adjustments you need.

This book was written in mid-2011, and the scientific facts it presents reflect what was known to astronomers as of about that time. Since new discoveries are being made every day, it’s entirely possible that scientists’ views of the universe will change after this book is printed. But the odds are, if you’re aware of the differences, you also know enough to account for them in your game in a logical yet fun way.

CHAPTER ONE



***STARSHIPS, SPACEMEN,
AND BUG-EYED ALIENS:
THE SCIENCE FICTION GENRE***



WHAT IS SCIENCE FICTION?

Before you can think about the different subgenres and elements of Science Fiction, you have to define what Science Fiction is, or else the vastness of the topic makes meaningful discussion (and game creation) impossible. There are probably as many definitions of Science Fiction as there are readers and writers of it. The author and critic Damon Knight once famously defined it as “Whatever we’re pointing to when we say, ‘that’s Science Fiction.’” Since Star Hero is a roleplaying game, not a critical study of Science Fiction as a genre, this chapter tends to agree with Knight’s definition. But regardless of that there are certain major elements and themes that tend to pervade Science Fiction and shape how gamers think of it. Those elements include:

The Future

While it’s certainly possible for a Science Fiction story to be set in the modern day, or even the past (“A long time ago in a galaxy far, far away...”), the vast majority of Science Fiction takes place in the future. Sometimes this is the near future — the next few decades or centuries — while at other times stories are set dozens or hundreds of millennia from the present. Some prolific authors, such as Robert Heinlein and Larry Niven, have created vast “future histories” of their settings, often covering hundreds or thousands of years of fictional time.

In many cases the degree of “future-ness” of a Science Fiction setting depends on its subgenre. For example, Low Science Fiction and Cyberpunk stories tend to occur in the next few decades or centuries, whereas the technological wizardry of Space Opera is often made more palatable by setting those stores many hundreds or thousands of years from now.

Science And High Technology

High technology, and the science that makes it possible, are a central element in many Science Fiction stories... or if not, they enable the characters to do whatever it is they want to do, or go where they need to go. Ray guns, starships, robots,

computers, antigravity belts, and uncounted thousands of other devices parade through the pages and across the screens of Science Fiction, enthraling readers and viewers with the possibilities.

In many ways it can be said that Science Fiction is a literature about Humanity’s relationship with science and technology, though it often occupies an uneasy ground between pure fantasy and pure realism. Only the hardest of Hard Science Fiction stories attempt to be *truly* realistic and scientifically accurate; the rest involve, to a greater or lesser degree, scientific and technological principles that violate the laws of physics as they’re known today. What sets Science Fiction apart from Fantasy is that in general, the fantastic elements in a Science Fiction story are at least *possible* — they may not exist yet, but they *could* exist at some future time, perhaps. They’re justified, however tenuously, by some degree of scientific plausibility. Often this means little more than abundant use of “technobabble,” but even then the principle holds: the appeal is to science, however unlikely or bogus, rather than magic or the supernatural. Many a Science Fiction setting adheres rigorously to the fictional scientific/technological framework created to sustain the story(ies) that take place there — witness, for example, the extensive “Technical Manuals” written to illustrate and explain the “science” behind *Star Trek*’s starships and weapons.

Space And Other Worlds

Science Fiction stories set on Earth are of course possible, and often quite entertaining (see *Earthbound Science Fiction*, below, for further discussion), but most Science Fiction takes place in outer space and/or on alien worlds — whether those “alien worlds” are just nearby neighbors like Mars and Venus, or bizarre planets in distant galaxies. The infinite possibilities of space offer equally infinite possibilities for storytelling. In some cases space or an alien world itself in effect become “characters” in a story... or at least “enemies” that the heroes must overcome if they’re to triumph and survive.

1

*“I offer a toast.
The undiscovered
country... the future.”*

—Chancellor Gorkon
quotes Shakespeare
in *Star Trek VI: The
Undiscovered Country*

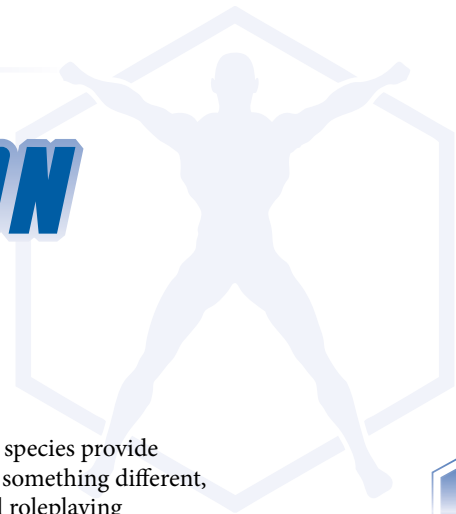
*He looked gravely at
Arthur and said, “I’m
a great fan of science,
you know.”*

—Slartibartfast talks
with Arthur Dent in
*The Hitchhiker’s
Guide To The Galaxy*,
by Douglas Adams

*Space... the final
frontier. These are the
voyages of the star-
ship Enterprise. Its
five-year mission: to
explore strange new
worlds... to seek out
new life and new civi-
lizations... to boldly
go where no man has
gone before!*

—the opening
of the television
series *Star Trek*

SCIENCE FICTION ELEMENTS



Besides the core definitional elements of the future, high technology, and space, certain elements, themes, features, and tropes — or “bits,” in gamer parlance — occur from setting to setting in Science Fiction stories regardless of subgenre. They include:

ALIENS

To either side of the street, now, the shacks and small shops, built of slate and split dried seaweed stalks, pressed ever closer, and the life clotted more thickly about them. Human children, grimed and ragged, played in the street with near-featureless Capella-anthropoids, young, immature Carnegie Twelve Armadillos, Martian frog-children. Hundreds of small Portman multipedes darted underfoot like lizards; most of them would be killed by their parents for reasons never quite understood by men. Yellowbirds — ostrich-like bipeds with soft yellow scales — strode quietly through the crowd, heads raised high, eyes rolled up. Like a parade of monsters in a dipsomaniac's delirium passed the population of Sclerotto City.

—Magnus Ridolph encounters many types of aliens on Sclerotto Planet in “The Unspeakable McInch,” by Jack Vance

Although sentient species from worlds other than Earth aren't *required* for Science Fiction — some classics, such as *Dune*, feature no aliens at all — they exist in most Science Fiction settings. They range from species identical to Humans in all but superficial ways (odd bumps or ridges on the head, unusual skin tones, weird alien customs), to species so different from Life As We Know It that Humans can barely relate to or interact with them (energy beings, psionic life-forms, silicon-bodied aliens).

Some Science Fiction settings feature only one or two alien species; others, including most Space Opera universes, feature hundreds or thousands of them. In either case, their purpose in the story is often to provide the author with a chance to comment on “the Human condition,” or to cast some Human custom into stark relief by comparing and contrasting it with alien practices.

In Star Hero campaigns, alien species provide players with the chance to try something different, and to dive into some unusual roleplaying experiences.

For more on creating aliens and alien civilizations, and the roles they play in Star Hero stories, see Chapter Six.

BIG DUMB OBJECTS

I myself have dreamed up an intermediate step between Dyson spheres and planets. Build a ring 93 million miles in radius — one Earth orbit — which would make it 600 million miles long. If we have the mass of Jupiter to work with, and if we make it a million miles wide, we get a thickness of about a thousand meters. The Ringworld would thus be much sturdier than a Dyson sphere.

There are other advantages. We can spin it for gravity. A rotation on its axis of 770 miles/second would give the Ringworld one gravity outward. We wouldn't even have to roof it over. Put walls a thousand miles high at each rim, aimed inward at the sun, and very little of the air will leak over the edges. ...

The thing is roomy enough: three million times the area of the Earth. It will be some time before anyone complains of the crowding.

—Larry Niven explains ringworlds in his essay “Bigger Than Worlds”

“Big dumb object” is a genre term for gigantic artifacts found in space or on planets. The best known examples include the Ringworld (depicted in Larry Niven's novel of the same name) and Dyson spheres, but plenty of others exist. They're a staple of Planetary Romance and some Space Opera settings; they're perfect for exploration-oriented adventures. For more information on them, see pages 28, 126, and 244.

BLASTERS

She landed face-to-face with the man below, his nerve disruptor held casually at the level of her waist. His eyes widened as he saw her stunner. Here the Barrayaran custom of all-male crews on warships paid her, for he hesitated just a fraction of a second to shoot a woman. In that fraction she fired first. He slumped heavily over her, head lolling on her shoulder. Bracing, she held him as a shield before her.

Her second shot laid out the next guard as he was bringing his disruptor to aim. The third guard got off a hasty burst that was absorbed by the back of the man she held, although the nimbus of it seared the outer edge of her left thigh. The pain of it flared screamingly, but no sound escaped her clenched teeth. With a wild berserker accuracy that seemed no part of herself, she felled him too, then looked frantically around for a place of concealment.

—Cordelia Naismith wins a blaster fight in *Shards Of Honor*, by Lois McMaster Bujold

If you're in a setting with advanced technology, what fun is it to shoot at people using weapons based on gunpowder and bullets? It's a lot more in tune with the genre to use an energy pistol that fires a brightly-colored bolt of energy. Generically known as "blasters" (or, in earlier Science Fiction, "ray guns" or "death rays"), these weapons crop up, in an infinity of shapes, sizes, and explanations, in most Science Fiction settings. Examples include the phasers of *Star Trek*, Han Solo's blaster (and Chewbacca's bowcaster), and the laser- or plasma-based weapons found in many stories.

See pages 32 and 190 for more about blasters.

Old Man Mose himself occupied the entire circular wall of the giant office. His multitudinous eyes winked and glared coldly. His multitudinous memories whirred and hummed. His mouth, the cone of a speaker, hung open in a kind of astonishment at human stupidity. His hands, the keys of a multiflex typewriter, poised over a roll of tape, ready to hammer out logic. Mose was the Mosaic Multiplex Prosecution Computer of the District Attorney's Office, whose awful decisions controlled the preparation, presentation, and prosecution of every police case.

—computers take Humans' place in the justice system in *The Demolished Man*, by Alfred Bester

Multivac had no particular home any longer. It was a global presence knit together by wire, optical fiber, and microwave. It had a brain divided into a hundred subsidiaries but acting as one. It had its outlets everywhere and no human being... was far from one.

—Isaac Asimov describes an Internet-like supercomputer in "The Life And Times Of Multivac"

"I simply maintain that computers are more efficient than human beings. Not better."

—Science Officer Spock to Dr. McCoy in "The Ultimate Computer" episode of *Star Trek*

CLONES

The hatch opened. The young man they had seen on the screen came out with one athletic twist and leaped down onto the shaky dust and clinkers of Libra. Martin shook his hand, but Pugh was staring at the hatch, from which another young man emerged with the same neat twist and jump, followed by a young woman who emerged with the same neat twist, ornamented with a wriggle, and a jump. They were all tall, with bronze skin, black hair, high-bridged noses, epicanthic folds, the same face. They all had the same face. The fourth was emerging from the hatch with a neat twist and jump. "Martin Bach," said Pugh, "we've got a clone."

"Right," said one of them, "we're a tenclone. John Chow's the name.[]" ...

Martin did not answer[.] It was hard to talk to them. The same faces, each with the same expression of intelligent interest, all leaned toward him across the table at almost the same angle. They all nodded together. ...

Within five E-days, the Johns had all their material and equipment unloaded and operating, and were starting to open up the mine. They worked with total efficiency.

—the benefits and difficulties of working with clones are the subject of "Nine Lives," by Ursula K. LeGuin

The idea of creating a carbon-copy of a living being is not a new one, but it's seen new life in Science Fiction in recent decades with the advance of Human genetic science. Now that doctors can viably clone advanced mammals, and some talk about cloning Humans, the concept has even more relevance for Star Hero campaigns. A character could create a clone of himself or another person for many purposes: artificial immortality (surgeons transplant the character's brain from healthy body to health body over the centuries); crime (the character fakes his own death, or creates an alibi, using the clone); trade (a Human with special abilities might be duplicated as an item of commerce, or a dissolute species might create custom-designed sex-slaves for sale); improved work efficiency (a group of clones making a perfect "project team"), or warfare (armies of cloned soldiers solve all your recruiting problems). See page 197 for more on creating clones in the *HERO System*.

COMPUTERS

Computers — thinking and calculating machines — have been a feature of Science Fiction from the genre's earliest days. From the helpful ship's computer of *Star Trek*, to the dangerously unbalanced HAL in *2001: A Space Odyssey*, to tiny computers built into characters' clothing, Science Fiction writers have explored how computers and people might interact in the future.

Given their prevalence in twenty-first century Earth society, computers have become an even more common, and powerful feature of the genre; some subgenres, such as Cyberpunk, can't really exist without computer as a plot element.

In the *HERO System*, characters build computers using the rules on 6E2 183. Page 193 of this book has further information.

EXPLORATION

Going into space is partly about “what’s out there” — the Human desire to go further, to see what’s beyond the horizon, to discover something new. Science Fiction characters have an entire Universe to explore, full of wonders and dangers, and wanting to go out there and experience them is one of the strongest motivating factors in the genre.

It’s also a great hook for a Star Hero GM to use. Most PCs can’t resist the lure of exploration any more than characters in fiction can, especially when there’s the possibility of profit lurking out there. Entire campaigns can even be constructed around the adventures of a group of explorers.

FIRST CONTACT

One of the enduring favorite story types in Science Fiction is the “first contact” story, where a group of Humans first encounters an alien species. This might be Humanity’s very first contact with any type of alien at all, or it could merely be first contact with a species Humans simply haven’t met yet despite years of being part of the galactic community. In either case, the possibilities for intrigue, espionage, comedy, and even romance are nearly limitless.

In a gaming context, a first contact makes for a great adventure. It’s not the sort of scenario most GMs want to run more than once, but it’s a fun discrete episode in a long-running campaign.

GALACTIC EMPIRES

In many Science Fiction settings, particularly Space Operas, the dominant (or a dominant) form of government is the “galactic empire” — a large entity spanning multiple star systems (or even galaxies), and typically ruled over by a single Emperor, tyrant, Senate, Council, or other person/institution. First featured prominently in Isaac Asimov’s *Foundation* novels, the galactic empire has become a feature of many Science Fiction stories. It may not always be an empire, exactly — the Federation of *Star Trek* isn’t one — but any large, multi-stellar government usually fits this theme. See pages 169 and 316 for more information.

Sam: *There are lots of hungry people in the world, Mal, and none of them are hungry because we went to the Moon. None of them are colder and certainly none of them are dumber because we went to the Moon.*

Mallory: *And we went to the Moon. Do we really have to go to Mars?*

Sam: *Yes.*

Mallory: *Why?*

Sam: *'Cause it's next. 'Cause we came out of the cave, and we looked over the hill and we saw fire; and we crossed the ocean and we pioneered the west, and we took to the sky. The history of man is hung on a timeline of explorations and this is what's next.*

—Sam Seaborn explains one of the profound truths of Human existence in *The West Wing* episode “Galileo”



Jean-Luc Picard: *Mirasta Yale?*

Mirasta Yale: *Yes?*

Deanna Troi: *Please don't be alarmed at our appearance.*

Picard: *My name is Jean-Luc Picard. This is my associate, Deanna Troi.*

Yale: *What are you...?*

Troi: *We come from a federation of planets.*

Captain Picard is from a planet called Earth which is over 2,000 light-years from here. I'm from another planet called Betazed.

Picard: *We've been monitoring your progress toward warp drive capability. When a society reaches your level of technology, and is clearly about to initiate warp travel, we feel the time is right for first contact.*

[Later, Picard speaks with Chancellor Avel Durken]

Picard: *Chancellor, there is no starship mission more dangerous than that of first contact. We never know what we will face when we open the door on a new world — how we will be greeted, what exactly the dangers will be.*

—from the *Star Trek: The Next Generation* episode “First Contact”

The First Galactic Empire had endured for tens of thousands of years. It had included all the planets of the Galaxy in a centralized rule, sometimes tyrannical, sometimes benevolent, always orderly. Human beings had forgotten that any other form of existence could be.

—from the Prologue to *Second Foundation*, by Isaac Asimov



The idea [is] this: Present-day physics poses a limit on the speed of an interstellar vehicle. The ships we send to distant stars will be on one-way journeys, at least at first. They will have to carry a complete ecology; they couldn't carry enough food and oxygen in tanks. Because they will take generations to complete their journeys, they must also carry a viable and complete society. Clearly we're talking about quite a large ship, with a population in the hundreds at least[.]

—Larry Niven discusses the multi-generation starship in his essay "Bigger Than Worlds"

"Almost 200 years ago, the planet of New Hartsdale declared themselves a mutagene world and closed off all direct contact with the Gallimaufry. Their declared intent was to create a "group mind." They succeeded, but only after reducing their entire population down to one "perfect" genotype. The group mind named itself "PSmith."

—Buck Godot first encounters the hive-mind Human race PSmith in the comic book *Buck Godot: PSmith*, by Phil Foglio

GENERATION SHIPS

Writers unwilling to invent FTL flight (or similar rubber science methods of rapid travel) for their settings still need a way to get Humans off Earth and out to new planets where they can meet aliens and have adventures — even though the trip would take many Human lifetimes. In some cases, travelers use suspended animation, but a more interesting device is the *generation ship*, a vessel large enough, and properly equipped, to house multiple generations of Humans as they live, have children, and die en route to their ultimate destination.

Stories involving generation ships usually go one of two ways. First, the story can focus on the ship itself — life aboard it, things it encounters, how people react to the end of the journey. Second, it can feature an FTL ship (often one invented by the same species that launched the generation ship centuries ago) discovering the generation ship, and what happens thereafter. Either situation would make for a fascinating Star Hero campaign or adventure.

For more on generation ships, see page 223.

HIVE MINDS

In many Science Fiction universes and stories, there's at least one species — often an insectile one — with a "hive mind" that psionically links all members of the species. This has some decided benefits (such as instantaneous communication and sharing of knowledge), but also some drawbacks ("individuals" treated as disposal elements of the greater "overmind"). Often hive mind characters appear in stories dealing with issues of free will and self-identification.

In *HERO System* terms, hive mind species typically have Mind Link with each other, bought to cover interstellar distances. An occasional variant is a species built as a single individual with massive amounts of Duplication.

HYPERSPACE

In the final decade of the twenty-first century, men and women in rocket ships landed on the moon. By 2200 AD they had reached the other planets of our solar system. Almost at once there followed the discovery of hyperdrive, through which the speed of light was first attained and later greatly surpassed. And so at last mankind began the conquest and colonization of deep space.

—from the opening monologue of *Forbidden Planet*

I was still thinking about monsters in hyperspace. The lovely thing about that hypothesis was that you couldn't even estimate a probability. We knew too little.

—Beowulf Shaeffer ponders a solution to the mystery of some disappearing starships in “The Borderlands Of Sol,” by Larry Niven

Rather than trying to distort science too much by making physical FTL travel possible, some Science Fiction writers create an alternate dimension, *hyperspace*, that starships can enter and travel through at faster-than-light velocities. In some cases, hyperspace allows physical objects to achieve FTL speeds impossible in normal space; in other cases, it acts as a “shortcut” that allows rapid journeys from star to star. For more on hyperspace travel, see page 226.

INVENTIONS

Subsequent authorities have found fault with the first land ironclads in many particulars, but assuredly they served their purpose on the day of their appearance.

—H.G. Wells presages the development of the tank, and shows its devastating effect on traditional soldiers and artillery, in “The Land Ironclads”

Science Fiction stories frequently revolve around the creation of some new, important invention. This was particularly common in the early years of the genre, but “invention stories” remain a part of it to this day. The creation of the first FTL drive (or something even better) is a common example; so is a super-weapon capable of wreaking heretofore unheard-of devastation, or an all-new power source. Typically the story deals with the implications of the new technology and how it might help or harm Humanity... and, ultimately, what the inventor decides to do with it.

MECHA

“Strictly speaking, she's not a robot, she's a man-made all-purpose battle weapon! Artificial human evangelion! And the last chance for humanity...”

—Doctor Ritsuko Akagi introduces Shinji Ikari to EVA Unit-01 in *Neon Genesis Evangelion*

Thanks to the influence of Japanese *manga* (comic books) and *anime* (animated features), mecha — gigantic, robot-like vehicles with humanoid or animal shapes — have become increasingly popular in some types of Science Fiction in recent years. They're most common in Military Science Fiction (since almost by definition they're fighting vehicles), but also appear in some Space Opera settings that have a heavy militaristic aspect.

THE ORIGIN OF HUMANKIND

The colony was large and well-equipped, and guided by beings tougher and smarter than humans. It had failed nonetheless. ... The protectors had died out, leaving a lost population of Pak breeders to fend for themselves[.] ... The breeders had mutated. By Phssthpok's time they showed little resemblance to the Pak breeder — barring certain changes at middle age[.]

—Humanity learns that it didn't arise independently on Earth but is descended from mutated Pak breeders in *The Ringworld Engineers*, by Larry Niven

Many Science Fiction stories have dealt, directly or indirectly, with the question of mankind's origin. For example, the movie *2001: A Space Odyssey* touches on this theme somewhat; so do some parts of Larry Niven's “Known World” cycle, and some episodes of *Star Trek*. In these stories, it often turns out that an Elder Civilization (page 158) jump-started Humanity, or made sure it was invested with intelligence, or carried its genetic material to other worlds (thus explaining why Humans meet other Humans in other star systems). The “deep mystery” of how Humanity evolved the way it did makes an excellent background element for a Star Hero campaign.

PLEASURE PLANETS

Kalgan first gained fame as the pleasure world of the Galaxy two centuries before the birth of Hari Seldon. It was a pleasure world in the sense that it made an industry — and an immensely profitable one, at that — out of amusement.

—a description of the pleasure-planet Kalgan from *Second Foundation*, by Isaac Asimov

In lots of Science Fiction settings, there's a planet... or two... or three serving as “resort worlds” — the ultimate vacation destination. Devoted to a non-stop sybaritic lifestyle, these worlds exist only to please vacationing tourists with whatever their hearts desire.



In darker Science Fiction settings, “vacation” activities on these planets often turn out to be immoral or illegal, but some are just for good-hearted fun. Inevitably, though, when Our Heroes arrive, they discover there’s trouble in paradise, and they have to put a stop to it.

Similar to the pleasure planet, but on a much smaller scale, is the orbital spa — a space station where people of every species can go to relax, be pampered, eat fine meals, and enjoy zero-gravity sports. But then, of course, there’s a murder the heroes have to solve, or the isolated station is attacked by some horror, or something goes terribly wrong...

PSIONICS

That night at her home in Orado City, Telzey had an uninvited visitor. She was half asleep when she sensed a cautious mental probe. It brought her instantly and completely awake, but she gave no immediate indication of having noticed anything. ...

The other psi remained cautious. But the probing continued, a not too expert testing of the density of her screens, a search for a weakness in their patterns through which the mind behind them might be scanned or invaded.

Telzey decided presently she’d waited long enough. She loosened her screens abruptly, sent a psi bolt flashing back along the line of the probe. It smacked into another screen. The probe vanished. Somebody somewhere probably had been knocked cold for an hour or so.

—Telzey Amberdon deals with a mental intruder in “The Telzey Toy,” by James H. Schmitz

The powers of the mind have fascinated Science Fiction writers for decades, and they exert a similar attraction on gamers. Some Science Fiction settings feature low-powered but intriguing mental abilities (like Gil Hamilton’s telekinetic “arm” in Niven’s short stories); in others, such as E.E. “Doc” Smith’s “Lensman” stories, characters have mental powers capable of laying waste planets and galaxies. See Chapter Ten for more about psionics in Star Hero.

ROBOTS AND ANDROIDS

Leela: Are the mechanical men friendly?

The Doctor: Robots don’t have feelings. It’s the people they serve we must hope are friendly.

—The Doctor explains one of the basics of robots in *Doctor Who* episode “The Robots Of Death”

The Encyclopedia Galactica defines a robot as a mechanical apparatus designed to do the work of a man. The marketing division of the Sirius Cybernetics Corporation defines a robot as “Your Plastic Pal Who’s Fun to Be With.”

—from *The Hitchhiker’s Guide To The Galaxy*, by Douglas Adams

From the humanoid mechanical men of Asimov’s *Robot* series of novels, to the often oddly-shaped droids of *Star Wars*, robots (and the more Human-appearing androids) have been a feature of Science Fiction since its earliest days. Sometimes they’re valuable helpers, sometimes deadly enemies, and in a few cases they even gain sentience and become heroes. In the *HERO System*, they’re typically built using the Automaton rules; see page 196 of this book, and HSB 406-11, for more information and some examples.

RUBBER SCIENCE

“To build the [Ringworld] at all, they must have had cheap transmutation — a few tenth-stars per kiloton — not to mention dozens of other impossibilities.”

—Louis Wu speculates about the construction of the Ringworld in *Ringworld*, by Larry Niven

“Rubber science” is a general term for the scientific impossibilities that occur frequently in Science Fiction (particularly Space Opera). In many cases, the characters and story matter more than strict scientific or technical accuracy; much of what occurs in Science Fiction novels and television shows isn’t physically possible (as early twenty-first century Humans understand “possible,” anyway). If necessary, a writer can blithely ignore Science, or develop some pseudo-scientific principles to explain how things work, and get on with the business of telling a good story. See Chapter Seven for more information and examples.

SPACE STATIONS AND STARSHIPS

The silvery image of the enemy ship almost filled the viewer. It showed as a broad, wide ring encircling a cylindrical axis, like a mechanical pencil floating inside a platinum bracelet. A finned craft projected from the pointed end of the axial section. Angular letters ran down the axis, totally unlike the dots-and-commas of Kzinti script.

—the Kzinti first encounter, to their ultimate sorrow, Humanity in “The Warriors,” by Larry Niven

When Satellite Control called me, I was writing up the day’s progress report in the Observation Bubble — the glass-domed office that juts out from the axis of the space station like the hubcap of a wheel. It was not really a good place to work, for the view was too overwhelming. Only a few yards away I could see the construction teams performing their slow-motion ballet as they put the station together like a giant jigsaw puzzle. And beyond them, twenty thousand miles below, was the blue-green glory of the full Earth, floating against the raveled star clouds of the Milky Way.

—from “Who’s There?,” by Arthur C. Clarke

As common in Science Fiction as aliens, if not more so, space stations (and their mobile counterparts, starships) are what allow characters to live, breathe, and travel in the dangerous depths of outer space. In many Star Hero campaigns, the characters’ starship or home starbase is as much an NPC as any shopkeeper or mercenary; it has its own personality, peccadilloes, and way of impacting the story. See Chapter Eight for more information.

TERRAFORMING

Ripley: *Why don’t you just check out LV-426?*

Van Leuwen: *Because I don’t have to. There’ve been people there for over twenty years and they never complained about any hostile organism.*

Ripley: *What do you mean? What people?*

Van Leuwen: *Terraformers. Planet engineers. They go in, set up these big atmosphere processors to make the air breathable. Takes decades. It’s what we call a “shake and bake” colony.*

—a whole bunch of colonists are about to die in the movie *Aliens*

Terraforming is the process by which Humans make an uninhabitable planet suitable for Human life. (Of course, aliens can do the same thing, but the results of “xenofarming” a planet may not be the same, if the aliens have highly different physiologies from Humans.) Realistically, it takes centuries of extraordinary effort, but in Space Opera settings it may be quite easy. See page 118 for more information.

TIME TRAVEL

“You mean that time travel really is possible? That men can be transported into the future or the past—”

The other held up a restraining hand. “Yes. Time travel is possible....”

“But professor! Think what you’re saying! You’re telling me that I could go back and murder my own grandfather. That I could prevent myself from being born—”

Again the elder sighed. “I was afraid of this,” he said. “I knew you could not understand.” He hesitated. Then: “At any rate, take my word for it that time travel is possible.”

—from “The Time Mirror,” by C. South

While some Science Fiction settings don’t allow time travel at all, others feature it frequently. Some Science Fiction story cycles, most prominently the *Doctor Who* television show, depend on it as their central enabling device. Journeying back and forth through time raises so many interesting issues, and creates so many bizarre questions, that Star Hero GMs willing to put in a little effort can get a lot of game mileage out of the concept. See Chapter Nine and *Time Travel Hero* for more information.

TRAVEL

Chilke, while barely past the first flush of youth, was already the veteran of a hundred picaresque adventures. He had traveled the Gaeen Reach far and wide, at every level of the economic ladder.

—Glawen Clattuc enjoys Eustace Chilke’s travel-stories in *Araminta Station*, by Jack Vance

Four miles! How ridiculous the distance seemed! How long would it take the Canopus to tavel four miles? He doubted if man could measure so short an interval of time. And how many trillions of miles had he, Robert Armstrong, traveled in his life? It must have reached a staggering total by now, for in the last twenty years he had scarcely stayed more than a month at a time on any single world. This very year, he had twice made the crossing of the Galaxy, and that was a notable journey even in these days of the phantom drive.

—Robert Armstrong contemplates the irony of having to walk four miles in “A Walk In The Dark,” by Arthur C. Clarke

Travel, like exploration, is a major element in many Science Fiction universes. Space itself, as *Star Trek* reminds us, is “the final frontier” — the one domain that it’s impossible to ever become totally familiar with. There’s always a strange new realm to go to, right beyond the next star system, and many characters can’t resist the lure of the open “road.”

SCIENCE FICTION SUBGENRES

The term “Science Fiction” is broad, encompassing many different types of stories, characters, and settings. In the course of almost a century as an identifiable genre, Science Fiction has spawned dozens of popular subgenres. Some of them are important enough to rate their own sourcebooks (like *Post-Apocalyptic Hero*). The boundaries between them are sometimes fuzzy, and many films, stories, or roleplaying campaigns fit into two or more subgenres at once. But for gaming purposes it helps to analyze them individually.

CYBERPUNK

Cyberpunk arose as a Science Fiction genre in the Eighties, though some of its elements and themes first appeared in some form in earlier stories. Most scholars consider William Gibson’s novel *Neuromancer* as the first true Cyberpunk story, and today that and Gibson’s other novels remain the primary manifestation of and influence on the subgenre in the minds of most gamers. But there’ve been many other powerful examples of Cyberpunk and its themes, including the Ridley Scott film *Blade Runner* and Neal Stephenson’s novel *Snow Crash* to name just two.

Cyberpunk combines features of Dystopian Science Fiction (in that Human society has at least partly become much worse), Earthbound Science Fiction (because the stories typically take place on Earth in the near future), Low Science Fiction (because the stories feature relatively “realistic” technology, rather than blasters, FTL travel, and aliens), and Hard Science Fiction (to the extent that they don’t violate scientific laws or posit “impossible” technologies). The subgenre’s name tells what makes it distinctive. “Cyber” reflects its fascination with computer networks, virtual reality, and the accelerating pace of technological change in the modern world and the near future. “Punk” indicates a focus on the seamier side of a world transformed by that technology.

Most Cyberpunk stories study or reflect the effects of rapid technological/social change and the possibilities of melding Humans and machines. The feel is gritty, urban, multicultural, and rebellious; characters are often outlaws battling large, impersonal corporations. The arche-

typical Cyberpunk character is the “cyberspace cowboy” — an elite hacker trained to outwit sophisticated and deadly countermeasures as he navigates the data networks to steal valuable information. Cybered drivers/pilots, as depicted in such works as Walter Jon Williams’s *Hardwired*, are a variant on the hacker. The “samurai” (a heavily-cybered warrior with an attitude often as lethal as his weaponry) is also popular; Gibson’s Molly Millions epitomizes this sort of character.

While “pure” Cyberpunk stories are rarely written anymore, it’s sufficiently robust and successful as a subgenre to spin off some children of its own. These include “biopunk” and “nanopunk,” which keep the rebellious tone and urban setting, but shift the focus from computer piracy and glittering mechanical implants to “gene hacking” and Humanity altered by genetic engineering or nanotechnology.

For a more detailed look at the Cyberpunk genre, please see *Cyber Hero*.

Cyberpunk Elements

Besides the central themes described above, some of the elements of Cyberpunk include:

CORPORATIONS

In most Cyberpunk settings, national governments have either collapsed, or effectively been rendered impotent. The most powerful forces in the world are megacorporations, which sometimes seem to *de facto* rule the world in an almost quasi-feudal style. Get in good with one and you’ve got a job and security for life; get on one’s wrong side and you’ll find your credit burned and corporate assassins coming after you. Many of these megacorporations are Japanese, or Japanese-controlled (reflecting the fact that Cyberpunk emerged in the Eighties, when Japan was considered a highly influential economic powerhouse).

In a gaming context, corporations are the ultimate villains in Cyberpunk. They manipulate people not only through consumerism, but by controlling access to basic resources like power and water. Many adventures involve stealing something from a “corp” — valuable data, or even kidnapping a valued researcher — or interfering with a corporation’s activities in some way.

1

The zaibatsus, Fox said, the multinationals. The blood of a zaibatsu is information, not people. The structure is independent of the individual lives that comprise it. Corporation as life form.

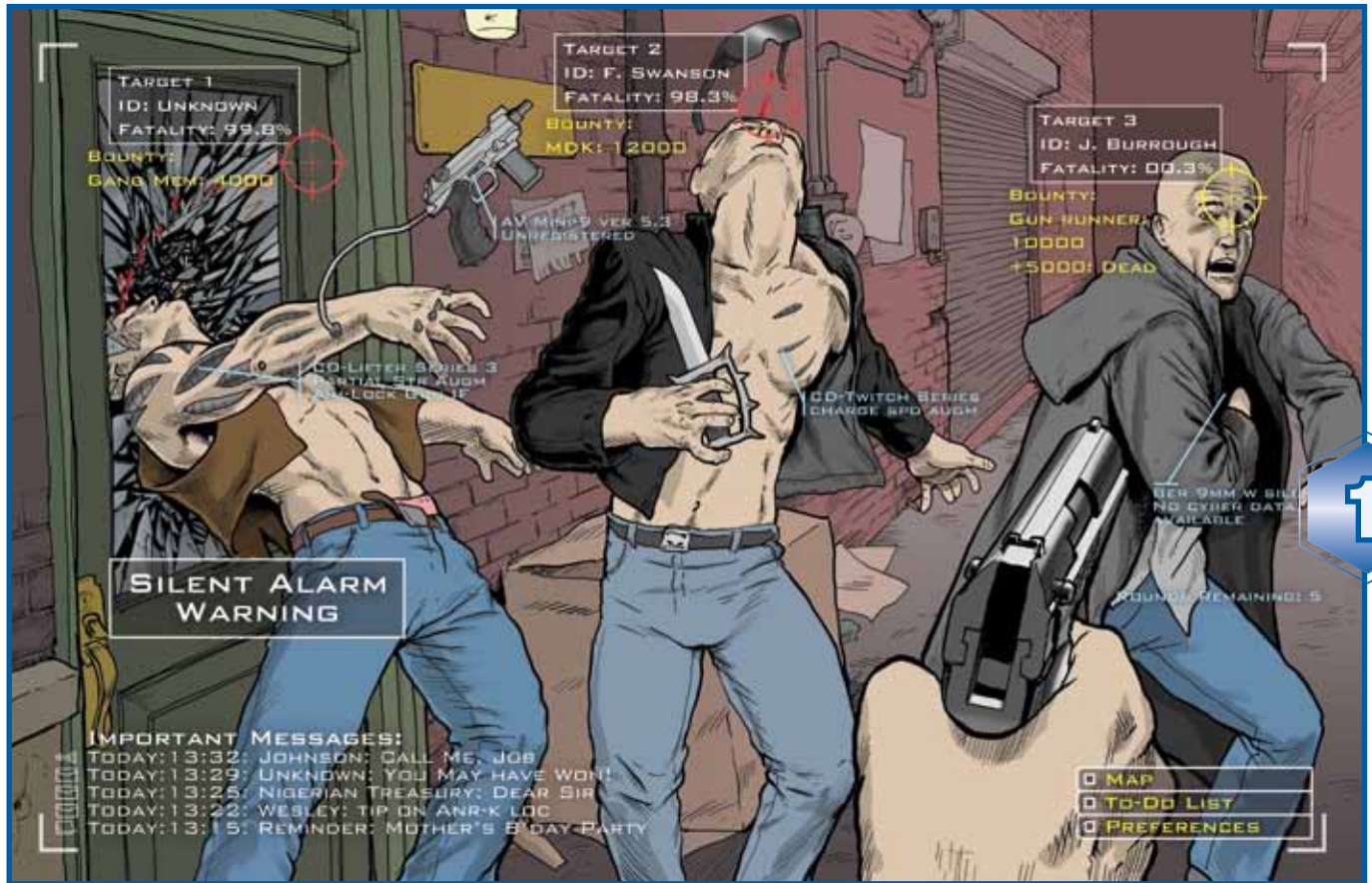
—corporate extractor Fox philosophizes about the megacorporations in “New Rose Hotel,” by William Gibson

“This is a war. Governments run wars. Not corporations.”

“That’s premillennium talk,” Laura said. “The world’s different now.” ...

“Let me get this straight,” Laura said. “You’re talking about a corporate army, without any legal national backing, invading sovereign nations?”

—the characters confront the reality of corporate influence in the Cyberpunk world in *Islands In The Net*, by Bruce Sterling



THE CYBERNET

In many Cyberpunk stories, part of the action takes place in the cybernet — also known as the net, the matrix, and cyberspace, among other names. The cybernet is the Internet taken to a fiction-logic extreme, where users “jack into” the “world” of computer data, visualizing it in their mind as various types of objects they can interact with in various ways. A character who specializes in this sort of work is known by such names as hacker, netter, decker, netrunner, computer cowboy, data thief, and technomancer. He often makes a living by finding or stealing valuable data and selling it; to do this he may have to hack into secured systems, avoiding or disabling specialized computer security programs (which Gibson calls *ice*, for Intrusion Countermeasures Electronics).

The cybernet is definitely an element of Cyberpunk gaming, but in many gaming campaigns it doesn't feature nearly as prominently as in Cyberpunk literature. Not all characters can easily enter the cybernet, or if they can aren't nearly as effective there as a netrunner. Therefore extended scenes involving the cybernet have the effect of “splitting the party,” forcing most players to wait passively while those who can run the net take center stage. Most GMs prefer to avoid this, so they gloss over netrunning or handle it as a few simple Skill rolls.

The matrix is an abstract representation of the relationships between data systems. Legitimate programmers jack into their employers' sector of the matrix and find themselves surrounded by bright geometries representing the corporate data.

Towers and fields of it ranged in the colorless non-space of the simulation matrix, the electronic consensus-hallucination that facilitates the handling and exchange of massive quantities of data. Legitimate programmers never see the walls of ice they work behind, the walls of shadow that screen their operations from others, from industrial-espionage artists and hustlers like Bobby Quine.

Bobby was a cowboy. Bobby was a cracksman, a burglar, casing mankind's extended electronic nervous system, rustling data and credit in the crowded matrix, monochrome nonspace where the only stars are dense concentrations of information, and high above it all burn corporate galaxies and the cold spiral arms of military systems.

—Bobby Quine and Automatic Jack prepare for the biggest data-run of their lives in “Burning Chrome,” by William Gibson

CYBERWARE

"I don't see how I missed him."

"Cause he's fast, so fast." She hugged her knees and rocked back and forth on her bootheels. "His nervous system's jacked up. He's factory custom." ...

"[He] was mostly grown in a vat in Chiba City. He's a Yakuza assassin."

"Chiba. Yeah. See, Molly's been Chiba, too." And she showed me her hands, fingers slightly spread. Her fingers were slender, tapered, very white against the polished burgundy nails. Ten blades snicked straight out from their recesses beneath her nails, each one a narrow, double-edged scalpel in pale blue steel.

—Johnny and Molly Millions discuss cyberware enhancements in "Johnny Mnemonic," by Walter Gibson.

In Cyberpunk, characters have often been enhanced by having *cyberware* installed in their bodies. Cyberware is devices (or in some cases biological material) that improves the performance of the Human body or gives it abilities it would otherwise lack. Some common types include: datajacks that allow the user to neurally interface with the cybernet; muscle grafts to augment strength; razor-sharp blades concealed beneath the fingernails; and cybereyes that enhance the user's sight in various ways. But the concept extends far beyond that — especially in Cyberpunk gaming, where getting just the right piece of "ware" can mean the difference between a cool character and a boring one... or between life and death during an adventure.

See the *Cyborgs* sidebar, page 52, for more information on cyberware.

FADS, FASHION, AND STYLE

It wasn't a name he knew. Something new, something that had come in since he'd been in Chiba. Fads swept the youth of the Sprawl at the speed of light; entire subcultures could rise overnight, thrive for a dozen weeks, and then vanish utterly.

—Case considers the nature of Cyberpunk society in *Neuromancer*, by William Gibson

The Cyberpunk world is a setting riddled by consumerism in every form at every level, and one way that manifests is an obsession with style, fashion, and trendiness. Looking and acting the right way is often just as important as having the right weapon or cyberware... sometimes moreso.

This theme applies to technology as well. Tech-based Cyberpunk characters want to be on the "bleeding edge" — yesterday's system or program isn't good enough, they need the most recent, the best. An adventurer's career may be marked by his rise from relatively mundane gadgetry to possessing the latest, most powerful devices.

THE SPRAWL

Bobby climbed down behind him, into the unmistakable signature smell of the Sprawl, a rich amalgam of stale subway exhalations, ancient soot, and the carcinogenic tang of fresh plastics, all of it shot through with the carbon edge of illicit fossil fuels. High overhead, in the reflected glare of arc lamps, one of the unfinished Fuller domes shut out two-thirds of the salmon-pink evening sky, its ragged edge like broken gray honeycomb. The Sprawl's patchwork of domes tended to generate inadvertent microclimates; there were areas of a few city blocks where a fine drizzle of condensation fell continually from the soot-stained geodesics, and sections of high dome famous for displays of static-discharge, a peculiarly urban variety of lightning.

—a description of the Sprawl from *Count Zero*, by William Gibson

While Cyberpunk stories occasionally get out into rural areas or even up to orbital habitats, typically they're set in vast urban areas, typically known by such derisive nicknames as "the Sprawl" or "the Plex." Here society festers and decays, with haves taking advantage of (and showing off) their wealth, and have-nots scrambling just to survive... and if they're lucky climb a few steps up the heap before they die. It's a bleak and unfor-giving setting, one tailor-made for adventures and adventurers.

Cyberpunk Campaigns

Cyber Hero campaigns typically feature Standard Heroic characters built on 175 Total Points (including 50 points' worth of Matching Complications). However, Cyberpunk characters are often quite powerful, combining high Skill rolls with various special abilities produced by artificial enhancements. Therefore, the GM may want to consider making them Powerful or Very Powerful Heroic characters, particularly if he prefers for the PCs to buy cyberware with Character Points instead of getting it for free.

EARTHBOUND SCIENCE FICTION

Though space travel remains one of the iconic image of Science Fiction, it's worth remembering that most of the early masters of the genre did quite well with stories set entirely on Earth — and so have many of the authors who came along later (more than a few of Robert Heinlein's "Future History" short stories fit into this subgenre, for example). Earthbound Science Fiction usually focuses more on changes to Human society than on interactions with alien beings. The time period tends to be modern-day or near-future, although some more pessimistic writers have examined how Human civilization might develop if space travel never becomes practical.

Just because a story is set on Earth doesn't mean it can't involve fantastic and exotic cultures or events. A perennial favorite of Pulp-era stories was the Lost World — a remote or isolated region where strange beings and stranger societies can develop. The arrival of aerial mapping and satellite photography drove most lost world stories off to other planets, but they still have a place in Pulp or Victorian adventures. Gamemasters who want to put a Lost World in a modern or near-future setting need to do some fancy handwaving to explain how it's remained undiscovered... but of course fancy handwaving is a GM specialty.

Similarly, it's possible to stretch the definition of "Earthbound" a bit to include the Moon, or even the entire solar system. The adventure possibilities within Sol's territory are almost too numerous to count, as shown by hundreds of Science Fiction short stories and novels.

Earthbound Science Fiction Elements

Besides the central themes described above, some of the elements of Earthbound Science Fiction include:

ALIEN VISITORS

Even if a story's limited to Earth, it can still involve aliens — they just have to come to the PCs, instead of the PCs going to them. They might be invaders (as in H.G. Wells's *The War Of The Worlds*), mysterious grey-skinned beings who want to harvest Humans for their own inscrutable purposes, or simply visitors interested in seeing Earth's "tourist attractions" who happen to bring adventure with them. Alternately, the "aliens" could be an altered, or newly-intelligent, form of Earth life, such as the insectile beings of Frank Herbert's *Hellstrom's Hive* or *The Green Brain*.

BELOW THE EARTH AND SEA

"There are plans for large-scale expansion of Ocean-Deep, then?"

"Sure, why not? We've got cities on the continental shelves, why not on the deep-sea bottom?"

—Stephen Demerest and Omar Javan discuss Humanity's undersea cities in "Waterclap," by Isaac Asimov

Since exploration — going places no one (or few others) has ever been, seeing what's there, and dealing with whatever troubles arise — is the driving force in many Science Fiction stories, Earthbound Science Fiction authors need places for their characters to explore. That means descending into the subterranean depths (as in Jules Verne's *Journey To The Center Of The Earth*) or the ocean (as in his *Twenty Thousand Leagues Under The Sea*). Even today, with all the technology at Humanity's command, men haven't yet fully investigated the seas that cover three-quarters of Earth, nor delved deeper into their homeworld than a few miles. Who knows what sort of wonders... or dangers... might await bold Player Characters able to make these harrowing journeys?

Just as many interesting possibilities arise from the concept of *living* underwater or in some sort of subterranean community... or in who else might. If aliens can't come at Humanity from the stars, they may swim up out of the depths or burrow up from beneath his very feet! And a community of, say, aqualab-dwelling Player Characters could get into all sorts of adventures involving strange biological discoveries, natural disasters threatening their home, rescuing wrecked submarines, and more.

No one would have believed in the last years of the nineteenth century that this world was being watched keenly and closely by intelligences greater than man's and yet as mortal as his own; that as men busied themselves about their various concerns they were scrutinised and studied, perhaps almost as narrowly as a man with a microscope might scrutinise the transient creatures that swarm and multiply in a drop of water.

—the opening line of *The War Of The Worlds*, by H.G. Wells

ONE NEW TECHNOLOGY

I wriggled myself quickly to the top of the being, or object, half out of the water, which served us for a refuge. I kicked it. It was evidently a hard, impenetrable body, and not the soft substance that forms the bodies of the great marine mammalia. But this hard body might be a bony covering, like that of the antediluvian animals; and I should be free to class this monster among amphibious reptiles, such as tortoises or alligators.

Well, no! the blackish back that supported me was smooth, polished, without scales. The blow produced a metallic sound; and, incredible though it may be, it seemed, I might say, as if it was made of riveted plates.

There was no doubt about it! This monster, this natural phenomenon that had puzzled the learned world, and overthrown and misled the imagination of seamen of both hemispheres, it must be owned was a still more astonishing phenomenon, inasmuch as it was a simply human construction.

We had no time to lose, however. We were lying upon the back of a sort of submarine boat, which appeared (as far as I could judge) like a huge fish of steel.

—Professor Pierre Arronax first encounters the fabulous *Nautilus* of Captain Nemo in *Twenty Thousand Leagues Under The Sea*, by Jules Verne

In contrast to Space Opera and many other types of Science Fiction, where new technologies abound, an Earthbound Science Fiction story often turns on *one* new technology, or one single, unusual development of some sort (such as the existence of an underground non-Human civilization). The classic example, illustrated by the quote above, is the submarine of *Twenty Thousand Leagues Under The Sea*. A clever GM could build a fun adventure — or perhaps even an entire campaign — around just such a plot device.

Earthbound Science Fiction Campaigns

Earthbound Star Hero campaigns typically feature Standard Heroic characters built on 175 Total Points (including 50 points' worth of Matching Complications). Typically the PCs' access to the fantastic technology so common to other forms of Science Fiction is limited, though they may, as in the movie *Men In Black*, have access to technology brought to Earth by alien species.

HARD SCIENCE FICTION

Science, technology, material achievement, and the rest are basically good. In them lies a necessary if not sufficient condition for the improvement of man's lot, even his mental and spiritual lot. ... A hard science story bases itself upon the real, present-day science or technology and carries these further with a minimum of imaginary forces, materials, or laws of nature.

—Poul Anderson's description of Hard Science Fiction, quoted in "On Science And Science Fiction," by Kathryn Cramer in *The Ascent Of Wonder: The Evolution Of Hard SF*, edited by David G. Hartwell and Kathryn Cramer

The subgenre of Hard Science Fiction emphasizes scientific and technical accuracy, sometimes at the expense of character development and plot (though the best Hard Science Fiction combines both technical and dramatic aspects without detracting from either). In many ways it lies at the heart of Science Fiction. Many of the trends in Science Fiction over the decades have been conscious or unconscious efforts to get away from, or cast aside, Hard Science Fiction, but inevitably it returns to the forefront of the genre. The themes and concepts of other subgenres are often presented as variations of, or contrasts to, the *de facto* baseline for the genre, which is Hard Science Fiction. Many of the greatest masters of Science Fiction, including Heinlein, Niven, and Clarke, are known primarily for their work in this subgenre.

One of the great appeals of a Hard Science Fiction story is that the events and technology depicted are, theoretically, really possible, at least at some point in mankind's development. In many such settings, not even that most common staple of Science Fiction, faster-than-light travel, exists, though some otherwise Hard Science Fiction stories do have FTL ships (or other common Science Fiction devices) because they're such a useful enabling device.

Hard Science Fiction's focus on technical matters and scientific phenomena often means the stories concern the exploits of inventors and engineers dealing with unforeseen problems in hostile environments. Conflicts in Hard Science Fiction stories are as frequently resolved with a little-known piece of real science as with fisticuffs and blaster fire. Many are, in essence, mystery stories where the resolution of the dilemma depends not on the characters' detective work, but on their scientific and engineering acumen.



Hard Science Fiction Elements

Besides the central themes described above, some of the elements of Hard Science Fiction include:

COMPETENT MEN OF SCIENCE

In Hard Science Fiction, the typical protagonist is a person of learning, skill, and dedication to knowledge and truth. He's usually well-versed in science in some form — typically hard sciences such as physics, astronomy and chemistry, but possibly softer sciences like biology or even social administration. And he uses his knowledge and his competence to identify, confront, and ultimately overcome obstacles. He may have to use his fists or blaster pistol too, at some point, but what really makes it possible for him to struggle, adapt, and overcome is his awareness and understanding of science.

In *HERO System* terms, this element of Hard Science Fiction is easy to emulate: make sure most characters have at least one or two Science Skills, or comparable other Skills (such as Computer Programming, Electronics, or Systems Operation). The GM might even require every character to have at least X points' worth of Science Skills, representing knowledge learned in school, or on the job, or simply by being a curious person in a technologically-advanced setting.

A HOSTILE UNIVERSE

One of the central premises of Hard Science Fiction is that the universe is a dangerous, even hostile place. It can kill you in seconds if you do the wrong thing — don't prepare your starship properly, don't fasten your spacesuit correctly,

Generally the central characters of hard science fiction are winners (the competent man, the engineer, the scientist, the good soldier, the man who transcends his circumstances, the inventor — the “Heinlein individual” who was for decades the model for the Modern sf hero). ... Hard sf embodies the fantasies of empowerment of the scientific and technological culture of the modern era and validates its faith in scientific knowledge as dominant over other ways of knowing.

—from “Hard Science Fiction,” by David G. Hartwell, in *The Ascent Of Wonder: The Evolution Of Hard SF*, edited by David G. Hartwell and Kathryn Cramer

“Everything you learn to do, bring it up to full competence — or don't do it.”

—Meddrick Kell offers some advice to Science Fiction characters everywhere in “To Bring In The Steel,” by Donald M. Kingsbury

She had violated a man-made law that said KEEP OUT but the penalty was not of men's making or desire and it was a penalty men could not revoke. A physical law had decreed: h amount of fuel will power [a starship] with a mass of m safely to its destination; and a second physical law had decreed: h amount of fuel will not power [a starship] with a mass of m plus x safely to its destination.

[Starships] obeyed only physical laws and no amount of human sympathy for her could alter the second law.

—an implacable universe decrees that an eighteen year-old girl must die for stowing away on a starship in “The Cold Equations,” by Tom Godwin

“Somebody had asked me why I didn't have bad entities — villains — in my stories, generally speaking, and my point was that the universe was a perfectly adequate villain!”

—author Hal Clement, quoted in “Hard Science Fiction,” by David G. Hartwell, in *The Ascent Of Wonder: The Evolution Of Hard SF*, edited by David G. Hartwell and Kathryn Cramer

wander into some area you have no business being in. It functions according to cruel and inflexible rules to which there are very few, if any, exceptions. Therefore, only those who can and do *learn* the rules and *follow* the rules — which is to say, competent, educated, scientifically/technically proficient people — will survive.

A LIBERTARIAN WORLDVIEW

The nature of Science Fiction in general, and Hard Science Fiction in particular, tends toward a certain perspective that can best be described as libertarian. Hard Science Fiction characters value knowledge, competence, the freedom to experiment, and the possibilities for improvement of the Human condition that Science and Technology have to offer. They look askance at, and may be actively hostile toward, political power, social engineering, coercion in nearly any form, and anything else that tends to curb or inhibit their ability to use knowledge and science to take advantage of those possibilities and transform the Human condition into something better. In this sense they can be described as “libertarian,” though they rarely (if ever) espouse political views within stories.

SURREALISTIC SCIENCE FICTION

At its most speculative, Science Fiction can question the very nature (or existence) of reality itself. What if everything we see is a dream, or an illusion? What if everything we remember is a lie? Philip K. Dick (*Do Androids Dream of Electric Sheep?*, which became the film *Blade Runner*) is perhaps the best-known surrealist Science Fiction writer, but even arch-Hard Science Fiction author Robert Heinlein crafted stories like “Them” and “The Unpleasant Profession of Jonathan Hoag.” Questions about the nature of reality turn up with surprising regularity in films and television.

The chief feature of surrealist Science Fiction is simply that Things Are Not As They Seem. The memories, perceptions and identities of the characters can all be false. Naturally, this can be overdone: if everything is arbitrary and mutable, it’s hard for the reader or the player to care about what happens.

Running a wholly surrealist Star Hero campaign probably isn’t practical, but GMs could certainly inject an occasional surrealist story into otherwise normal campaigns. An RPG also opens up the interesting possibility of running two parallel campaigns, each of which is a work of fiction in the other. The heroes in the Cyberpunk setting venture into a virtual reality parlor and enter the Space Opera campaign. But the Space Opera characters are playing a “psionic novel” set in the Cyberpunk world. Which world is the “real” one?

SCIENTIFIC RIGOR, EVEN FOR THE IMPOSSIBLE

There weren't any airlocks! Instead, there was the cziltang brone. This machine projected a field which caused the structure of the Ringworld floor, and hence of the rim wall, to become permeable to matter. ... There was an accident during that time. An osmosis beam, modified by bad calibration, went through the [starship]. Two crewmen died waist-deep in a metal floor, and seventeen others suffered permanent brain damage in addition to other injuries when certain permeable membranes became too permeable.

—our heroes learn some of the realistic implications of living and working on the Ringworld in *Ringworld*, by Larry Niven

Even in Hard Science Fiction settings that feature “impossible” technologies, such as FTL starships and force-fields, an attempt is made to establish the scientific rules that enable such technologies, how those rules work, and what their implications are. In many cases this turns out to be the focus of the story — a character’s starship suffers a deadly malfunction and he has to use his knowledge of regular science and “FTL mechanics” to find out what’s wrong and fix it in time, for example.

Hard Science Fiction Campaigns

Hard Science Fiction campaigns are typically Standard Heroic games with characters built on 175 Total Points (including 50 points’ worth of Matching Complications). Many use even lower Total Point — Hard Science Fiction characters’ non-scientific abilities are often quite low, thus forcing them to think their way out of dilemmas.



LOW SCIENCE FICTION

Low Science Fiction is Science Fiction without most of the high-tech trappings common to the genre — either the stories take place at the low end of the technology scale, or whatever advanced technology does exist is absent for some reason (or simply irrelevant to the story). Generally this limits the campaign and characters to relatively plausible near-future technological developments instead of the fantastic devices common to far-future Space Opera and the like. (Many other common Science Fiction characters, abilities, or elements — such as psionics, time travel, and mecha — are typically inappropriate as well.) The “Aliens” movies, starring Sigourney Weaver, represent this subgenre in many respects; so does the television show *Firefly* (and follow-up movie *Serenity*). (Low Science Fiction is common in television and movie Science Fiction, since it’s easier (and cheaper) to depict — novel writers don’t suffer from budget restrictions.)

Ironically, Low Science Fiction isn’t necessarily more “realistic” than other subgenres simply because it limits the technology available. Reasonable extrapolations of future technology show that some amazing things may be possible in only a few decades. Low Science Fiction often tacitly ignores some potential major advances to focus on recognizable characters in a recognizable setting.

Low Science Fiction Elements

Besides the central themes described above, some of the elements of Low Science Fiction include:

COLD SLEEP

“Bio-readouts all in the green, looks like she’s alive.”

“Ehhh, there go our salvage rights.”

—A salvage team discovers Ellen Ripley still alive after 57 years of cold sleep in an escape pod in *Aliens*

Low Science Fiction characters don’t have FTL starships, but they still sometimes have a *lot* of space to cross. One of the ways they avoid some of the problems this causes is to put themselves into “cold sleep” (cryogenic suspension). This avoids the need to provide large amounts of food, oxygen, and entertainment for a potentially multi-year journey. If the ship can travel at near-lightspeed, characters in cold sleep may or may not suffer from time dilation effects (see page 227), depending on the needs of the story.

COLONIES

New Planet Just Opening — Type T-8 Guaranteed Maximum Danger Couples or Groups Only Augmented Survival Plan ...

I remembered something Georges had said, that anything above Terran scale eight called for a big bonus or bounty. But I knew more about that scale now; eight was Earth's own basic rating. Most of this planet wasn't too easy to tame. Most of it had to be worked over, rebuilt.

—Friday contemplates emigrating to a colony world in *Friday*, by Robert Heinlein

One common locale for Low Science Fiction stories is a colony, backwater world, or other less-advanced part of a setting that's at least a little higher-tech in its "core worlds." Characters find themselves having to make do with lesser tech, instead of the cutting-edge devices available to people who live on worlds that have been settled for centuries or millennia.

EARNING A LIVING

Mal: Hell, this job I would pull for free.

Zoe: Then can I have your share?

Mal: No!

Zoe: If you die can I have your share?

Mal: Yes.

—Captain Malcolm Reynolds and Zoe Washburne plan to rob a train full of Alliance soldiers in "The Train Job" episode of *Firefly*

Unlike characters from Space Opera or many other subgenres, who often don't seem to worry about jobs and income, characters in Low Science Fiction have to devote a lot of time and effort to earning a living. They may be traders, miners, smugglers, or crooks, but somehow they've got to keep money coming in. In a gaming context this tends to make the GM's life easier, since the need to earn a living is a great plot hook you can use again and again without it ever getting too stale.

Similarly, Low Science Fiction characters often have to pay close attention to their expendable resources, such as fuel and oxygen. They can't just create things like that out of thin air; they have to buy them, steal them, or find other sources of supply. It doesn't matter if a character's flush with credits if he's going to run out of fuel before his starship gets him to somewhere he can spend them....

Hudson: Is this going to be a standup fight, sir, or another bughunt?

Gorman: All we know that is there still is no contact with the colony, and that a xenomorph may be involved.

Frost: Excuse me sir, a what?

Gorman: A xenomorph.

Hicks: It's a bughunt.

—the Colonial Marines get ready for action in *Aliens*

FEW (IF ANY) ALIENS

Low Science Fiction characters are almost always Humans. Sentient aliens rarely appear in such settings, since the lack of dependable FTL travel makes it difficult or impossible for them to mingle with Humans (assuming any sentient aliens exist at all). Alien *creatures* might exist (as in the "Aliens" movie franchise), and might even be a major adversary for the PCs, but the heroes don't interact with sentient alien life, and there are no Species Templates for aliens available in the campaign.

MODERN TECHNOLOGY, ADVANCED

Ripley: Lieutenant, what do those pulse-rifles fire?

Gorman: 10 millimeter explosive tip caseless. Standard light armor-piercing rounds.

—Ellen Ripley learns a thing or two about life in the Colonial Marines in *Aliens*

Low Science Fiction often involves advances on or extrapolations from modern technology, but not to the extent of the impossible high-tech devices found in Space Opera and most other forms of Science Fiction. Characters carry advanced firearms rather than energy weapons. When planetside, they travel in advanced all-terrain vehicles, helicopters, or similar vehicles instead of hovercraft or small starships. On long spaceflights they eat preserved foods, rather than "replicating" whatever they feel like eating from a machine.

SMALL-SCALE SETTING

Since they don't have FTL capability or other means to cross the vast distances of space quickly and easily, Low Science Fiction characters are usually restricted to a relatively small setting. It may be a single solar system, or a cluster of systems in close proximity, but that's typically the extent of things unless the author (or GM) is willing to break the rules of the subgenre and include some means of FTL travel. (As an example of just such an exception, consider *Dune*. Because it lacks computers and most other high-tech trappings, it could be considered Low Science Fiction in at least some respects, but since "folding space" allows for rapid interstellar travel the Emperor rules many, many star systems as a sort of feudal overlord.)

Low Science Fiction Campaigns

Low Science Fiction Star Hero games are mostly the same as Hard Science Fiction games: they feature Standard Heroic characters built on 175 Total Points (including 50 points' worth of Matching Complications). Some GMs allow even fewer points, thus further emphasizing the grim-and-gritty aspects of the subgenre; others prefer more points, since the PCs have to rely solely on their own skills — can't fall back on advanced technology the way other Star Hero characters can.

MILITARY SCIENCE FICTION

Military Science Fiction is a very popular subgenre, focusing on futuristic military operations and battles. It can involve space battleships trading broadsides in vacuum, or tough battle-suited Space Marines slugging it out on alien planets. By adjusting the technologies available, the GM can create settings which echo the Napoleonic Wars of Captain Hornblower, the island-hopping and carrier duels of World War II's Pacific theater of operations, or the ground-pounding horrors of World War I trench warfare.

Military Science Fiction is often Low Science Fiction, or close to it, because of the sheer killing power of advanced technology. When the outcome of a battle depends more on stealth technology and smart missiles, there isn't much room for individual heroism. But that's not a hard and fast rule; it's entirely possible to tell Military Science Fiction stories in high-tech settings, as the "Dominion War" story arc on *Star Trek: Deep Space Nine* so ably shows. Gamers often have a lot of fun figuring out ways to use teleporting artillery, FTL missiles, anti-matter explosives, and planetary fortresses to wage war.

Military Science Fiction Elements

Besides the central themes described above, some of the elements of Military Science Fiction include:

ALIEN INVASION

A particularly enduring type of Military Science Fiction is the *alien invasion* story, in which extraterrestrials drop down out of the sky and begin trying to take over the world. It worked for H.G. Wells in *The War of the Worlds*, the producers of the film *Independence Day*, and thousands of writers and moviemakers in between. Alien invasions usually land on a modern-day or past Earth; a future Military Science Fiction setting's more likely to be a space war story.

One twist on this theme, seen in Robert Heinlein's *Starship Troopers* or Orson Scott Card's *Ender's Game*, is to focus on how the PCs train to invade an enemy world. Training probably isn't a good subject for a Star Hero campaign, but it might make for an enjoyable scenario or two at the very beginning of a Military Science Fiction campaign.

"I saw... its thoughts. I saw what they're planning to do. They're like locusts. They're moving from planet to planet... their whole civilization. After they've consumed every natural resource they move on... and we're next. Nuke 'em. Let's nuke the bastards."

—President Thomas Whitmore learns the truth behind the alien attacks in *Independence Day*

1



FUTURE INFANTRY

It's another glorious day in the Corps. A day in the Corps is like a day on the farm. Every meal's a banquet. Every paycheck a fortune! Every formation's a parade! I love the Corps!

—Sergeant Apone extols the virtues of the Colonial Marines in *Aliens*

Since Military Science Fiction stories need heroes for the reader/viewer to identify with, they often focus on some form of infantry. It may be ordinary soldiers armed with the best weaponry available (as in *Aliens*), or it may be mechanized infantry (such as the advanced tank squad in David Drake's *Hammer's Slammers*) or even infantry wearing powered armor (see below).

This element is one reason Military Science Fiction is so well-suited for gaming purposes. The PCs are infantrymen who all belong to the same squad or platoon. This gives them a reason to work together... and a source of authority that can make them go on missions.

INSECTOID ENEMIES

"[T]he buggers are out there. Ten billion, a hundred billion, a million billion of them, for all we know. With as many ships, for all we know. With weapons we can't understand. And a willingness to use those weapons to wipe us out."

—Graff lays the cold, hard truth on the line for Ender Wiggin in *Ender's Game*, by Orson Scott Card

In many Military Science Fiction stories, Humanity's pitted against a very specific type of enemy: a species of intelligent insects, often with specially-bred "subtypes" (warriors, workers, builders, pilots, and so on). Not only does this play on many readers'/viewers' instinctive dislike (and fear) of bugs, it allows the creator to contrast the independent, free-thinking Human heroes with the hive mind-driven, conformist insectoid foe.

The Pelians attacked from the ecliptic, opposite the sun, taking advantage of the scattered masses of the asteroid belt for what cover they provided. They came decelerating, telegraphing their intention to capture, not destroy; and they came alone, without their Oseran employees. ...

The lead Pelian spewed a glittering string of dandelion bombs, arcing toward the solar collectors. ... The bombs puffed into their thousands of separate needles. Space was suddenly laced with threads of fire as the defense weaponry labored to knock them out. Should have fired an instant sooner. The Pelian ship itself exploded into pelting debris as someone on Miles's side scored a direct, perhaps lucky, hit.

—Miles Vorkosigan gets into his first space battle in *The Warrior's Apprentice*, by Lois McMaster Bujold

"He is intelligent, but not experienced. His pattern indicates two-dimensional thinking."

—Spock analyzes the weakness in Khan's approach to starship warfare in *Star Trek II: The Wrath Of Khan*

POWERED ARMOR

But I do want to mention a little about powered suits[.] ... [A Mobile Infantryman] lives by his suit the way a K-9 lives by and with and on his doggie partner. Powered armor is one-half the reason we call ourselves "mobile infantry" instead of just "infantry." (The other half are the spaceships that drop us and the capsules we drop in.) Our suits give us better eyes, better ears, stronger backs (to carry heavier weapons and more ammo), better legs, more intelligence..., more firepower, greater endurance, less vulnerability.

A suit isn't a space suit — although it can serve as one. It is not primarily armor — although the Knights of the Round Table were not armored as well as we are. It isn't a tank — but a single M.I. private could take on a squadron of those things and knock them off unassisted if anybody was silly enough to put tanks against M.I. A suit is not a ship but it can fly, a little — on the other hand neither spaceships nor atmosphere craft can fight against a man in a suit except by saturation bombing of the area he is in (like burning down a house to get one flea!). Contrariwise we can do many things that no ship — air, submersible, or space — can do.

—Johnny Rico explains the basic nature of a powered armor suit in Robert Heinlein's magnificent *Starship Troopers*

Ever since the publication of Robert Heinlein's *Starship Troopers* in 1959, suits of powered armor have been a staple of Military Science Fiction, appearing in such novels as Joe Haldeman's *The Forever War* and John Steakley's *Armor*, to name just two. They're perfect for many stories (and Star Hero campaigns!) because they simultaneously let you look at an individual soldier and his experiences (including his feelings and emotions) *and* let you play around with a fascinating high-tech weapon.

See HSEG 247-67 for examples of powered armor in the *HERO System*. The suits described there (which can be generated using random-roll tables, if desired) are primarily intended for Superhero games, but work just as well for Science Fiction — you simply have to decide which weapons and systems are appropriate for your setting and adjust as needed.

SPACE BATTLES

Military Science Fiction that doesn't feature ground-based troops (see above) usually focuses on starship battles in space. This is more common in novels and short stories than on the screen due to the expense of showing space fleets battling, but some television shows and movies portray space battles to great effect (witness the stirring Dominion War battle scenes on *Star Trek: Deep Space Nine* or the numerous thrilling ship battles in the Star Wars movies).

In a gaming context running an entire space battle can be difficult and time-consuming, a far cry from the exciting, action-packed scenes in Science Fiction stories. But a clever GM can find ways around this by focusing on the actions of one ship (the PCs', of course!) or finding ways to streamline the resolution of the battle. See *HERO System Vehicles* for more information about Vehicle combat, including space battles.

SUPERTANKS

Technology had dragged the tank to the brink of abandonment. Not surprisingly, it was technology again which brought the panzers back.

The primary breakthrough was the development of portable fusion power plants. ... [T]he fusion unit's almost limitless output was required to move the mass which made the new supertanks viable. ... Armor became thick — and thicker. With the whole galaxy available as a source of ores, iridium replaced the less effective steels and ceramics without regard for weight. ... Now that power was no longer a factor, even the armored bulk of a tank could be mounted on an air cushion. ... So tanks roamed again as lords of battle, gray-gleaming phoenixes on air cushions. Their guns could defeat the thickest armor, their armor could blunt all but the most powerful attacks. They were fast enough to range continents in days, big enough to carry a battery of sensors and weaponry which made them impossible to escape when they hunted.

—a description of technologically-advanced “supertanks” from *Hammer's Slammers*, by David Drake

One source of Military Science Fiction's enduring popularity is the hardware, especially really big fighting machines. Supertanks are one common trope; these tend to be hovercraft or antigravity vehicles armed with huge energy cannons. Some supertanks dispense with crews, letting a sophisticated artificial intelligence run the machine. Sloppy programming can lead to interesting complications. David Drake's “Hammer's Slammers” series focuses on a Science Fiction tank crew; the Joe Haldeman-edited anthology *Supertanks* has a whole series of tank stories.

Military Science Fiction Campaigns

Military Science Fiction Star Hero campaigns typically feature Standard Heroic characters built on 175 Total Points (including 50 points' worth of Matching Complications). Some go higher, to Powerful Heroic PCs, because the GM wants to keep the heroes as the campaign's focus — the technology common to this subgenre can easily eclipse the PCs in importance if they're not particularly competent.

PLANETARY ROMANCE

["The natives are] cutting up the ship. It's the most metal they've seen in their whole lives. We've made them all millionaires." ...

"We've got to get out," Glystra muttered, twisting in his chair. "We've got to get to the Enclave — somehow..."

Pianza pursed his lips. "It's around the planet, forty thousand miles."

Glystra struggled up to his feet. "We've got to get out of here. We're sitting ducks, Eli."

—our heroes contemplate a long and danger-filled journey across the *Big Planet*, by Jack Vance

*Two hundred and twelve light-years from Earth hung the smoky yellow star Carina 4269 and its single planet Tschai. Coming to investigate a mysterious surge of radio signals, the survey ship **Explorator IV** met destruction. The sole survivor, star-scout Adam Reith, was rescued, barely alive, by Traz Onmale, boy-chief of the Emblem nomads.*

From the first, Adam Reith's urgent goal was to return to Earth, with news of Tschai and its queer conglomeration of people. ... Tschai, so Reith learned, had been the scene of ancient wars between three off-world races: the Dirdir, the Chasch, and the Wankh.

—Jack Vance shows further mastery of the form in volume three of the “Planet Of Adventure” series, *The Dirdir*

Closely related to both Pulp Science Fiction and Space Opera, Planetary Romance stories center on a single world, often teeming with exotic cultures and menaces. The technology level is usually low enough to allow for swordplay and swashbuckling derring-do, though characters can still find nifty remnants of advanced superscience. Stories tend to be quests or picaresque journeys which take the heroes on a tour of interesting and dangerous places; Planetary Romances resemble Fantasy Hero in some ways, but with blasters, force-fields, and aliens instead of magic and monsters. The “Barsoom” stories of Edgar Rice Burroughs serve as a model for the genre, but the novels of writers like L. Sprague de Camp (in his “Krishna” books) and Jack Vance (*Big Planet*, the “Planet of Adventure” series) hone it to perfection.

Whatever the location, the central focus of a Planetary Romance is the planet and its inhabitants and features. Unlike many Science Fiction stories, which involve traveling vast distances through space in starships, Planetary Romances stick to a single world. Either the characters have no way to get off-planet, or their means of space travel has been disabled (which makes “find a way to repair the ship” an excellent motivator for the GM to use). This means the GM has to develop that one world in detail. He needs to know everything from its planetological data (year, length of day, core composition, orbital pattern, hydrology, climate, and so forth), to its major and minor geographical features, to the people and cultures who call it home. Part of the goal of the campaign is often to find out about the world, so the GM needs to have answers at the ready when the PCs begin to explore and investigate.



1

Planetary Romance Elements

Besides the central themes described above, some of the elements of Planetary Romance include:

BIG DUMB OBJECT STORIES

They came within fifty miles, and that was close enough to find the city. Great gray rocks protruded through the ice floes, and some of these showed myriad black-shadowed doors and windows. Focus closer and the doorways had balconies and awnings, and hundreds of slender suspension bridges ran up, down, and sideways. Stairways were hacked into the rock; they ran in strange branching curves, half a mile tall and more. One dipped all the way to the foothills, to the tree line.

—Louis Wu and Chmeeee observe one of the cities on the Ringworld in *The Ringworld Engineers*, by Larry Niven.

A recent offshoot of the Planetary Romance is the “Big Dumb Object” story. These tales share the colorful landscape and exotic cultures, but set the story on a vast and ancient artificial structure (see page 9). Examples include Larry Niven’s *Ringworld* and John Varley’s “Gaia” series. The goal when exploring a Big Dumb Object is usually to find out who built it and why; often the sheer Bigness of the Object is the chief obstacle faced by the heroes.

I was so wild with anger that I could scarcely refrain from drawing my pistol and shooting him down for the brute he was; but he stood waiting with drawn long-sword, and my only choice was to draw my own and meet him in fair fight with his choice of weapons or a lesser one. ... I chose the same weapon he had drawn because I knew he prided himself upon his ability with it, and I wished, if I worsted him at all, to do it with his own weapon.

Zad first attempted to rush me down as a bull might a wolf, but I was much too quick for him, and each time I side-stepped his rushes he would go lunging past me, only to receive a nick from my sword upon his arm or back. He was soon streaming blood from a half dozen minor wounds, but I could not obtain an opening to deliver an effective thrust. Then he changed his tactics, and fighting warily and with extreme dexterity, he tried to do by science what he was unable to do by brute strength. I must admit that he was a magnificent swordsman, and had it not been for my greater endurance and the remarkable agility the lesser gravitation of Mars lent me I might not have been able to put up the creditable fight I did against him.

We circled for some time without doing much damage on either side; the long, straight, needle-like swords flashing in the sunlight, and ringing out upon the stillness as they crashed together with each effective parry.

—John Carter deals with an insulting green Martian in *A Princess Of Mars*, by Edgar Rice Burroughs

SWORDS AND SWORDPLAY

A surprising number of Science Fiction settings (even ones that don't qualify as Planetary Romance) work swordplay into a high-technology setting. This is mostly because swordfights are a lot cooler than just incinerating somebody with your laser pistol.

Since swords aren't commonly used even on twenty-first century Earth, the author of a Science Fiction swashbuckler has to explain why they've returned to favor. Sometimes the reason is social: in L. Sprague de Camp's "Krishna," stories the interstellar authorities strictly control what technology explorers can bring with them on primitive planets, and enforce the rules with brainwashing machines. A technological solution was used by Frank Herbert in the *Dune* series. His characters had personal force-fields which could stop high-velocity projectiles, but which a slow-moving blade could penetrate. The lightsabers of *Star Wars* can penetrate any defenses, but can't be used as projectiles or beams, making a revival of swordfighting techniques essential for the Jedi Knights. In more general terms, it might be a matter of spacefaring safety — an errant blaster shot aboard a starship could penetrate the hull and cause explosive decompression that kills everyone aboard, whereas swords pose no such danger.

Planetary Romance Campaigns

Planetary Romance campaigns usually feature Standard Heroic characters built on 175 Total Points (including 50 points' worth of Matching Complications). Since the PCs are likely cut off from help or outside resources, the GM may want to give them more Character Points so they're more self-sufficient. Higher Total Point allotments (and perhaps providing PCs with extra Heroic Action Points) also suits the quasi-swashbuckling nature of these stories.

POST-APOCALYPTIC

While Science Fiction is usually described as an optimistic genre, it's full of stories about the collapse of civilization. The causes of the collapse are various: plagues which depopulate the Earth (as in Mary Shelley's *The Last Man* or Stephen King's *The Stand*), endless warfare (in H.G. Wells's *Things To Come*), nuclear war (*The Road Warrior*, Paul O. Williams's "Pelbar Cycle" novels, Piers Anthony's *Battlecircle*, and countless others), asteroid impacts (*Lucifer's Hammer*, by Niven and Pournelle), mass blindness (in John Wyndham's *Day Of The Triffids*), a new Ice Age (the film *Quintet*), shoddy software (remember the "Y2K bug"?), global warming (*Waterworld* or John Barnes's *Mother Of Storms*), and even the literal Apocalypse (in the *Left Behind* series of Christian thrillers).

The great appeal of *The End Of The World As We Know It* is that all the irritating restrictions and complications of modern life are swept away and replaced by others more conducive to "adventure." Instead of battling traffic to get to work on time, people battle each other to survive. Impersonal threats like inflation are replaced by personal, immediate problems like cannibal motorcycle gangs. The level of destruction is secondary to the complete absence of any authority. People are totally free, and what they choose to do with that freedom drives the story. Some writers use the apocalypse as a way to sweep away the corrupt old world and allow for the creation of a Utopia; others use the post-apocalypse setting as a venue for action-adventure.

Post-Apocalyptic Science Fiction generally divides into stories which focus on the big disaster itself, and those which pick up the story generations or centuries later in the new societies which have grown up (true "post-apocalyptic" Science Fiction). The latter type may shade into the Planetary Romance subgenre, with Earth as the unknown world dotted with strange societies that the heroes must journey through to reach some goal (typically a surviving pocket of civilization that serves as a "safe haven"). A few save the revelation that the planet is Earth for the Big Surprise Ending, as in the original *Planet of the Apes*. Tales of surviving the apocalypse and its aftermath can delve into the minutiae of rebuilding civilization, or just center on blowing away cannibal motorcyclists.

For a more detailed look at the Post-Apocalyptic subgenre, please see *Post-Apocalyptic Hero*.

Post-Apocalyptic Elements

Besides the central themes described above, some of the elements of Post-Apocalyptic Science Fiction include:

THE ANCIENTS

How can a great and wise civilization have destroyed itself so completely?

—Walter Miller, *A Canticle For Leibowitz*

In Post-Apocalyptic stories that take place so long after the apocalypse that pre-apocalypse civilization is a mystery, "the Ancients" — the creators and inhabitants of the pre-apocalypse society — are often mentioned. In some cases they're regarded as almost mythological: gods or near-gods capable of feats (like building skyscrapers) that Post-Apocalyptic people cannot even conceive of undertaking. In other stories, where characters are more aware of the course of history and the nature of their own society, the Ancients are the subject of scientific and practical speculation: how did they do what they did, how can we discover their secrets, how can we use their technology? It's a paradox that gnaws at the minds of thinking characters... and can make them question their own actions.

COZY CATASTROPHES

Not all apocalypses are created equal. Some devastate the Earth, while others conveniently kill off the Human race but leave everything intact. *Day Of The Triffids* and *The Stand* both got rid of Humanity without much large-scale destruction. For the lucky few survivors, the result is a consumer's paradise: all the goods and luxuries of modern society are just lying around to be picked up. There may still be cannibal motorcycle bandits to contend with, but it's much more fun to battle them in an expensive car.

The work of rebuilding society is much easier if the catastrophe is a cozy one; just figure out how to get the power plant running and you're in business. Consequently, cozy catastrophe stories tend to focus on struggles among the survivors about what sort of new society to create.

MUTANTS

He had no illusions about the dangers involved in what he was doing. The world was full of savage beasts and more savage men, those who lived beyond any law and made pacts with darkness and the Leemutes. And the Leemutes themselves, what of them? Twice he had fought for his life against them, the last time two years back. A pack of filthy hideous ape-like creatures, hitherto unknown, riding bareback on giant, brindled dog-things....

—Sterling Lanier, *Hiero's Journey*

The most popular form of cataclysm for Post-Apocalyptic stories is nuclear war... and nuclear bombs mean radiation, which wreaks havoc with flesh and genes. "Realistically" this means death for those intensely exposed, and defects in later generations born to the survivors, but Post-Apocalyptic writers and filmmakers are rarely content with reality. Thus, in the Post-Apocalyptic genre as in comic books, radiation often has bizarre mutative effects. It transforms ordinary animals into hideous monsters, and makes of men inhuman creatures with all variety of strange aberrations and deformities. In more "realistic" settings these alterations are rarely (if ever) pleasant, and those who possess them tend to live apart, often in the wastelands, either alone or in small cults and communities. (Sometimes the mutants are the only ones who can survive in the wastelands — their mutations allow them to withstand radiation, plague, or whatever caused the apocalypse.) In more fantastic or cinematic settings, mutants may gain all sorts of strange, superhuman powers.

QUEST FOR SAFETY

"When we've got to high ground, when we know what's happening, we can start thinking civilization again," Eileen said. "Until then, we survive."

—Larry Niven and Jerry Pournelle, *Lucifer's Hammer*

One of the classic forms of Post-Apocalyptic story is the "quest for safety." The characters are people, usually more or less ordinary ones, trapped by the collapse of society (which occurs during or immediately before the story) in a dangerous or untenable location. Personal knowledge or rumor informs them of a place where they can be safe: an old rural retreat they remember from childhood; a relative's isolated, well-stocked home; a new community founded by a man strong enough to maintain order and ensure safety. Through perils of every variety — from hostile peoples, to environmental hazards, to starvation — they have to make their way there.

RUINS

Mr. Wayne left the shop and hurried down to the end of the lane of gray rubble. Beyond it, as far as he could see, lay flat fields of rubble, brown and gray and black. Those fields, stretching to every horizon, were made of the twisted corpses of buildings, the shattered remnants of trees, and the fine white ash that once was human flesh and bone.

—Robert Sheckley, "The Store of the Worlds"

Damaged structures of all sorts are commonplace in Post-Apocalyptic fiction. They're a place for characters to take shelter in, to scavenge for supplies in, and to lament or ponder the passing of the Ancients. And in many cases they're home to bands of mutants, mutated creatures, or other horrors of the wastelands, all eager for a taste of human flesh....

SCAVENGING

"You're a scavenger, Max. You're a maggot. Did you know that? You're living off the corpse of the old world."

—Pappagallo to Max in *Mad Max 2: The Road Warrior*

Lacking the means to produce what they need, Post-Apocalyptic characters have to search through the ruins to find it. In short, they have to live by scavenging. In books and movies this is often a simple matter of survival, but in a gaming context it's also the Post-Apocalyptic equivalent of finding a dragon's hoard in a Fantasy game. Scavenged and salvaged goods are loot, in other words — a reward to the heroes for their cleverness, bravery, and perseverance.

Post-Apocalyptic Hero Campaigns

Post-Apocalyptic Hero campaigns typically feature Standard Heroic characters built on 175 Total Points (including 50 points' worth of Matching Complications). If the GM wants to throw in a weird twist, such as the existence of magic or the supernatural, or even lots of mutants with bizarre radiation-spawned powers, he may prefer Powerful or Very Powerful Heroic characters instead. On the other hand, a truly gritty game focusing on survival in the most desperate surroundings may feature characters with even fewer Total Points to emphasize the depth of the PCs' plight.

RETRO-SCIENCE FICTION

Since Science Fiction as a genre has a history stretching back to the 1860s (if not earlier), there's now a thriving subgenre in which authors (and gamers!) revive old styles and tropes. The tone usually falls somewhere between affectionate parody and nostalgic homage.

The major types of Retro-Science Fiction are described below. Generally they all tend to be Standard Heroic campaigns, with characters built on 175 Total Points (including 50 points' worth of Matching Complications).

STEAMPUNK

"Steampunk" is a coined term referring, generally, to stories which take the work of Verne, Wells, and their ilk as inspiration. They can either be set in a Victorian-era setting with anachronistic technology, or in an alternate present based on Steam Age visions of the future. Either way, puffing smokestacks, bronze gears, and rivets are the order of the day, and the sun doesn't set on the steam-powered British Empire. The "punk" aspect draws on the genuine squalor and misery of the early Industrial Revolution, often blended with Cyberpunk tropes like computer hackers (breaking into the giant Babbage engines that keep the Empire running) or mechanical implants (which may need winding or stoking). The seminal Steampunk novels are *The Difference Engine*, by William Gibson and Bruce Sterling, and K. W. Jeter's *Infernal Devices*.

PULP SCIENCE FICTION

Science Fiction tales filled the pages of many pulps, such as *Amazing Stories* and *Astounding Stories* — indeed, the term "science fiction" was popularized through the pulps (though there are instances of it, and similar terms, being used in the mid-1800s). Comic strips and film adventure serials featuring Buck Rogers and Flash Gordon were also extremely popular. Thus, mixing Star Hero and Pulp Hero is easy, and can be a lot of fun.

Pulp Science Fiction stories, and the gaming campaigns inspired by them, are characterized by several elements in addition to the general Pulp elements described earlier in this chapter. These include:

Fantastic technology: The technology of Pulp SF isn't just Weird, it's downright fantastic. Anything you can think of, from matter transmitters (teleporters), to ray guns, to mind transference is fair game. As depicted in the Science Fiction pulps, this technology often has a sort of stylish "Art Deco" appearance, with lots of fins, knobs, and extraneous decorations that make no sense... but look great.

Bug-eyed alien monsters: No Pulp SF tale would be complete without a fight against some bug-eyed alien monsters! Whether they're invading Earth, kidnapping the beautiful alien princess, or attacking the PCs for no good reason, BAMs are a menace that needs to be destroyed pronto.

No technological negative consequences: Advanced technology is always a good thing, with no negative connotations. It doesn't pollute, or there's other technology to clean up all the pollution instantly. There's always enough fuel (whatever that fuel may be), unless the absence of fuel is a particular plot point. Technology has no dangerous side effects for the user — in fact, it rarely even requires much effort to learn how to use it.

Humanistic aliens: In Pulp SF, the aliens that heroes encounter often aren't all that unusual — they're basically Humans, but with a different skin tone, or other distinctive features like small antennae or pointed ears. And they all seem to speak English (or at least have translation technology!).

Earthmen are hunks: Alien woman always fall hard for Pulp SF adventurers, often to the point of betraying their own societies to help them.

The old-fashioned Solar System: The solar system of Earth as portrayed in the pulps isn't anything like it is in "real life," in large part because the astronomers of the Pulp era had very limited knowledge of the planets (Pluto wasn't even discovered until 1930). Thus, Mars is a dry, canal-covered planet (see, for example, the "John Carter" novels of Edgar Rice Burroughs); Venus is swampy and/or jungle-covered; and so on. In short, define each planet the PCs visit using your dramatic sense, not scientific knowledge.

Scientists are heroes: Inventors don't just create gadgets for heroes to use — often they are the heroes, with physical and social qualities to match their genius intellects.

True science isn't necessary: While some pulps stressed scientific accuracy (at least to the extent possible in a fictional medium), most didn't. If the explanation for something sounded reasonably scientific, that was good enough for the editors... and in a gaming context, for the GM.

By Scientifiction, I mean... a charming romance intermingled with scientific fact and prophetic vision.

—Hugo Gernsback explaining his intent in the first issue of *Amazing Stories*



FIFTIES SCI-FI

“Fifties Sci-Fi” refers to tales based more on the monster and alien-invasion movies of the Atomic Era than on written fiction of the time. In Fifties Sci-Fi, the main threats are either radiation-spawned giant monsters or flying saucer aliens from space. A dash of Cold War paranoia and the sense that “the government is keeping this quiet” usually add a slightly malevolent tone to what would otherwise be pure camp, but in the end square-jawed jet pilots and pipe-smoking scientists usually save the day. The cheesiness of much of the source material makes it almost impossible not to play Fifties Sci-Fi for laughs.

1

RAY GUNS

One Retro-Science Fiction notion which rather surprisingly came true is the idea of the “ray gun.” One early example was the Heat-Ray of H.G. Wells’s *Martian Invaders*, and during the Pulp Era both heroes and villains wielded a dazzling array of weapons that projected rays of various colors and destructive effects. Scientists, meanwhile, scoffed at the notion because everyone knows a beam of light or radiation spreads out in a cone and could never deliver enough energy to do damage. Then a team at Bell Labs invented the laser, and today energy weapons are the stuff of Pentagon research projects rather than Pulp fiction.

Gamemasters and players who want to “personalize” their characters’ ray guns a bit can use the following handy tables. Roll 1d6 for beam type, then roll again for the beam’s color.

Roll (1d6)	Beam Type
1	Straight beam
2	Pulse beam
3	Wavy beam
4	Line of circles/disks
5	Sphere(s)
6	Narrow cone

Roll (1d6)	Beam Color
1	Red
2	Blue
3	Purple
4	Green
5	Yellow/Gold
6	Silver/White

SPACE OPERA

Originally coined as a derogatory term for the tired old “spaceship yarn” of the early pulps, *Space Opera* now refers to stories which try to recapture the sense of wonder and high adventure that characterized Pulp Science Fiction. In Space Opera scientific accuracy and rigorous speculation take a distant second place to exotic settings, fast-paced adventure, and technology so wondrous it can’t even see “realistic” in its rear-view vid-screen. Just about any other Science Fiction element you can think of — psionics, time travel, crossing dimensional barriers, and more — may also be a part of a Space Opera setting.

Probably the purest Space Opera stories are the “Lensman” series by E.E. “Doc” Smith, but the greatest success of Space Opera has come in film and television — the likes of *Star Trek*, *Star Wars*, and *Babylon 5* embody all the subgenre’s virtues (and flaws). In recent years authors like Iain M. Banks and Lois McMaster Bujold have revisited Space Opera, adding a greater depth of character and theme.

Space Opera Elements

Besides the central themes described above, some of the elements of Space Opera include:

ALIENS APLENTY

The central forum chamber of the station is a marvel of environmental engineering. Twenty kilometers in diameter, it allows every race in the Gallimaufry to be present in one place. Naturally, many races are so alien to each other that they never directly interact, but everybody feels more comfortable knowing that they can keep an eye on each other at all times.

—*Fleeztrow’s Guide To The Gallimaufry*, as quoted in issue #2 of *Buck Godot: The Gallimaufry*, by Phil Foglio

Many Science Fiction settings have some form of alien life, but Space Opera often features *lots* of aliens: thousands or millions of species mingling together in one great galactic community. Some of them are bizarre in the extreme — weird biological shapes (or even shapechangers), energy beings that can’t fully interact with physical entities, purely psionic life-forms, species that aren’t “in phase” with Humans temporally or dimensionally.

The multiplicity of aliens is a popular theme for gaming, since it allows players a wide scope of choice when creating characters. See Chapter Two for Templates for many types of aliens.



A GRAND SCALE

"We, the Elder Thinkers, have not shared fully with you our visualization of the Cosmic All[.] ... [T]he probability is exceedingly great that despite our utmost efforts at self-development our descendants will have to breed, from some people to evolve upon a planet not yet in existence, an entirely new race — a race tremendously more capable than ours — to succeed us as Guardians of Civilization."

—the Arisians contemplate a secret war with the Eddorians lasting billions of years in *Triplanetary*, by E. E. "Doc" Smith

Space Opera requires a large canvas: the scale is at least the whole Solar System, but most stories/campaigns are galactic (or even intergalactic) in scope. Interstellar empires (see page 11) are not uncommon, and often multiple galactopolitical entities exist and compete with one another.

The events depicted in Space Opera stories tend to be similarly grand. The focus is on major occurrences like interstellar wars, planet-cracking disasters, and the fate of whole civilizations.

HIGHEST TECH

Most Science Fiction stories feature some sort of advanced technology, but technology reaches its peak in Space Opera. In some settings it can do virtually anything and embodies Clarke's Law ("Any sufficiently advanced technology is indistinguishable from magic"). It may have a few limits (often ones which become crucial in a given story), but by and large Space Opera technology can accomplish nearly anything. The most common examples include starships that can travel at many times the speed of light, and that range from merely big to mind-bogglingly huge; and personal and starship weapons that fire brightly-colored beams of devastating power. But time machines, instant cross-galaxy communications, sentient supercomputers, teleportation platforms, matter creation and transmutation devices, and plenty of others can also exist — it's all a question of the creator's imagination and how he envisions his setting.

"You know, I've always thought that technology could solve almost any problem. It enhances the quality of our lives... lets us travel across the galaxy... even gave me my vision. But sometimes you just have to turn it all off."

—Geordi La Forge, on the *Star Trek: The Next Generation* episode "Booby Trap"

POST-SCARCITY

Keeve: *We live in different universes, you and I. Yours is about diplomacy, politics, strategy. Mine is about blankets! If we were to exchange places for one night, you might better understand.*

Captain Picard: *Mister Data, see that the replicators provide a blanket for every man, woman, and child before nightfall.*

—Jean-Luc Picard provides for Bajoran refugees out of the Federation's infinite largesse in "Ensign Ro," *Star Trek: The Next Generation*

In many Space Opera settings, technology has advanced so far that no one wants for anything — they are true “post-scarcity economies” in every sense of the word, with no one having to work unless he wants to and most people’s biggest problem being how to amuse themselves. The Federation of *Star Trek* and the peoples of Iain Banks’s “Culture” novels provide two prominent examples. They also show that while utopia makes telling some types of stories impossible, it opens up many other dramatic possibilities.

Space Opera Campaigns

Space Opera is probably the easiest Science Fiction subgenre to run as a Star Hero campaign; most Science Fiction RPGs derive from, and use, the elements and features of Space Opera more than any other subgenre. The campaigns usually feature Standard Heroic PCs built on 175 Total Points (including 50 points’ worth of Matching Complications). In some Space Opera games the PCs are built on even more points (as Powerful or Very Powerful Heroic characters, or sometimes even Low-Powered Superheroics) — that allows for the high Skill Rolls, psionic powers, and other abilities often displayed by Space Opera characters.

ADJECTIVE FATIGUE

A potential problem for Space Opera adventures is “adjective fatigue.” Once the heroes have defeated the Ultimate Evil Overlord, they soon run across a Super-Ultimate Overlord. The giant starships and super-weapons get bigger and more devastating in each episode. After saving the Galaxy, they have to save the whole Universe, and then the entire Multiverse, and then....

The simplest way to avoid this problem is to start at an appropriately low scale. If the heroes begin by toppling the Galactic Empire, it’s hard to top that in later scenarios. But if they begin by thwarting one power-mad Imperial governor, then with what they’ve learned and the allies they’ve made, they can work their way up. The Lensman stories followed this pattern: at first the Galactic Patrol was just concerned with fighting drug runners and pirates. Then they had to face the secret conspiracy behind the pirates. Then they confronted an aggressive rival empire which sponsored the conspiracy... and so on right up to the final battle of Good against Evil.

TIME TRAVEL

If space isn’t big enough, Science Fiction characters can also go roaming through time. Stories of time travel go back to Mark Twain’s *A Connecticut Yankee in King Arthur’s Court*, but the concept remained strictly fantasy until H.G. Wells came up with the notion of a Time Machine in the novel of the same name. (And it seems that Spanish novelist Enrique Gaspar actually beat him by seven years, with his novel *El Anacronopete* [“The Time Ship”].) Even then, of course, it was all just fantasy with technological trappings, but in later decades scientists began to discover curious loopholes in General Relativity and modern physics which may actually allow time travel under certain conditions.

JUST VISITING

Time travel is a great excuse to let characters from a historical or present-day roleplaying campaign spend some time in a Science Fiction setting. While it can be just a fun outing to a different playground, there’s a lot of potential in letting the characters see the consequences of things they were doing back in the “real” campaign setting. If their visit to the future reveals that a minor villain becomes the Tyrant of Earth, they’ll certainly redouble their efforts to catch him. (Even more disturbingly, what if one of the PCs is destined to commit some atrocity?) Similarly, visits to the past can let characters meet their earlier selves, see (or even cause) the origins of their adversaries, and possibly learn some secrets which can help them in their ongoing campaign.

This is not without its pitfalls, however: characters dropped into a highly-advanced future world are likely to hit the malls for a superscience shopping spree, and then either use high-tech firepower when they get back home or transform the world economy with new inventions. Those who travel into the past tend to acquire lots of valuable old postage stamps, or else start up stock portfolios or bank accounts which have grown to titanic proportions when they return to their proper time. Unless the GM wants to have his campaign altered this way (which would certainly make for an interesting change of pace!), he needs to find a way to prevent the characters from doing these things — ranging from not giving them the opportunity, to appealing to the players’ senses of drama and fair play, to have items that are “temporally out of place” quickly crumble to dust.

Tales of time travel tend to break down into two main categories. The first follow Twain and Wells and use time travel as an enabling device that lets characters have exciting adventures in the past or future. The second type centers on the mechanics and paradoxes of time travel itself. These tend to be short stories like Robert Heinlein's "All You Zombies" or paradox-riddled films like *Back To The Future*.

Time travel is such an enduring trope in Science Fiction that it tends to work its way into all the other subgenres (except Low Science Fiction). *Star Trek* and *Babylon 5* both have time travel episodes, and S.M. Stirling's popular *Island In The Sea Of Time* centers on the military adventures of modern Americans stuck in the Bronze Age. A time-hop can be a one-shot adventure in an ongoing campaign, or the characters can make a career of visiting other times as agents of the Time Police or simply tourists. Combining space and time travel lets the stories wander all over the cosmos, in the footsteps of the BBC's Doctor Who.

A variant on time travel is visiting alternate universes and other dimensions. These are worlds like our own, but existing "next to it" in some higher level of reality. Alternate histories are worlds in which some particular historical event turned out differently (perennial favorites are the American Civil War and World War II). They allow characters to see the results of changing history without involving them in all the potential paradoxes and complications of visiting their own past. Some alternate worlds even have different natural laws, with functioning magic or other supernatural powers to liven things up.

For more on time travel, please refer to Chapter Nine, or to *Time Travel Hero*.

Time Travel Hero Campaigns

Gamemasters can easily center entire campaigns around the idea of PCs traveling through time, either deliberately (perhaps as "Time Cops") or involuntarily/uncontrollably (as with Doctor Who, at some points of his career). Player Characters in Time Travel campaigns are ordinarily Standard Heroic characters built on 175 Total Points (including 50 points' worth of Matching Complications). Technical Skills and a knowledge of history are *de rigueur*, and usually much more valuable than the ability to fight well. Some GMs may even wish to consider giving characters extra Character Points that can only be used to buy history-related Background Skills.

UTOPIAS AND DYSTOPIAS

One of the oldest themes in Science Fiction is showing how the world could be a better place. Usually this is accomplished by creating a society in which all the author's pet ideas are put into practice, and everything he dislikes is eliminated. (Or everything *she* dislikes: feminist utopias are a particularly enduring subset.) Once all that is done, the result is an ideal society.

In a future where freedom is outlawed outlaws will become heroes.

—tag line for the movie *Equilibrium*, about a future society where emotion is illegal

Ideal societies have an unfortunate tendency to be static and unchanging, because there's no way to improve on perfection. In a roleplaying game they're rather unsatisfying places for adventures, since in a smoothly-running ideal society there aren't all that many adventures to have. One way to have perfection and still go adventuring is to place the Utopia in danger from hostile outside forces who want to destroy it. Alternately, the inhabitants of a Utopia may feel it's their duty to spread the benefits of their ideal society to the outside world. Of course, one person's ideal society is another's living hell.

The flip side of the coin from Utopia is *Dystopia*: a society in which something (or everything) has gone wrong. As with Utopias, they are often an excuse for the author to air his political views, by showing the awful consequences if those he disagrees with get their way. The most famous dystopia is George Orwell's *1984*, which was a warning about the true face of Communism at a time when it still had a following among the British left. Aldous Huxley's *Brave New World* is another recognized classic of the subgenre.

Dystopias are slaves of fashion, reflecting with uncanny accuracy the concerns of the decade in which they are written. Orwell wrote in 1948 when the Cold War was at its coldest. A few years later Frederick Pohl warned about unconstrained consumerism in *The Midas Plague*, and a couple of decades after that the big problem was overpopulation in the film *Soylent Green*. Other dystopias retain their appeal: fundamentalist right-wing dictatorships in America are a perennial favorite, from Robert Heinlein's *Revolt In 2100* to Margaret Atwood's *The Handmaid's Tale*. In many ways, the entire Cyberpunk subgenre could be regarded as a dystopia reflecting fears over corporate power (and greed) and the dehumanizing effects of technology and consumerism.

Utopia/Dystopia Campaigns

Star Hero campaigns focusing on utopias or dystopias are relatively rare; such places are better to visit, for single game sessions or story arcs, than they are to live in. Games permanently focused on such settings usually feature Competent Normal (100 Total Points, including 30 points from Matching Complications) or Standard Heroic PCs (175 Total Points, including 50 points' worth of Matching Complications). However, utopian characters may be much more powerful, even Superheroic, because their societies have unlocked the secrets of psionics, immortality, superhuman abilities, or what have you.

AS GOOD AS IT GETS?

For a slightly more grown-up approach, instead of a dystopia being the result of Evil Overlords or the triumph of a political party the GM didn't vote for, what if the dystopia is the best anyone can manage in a tough situation? Real-world examples of this are all too common: Rome during the decline of the Roman Empire was a pretty oppressive and dystopian place, but all attempts at reform were futile — the barbarians kept coming over the border, and heavy-handed Emperors were about the only alternative to anarchy. And when the Empire finally did fall, the ensuing centuries of darkness weren't any better.

Putting the characters in a dystopia which can't really be fixed sounds like a recipe for a pretty depressing campaign, but there's still scope for individual heroism and small-scale victories. You may not be able to overthrow the Overlords, but you can keep one person from falling into the hands of the Secret Police, or possibly bring about the downfall of a corrupt official. Characters who are servants of the regime can try to maintain their own decency in a grim world.





META-GENRES IN SCIENCE FICTION

1 While most Science Fiction stories fit, broadly speaking, into the meta-genre of “action-adventure,” they don’t all come from that mold. In the past century writers and filmmakers have blended Science Fiction with just about every other mood and theme possible in fiction. Some of the crossovers are naturals, others are difficult to pull off with a straight face.

COMEDY

Science Fiction and Comedy have had an uneasy partnership. The clichés and earnest tone of Science Fiction make it a natural target for parody or self-parody, as in Douglas Adams’s *Hitchhiker’s Guide To The Galaxy* series or the cartoon “Duck Dodgers in the 24½th Century.” There is a whole subgenre of Science Fiction stories which are nothing but elaborate setups for excruciating puns. But funny Science

Fiction is possible, and stories can be both good Comedy and good Science Fiction. Examples include the *Buck Godot* comics series by Phil Foglio, novels like Connie Willis’s *Bellwether* or the *Hoka* series by Poul Anderson and Gordon Dickson, and films like *Men In Black*.

The simplest way to do Science Fiction Comedy is to parody the genre, with silly aliens who look like food or cartoon characters, items like the “Kill-o-Zap Gun,” and civilization threatened by shortages of the shaving-cream atom. This can be very funny and entertaining if done right. But it can get old quickly. One game session spent chasing around the Planet of the Prune People with phasers set to “fricasee” is entertaining, but by the second or third game the amusement value of funny names and mocking the conventions of the genre gets thin.

A more enduring form of Science Fiction Comedy uses the possibilities of the Science Fiction genre to create comic situations and characters. This is somewhat more difficult than parody, but it has more shelf life. Eric Frank Russell’s Hugo-winning story “Allamagoosa” is a good guide: while preparing for an inspection, the crew of a spaceship

painstakingly goes down the inventory of components to make sure everything is in order, but discovers one item on the list which nobody can remember or find. Their increasingly desperate efforts to find the device or account for its absence are the source of the humor in the story, since everything they do just makes the situation worse.

It’s remarkably easy to do the same thing in a roleplaying game, since gamers have a real talent for picking the wrong course of action and then sticking to it with relentless tenacity. However, players sometimes resent discovering that they’re the fall guys. If they know it’s a comedy, they may be able to relax and enjoy seeing their characters in a fix. More competitive gamers may have trouble with the idea of not “winning” the adventure. One principle to remember is that in a comedy, everything comes out all right in the end. Fate may conspire against the characters, they may

ROMANTIC COMEDY

Comedy is all about making people act ridiculous, and through all of Human history the most reliable way to do this is to make them fall in love. Romantic attraction dissolves dignity and restraint, makes people absurdly sensitive and insecure, and puts one’s ego and happiness entirely at the mercy of another person. In fact, the ancient Greeks defined a play as a comedy if it ended with a marriage (tragedies ended with a funeral).

Romantic comedy in a Science Fiction setting allows a considerably broader range of potential partners falling in and out of love: Humans, aliens, robots, clones, artificial intelligences, androids, time travelers, immortals, and many others. Science Fiction also creates loads of potential new complications. Characters falling in love in a virtual environment may not like each other in the real world; someone falling in love with one member of a group of identical clones could be unable to tell which is the right one; Humans and aliens in love may be frustrated by incompatible reproductive systems; advances in biochemistry could make genuine “love potions” available at every drugstore. A clever GM can get a lot of story mileage out of such circumstances.

That’s the last straw! Now I use my secret weapon!

—Duck Dodgers gets serious in the cartoon “Duck Dodgers in the 24½th Century”

be frustrated at every turn, but nobody gets hurt by anything worse than a pie in the face.

HORROR

In space no one can hear you scream.

—Advertising slogan for the movie *Alien*

Horror and Science Fiction grew up as genres side by side in Victorian novels and pulps like *Weird Tales*, so it's natural for them to borrow from each other. *Frankenstein* is an early classic of both Science Fiction and Horror. The "Aliens" series of movies is one of the best modern examples of Science Fiction Horror, and the genre staple *2001: A Space Odyssey* also has important Horror elements, as do many episodes of the television show *Doctor Who*.

The great advantage to blending the two is that Science Fiction allows you to deploy Horror elements which don't rely on the supernatural. Instead of ghosts and vampires you can use alien monsters, dehumanizing brain implants, or predatory cyberspace entities. The greater realism possible makes it easier to believe in the horrors, and that makes them scarier.

It's possible to run a relatively "straight" Horror adventure in a Science Fiction setting: a mad slasher lurking aboard a deserted starship is just as scary as one in a castle or a college dorm. But Science Fiction also supplies some elements which amp up the horror. If the characters are stuck aboard a spaceship floating in empty space, they can't flee whatever evil is stalking them. If they're wanderers in a post-apocalyptic wasteland, there are no police to call when horror strikes. The sense of isolation and (at least partial) helplessness which is so important to a good Horror story is easy to achieve in many Science Fiction environments.

However, there's a countervailing difficulty: the tools and weapons available to the heroes make them hard to frighten. When you're packing a plasma rifle and have a belt pouch full of regeneration pills, what's so scary about a werewolf? When a character can cross the galaxy in a day or two, how isolated can he really be?

There are two useful approaches to making Science Fiction Horror genuinely scary. First, deprive the heroes of their ultra-tech toys and make them rely on their own wits. (The film *Aliens* is a great example of this, as all the Colonial Marines's superweapons and vehicles are either rendered useless by the situation, or get broken or lost.) The more the characters (and their players) have come to rely on gadgetry, the more uneasy they'll be without it. Taking away the toys can be as complicated as a series of accidents and equipment failures, or as simple as starting the adventure in a situation which doesn't call for much in the way of equipment: a vacation or an undercover mission.

The second approach is to make the horrors immune to super-tech weaponry. Maybe they don't have physical bodies to blow apart, or perhaps they can regenerate any amount of damage. However you justify it, a monster who keeps coming despite a barrage of laser bolts is pretty scary, especially to characters who prefer to solve their problems with gunplay. Jack Vance's short story "Three-Legged Joe" provides a perfect example of an indestructible monster the characters have to defeat with their intelligence, rather than their weaponry.

MYSTERY

Detective stories were another pulp perennial, but actual Science Fiction Mystery stories are surprisingly rare. The reason is that the story must work both as Science Fiction and as a plausible mystery, which can be difficult to pull off. Isaac Asimov managed it in several stories, as did Larry Niven. In a roleplaying campaign the players have enough time to get familiar with the setting and the way the world works, which means Science Fiction mysteries become quite possible.

Another problem with creating Science Fiction mysteries is the rapid advance of crime-solving technology. Present-day police can deploy tools like DNA analysis, face-recognition software, cell-phone eavesdropping, computer databases, psychological profiling, and long-range listening devices. A futuristic setting could add even more powerful technologies like nanotech forensic robots, telepathic cops, and superhumanly intelligent computers. The existence of such tools makes it very difficult for a criminal to hide his traces, and in game terms it makes solving a crime little more than a series of technical Skill Rolls. (Though in some "caper" games, outwitting the Science Police and all their tools may be one of the points of the story, as in Alfred Bester's *The Demolished Man*.)

The GM can constrain the power of crime-solving tools somewhat with laws and regulations: judges may refuse to grant permission for high-tech eavesdropping, and criminals are already getting cagey about letting the authorities take genetic samples. Strict rules may limit when psionic detectives may use their powers, or perhaps psionic evidence isn't admissible in court.

Crooks are also good at coming up with ways to block or trick forensic technology. If nanobots can gather up skin cells from the crime scene to trace the culprit's DNA, clever criminals could either deploy their own nanobots to scour the area clean, or else confuse the issue by scattering samples of DNA from dozens of other people at the site. If the cops can use psionics, the crooks can hire rogue telepaths to read the minds of the detectives (and the crooks aren't going to be worried about privacy regulations). If superhuman AIs help out with police work, other super-smart computers could be planning or even committing crimes.

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Mystery is a word with no objective pertinence, merely describing the limitations of a mind. In fact, a mind may be classified by the order of the phenomena it considers mysterious.... The mystery is resolved, the solution made known. "Of course, it is obvious!" comes the chorus. A word about the obvious: it is always obvious.... The common mind transposes the sequence, letting the mystery generate the solution. This is logic in reverse; actually the mystery relates to the solution as the foam relates to the beer....

—private detective Magnus Ridolph offers some opinions in "The Unspeakable McInch," by Jack Vance



ROMANCE

And just when was it, she asked herself, that you stopped being afraid of him and started being afraid for him? And why is this new fear so much more gut-wrenching than the first?

—Cordelia Naismith realizes she's beginning to fall in love in *Shards Of Honor*, by Lois McMaster Bujold

Science Fiction and Romance have had an uneasy relationship for decades. Until the 1960s, the primary readership of Science Fiction was young men, and relationships were seen as so much “mushy stuff.” A Science Fiction hero might be in love with the mad scientist’s beautiful daughter, but a quick kiss before doing battle with the Lava Men was about all the reader saw of their relationship. At the same time, however, Science Fiction and its twin Fantasy were both part of a strongly romantic stream of popular fiction. Characters were motivated by love, even if the readers didn’t want to read about it.

Changes in the readership and the general culture encouraged a change in treatments of romance and sexuality in Science Fiction, particularly during the Seventies. Writers began

to explore “adult” themes, more explicit sexual situations began to appear in stories, and the genre approached the final taboo: realistic depictions of relationships.

In Science Fiction roleplaying, much the same has happened, compressed into a shorter timespan: the hobby went from all-male to something approaching an even mix, and recent games have paid more attention to relationships among characters and NPCs in play. A Star Hero campaign can center on love and romance in a variety of settings — if the players are interested.

Science Fiction Romance opens up an intriguing possibility: interspecies romance. Can a Human find love with an alien? In Planetary Romance and Space Opera Science Fiction, the answer is usually yes, since the aliens tend to be very Human-like anyhow. (Or at least the species learn to inquire about such things, as with the discussions of *rishathra* among the inhabitant’s of Niven’s Ringworld.) But what about Hard Science Fiction settings? It’s one thing to fall in love with a green-skinned girl dressed in filmy chiffon, but what if the “girl” looks like a cross between a spider and a squid? Science Fiction writers still have mixed feelings about such relationships: are they abhorrent and dehumanizing, or noble and enlightened? Issues like this are perfectly suited for exploration in Star Hero.

SATIRE AND SOCIAL COMMENTARY

Writers have been using Science Fiction to comment on contemporary society ever since Plato invented Atlantis. Gamemasters can follow in this tradition and use Science Fiction adventures to air their own opinions on the way the world should be. By exaggerating a trend or taking something to its logical conclusion, one can see potential flaws. If equality is good, should society use genetic engineering and brain surgery to make everyone exactly alike? If large corporations are growing ever bigger and more powerful, a future world might show everything subordinated to the Bottom Line. Freedom is good, but is complete anarchy really better than living under laws? These are all issues which can be examined in an Science Fiction setting.

There are a couple of pitfalls to be avoided when doing this. The first is simply that the players may not share the GM's views. His brilliant satire on feminism may strike one of the players as nothing but piggishness, while her nightmarish world of capitalism run wild might be another player's utopia. The second issue is that a certain deftness of touch is required if the game is not to degenerate into a series of Ham-Fisted Moral Tales. The TV series *The Twilight Zone* often skated on the edge of this precipice, and sometimes went right over. Characters can espouse a view you dislike without being caricatures, and people have reasons (however flawed) for doing things you don't approve of.

TRAGEDY

The flip side of Comedy is Tragedy. The traditional tragic story tells of a hero (or heroes) doomed by some flaw, and ultimately destroyed by it. A hero's tragic flaw can be anything — stubborn devotion to duty, impetuous action, over-caution, even love for another. Sound familiar? Those are all character Complications in the *HERO System*. Creating a tragedy is simply a matter of setting up a situation in which a hero's Complications have dire consequences. Having done that, though, a real tragedy requires that the Gamemaster actually go through with it. A tragic hero who cheats fate isn't a tragic hero at all. Being a tragic hero is all about defying fate even as it overwhelms you.

The elements of Science Fiction open up some interesting possibilities for tragedy. Time travel, for example, can easily have all sorts of unintended negative results, even if the characters use it carefully and with the best of intentions. Cultural or biological differences may doom an interspecies romance from the start. The PCs' vastly powerful technology may cause equally vast problems if they lose, misuse, or damage it.



THE RETURN OF HAMLET

Tragedies tend to be one-shots: Hamlet comes home, plots to avenge his father, and the stage is littered with bodies. Not much sequel potential. Role-playing games are usually ongoing campaigns. How to reconcile the two? There are three ways.


The first is to go ahead and kill off the tragic hero. Characters die in games. The player can create a new one — possibly a vengeance-obsessed brother with his own tragic fate awaiting him.

The second is to recall that being destroyed by fate and being killed are not the same thing. A tragic hero could be financially ruined, lose his loved ones, or see his home planet blown to bits, and still live on, embittered and broken. The character of Athos in Dumas's *The Three Musketeers* is a man who has lived through a tragedy.

The final method is the “Rosencrantz and Guildenstern” approach. In this the Player Characters aren't the heroes, but instead are working with an NPC who is. This lets the GM send the tragic figure hurtling toward his doom without any worry about players changing their minds or derailing the situation. However, players don't much enjoy being spectators; the GM needs to give their characters plenty to do.



STAR HERO AND OTHER GENRES



Science Fiction is a broad genre, with almost limitless possibilities for storytelling. One of those possibilities is the mixing of Science Fiction with other genres, such as Fantasy, Superheroes, or Westerns. This ranges from strangely anachronistic planets, to time-traveling Science Fiction characters getting stuck in the past, to using the elements of another genre in an Science Fiction setting... and beyond.

EVERYONE'S A SUPERHERO

If an ordinary soldier or policeman in the twenty-fifth century has equipment which makes him the equal of a present-day superhero, what do the heroes in that setting have? Is there much point in being able to fly and project bolts of energy when anyone with a few credits to spare can buy an anti-gravity pack and a blaster gun? Superheroes in a high-tech setting face the problem that their powers may not give them much of an advantage over the off-the-shelf items available to ordinary citizens. If those normal folk have cybernetic implants and are genetically improved, or are aliens with innate powers of their own, the superhero is just a guy who likes to wear capes.

One way around this problem is to encourage players to design supers with powers that aren't easily duplicated by technology. Superpowers like Growth, Stretching, Desolidification, or Mental Powers are all possibilities.

Another solution is to embrace the problem and run with it. The comic series *Top Ten*, by Alan Moore, examines the problems of superheroes working as cops in a city where everyone from bum to mayor is also super-powered. Fighting crime is easy when you can shrug off the bad guys' bullets; when they have blasters it becomes a dangerous job. Isn't doing a dangerous job what being a hero is all about?

Champions

Superheroes are often ostensibly Science Fiction characters. Except where a hero's powers explicitly derive from magic, superheroes generally have a "rubber science" or "technobabble" explanation for how they got their abilities. In comic books, Superman is an extraterrestrial, the X-Men are mutants, Iron Man has a high-tech battlesuit, and Plastic Man's powers come from exposure to chemicals.

You can use the weapons and equipment described in Star Hero to outfit a high-tech superhero operating in a contemporary Champions campaign (paying the appropriate point cost for the powers they confer, of course). An alien or time-traveler with off-the-shelf supertech equipment could be quite effective as a crimefighter (or supervillain) in the present (witness Captain Chronos from *Champions Villains*). Some aliens may have superpowers themselves, either as the result of the same sorts of origins Human superheroes experience, or because the alien's species naturally possesses some sort of ability that makes him "superhuman." The Malvan gladiators of the Champions Universe are an example of this (see *Champions Beyond* for plenty of examples).

Of course, superheroes often get out into space themselves. Whether they're foiling an alien invasion, rescuing a DNPC kidnapped by intergalactic slavers, or just test-driving a gadgeteer's starship, characters from a Champions campaign sometimes visit other planets and meet exotic aliens. It's even possible to run a relatively straight superheroic campaign in an interstellar setting. *Champions Beyond* and *Galactic Champions* both focus on outer space, aliens, and related issues in the Champions Universe (the former for the modern day, the latter for the far future). In comic books the Legion of Superheroes and the Green Lantern Corps have similar duties, and the Lensmen of Doc Smith's pulp epics were certainly as powerful as any caped hero.



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Dark Champions

The stereotypical Dark Champions grim vigilante may not have much place in most Science Fiction settings, but the Danger International subgenre — espionage and intrigue — is definitely an appropriate one to cross with Science Fiction. Call it Danger Interstellar.

Spy stories and Science Fiction blend seamlessly into one another. Often the distinction between an espionage “technothriller” and near-future or Cyberpunk Science Fiction is nothing more than a matter of marketing. Certainly James Bond has spent an awful lot of his career facing villains with secret bases and superweapons straight out of Science Fiction. The crossover goes the other way, too: Poul Anderson’s *Ensign Flandry*, Harry Harrison’s *Slippery Jim DiGriz*, and Robert Heinlein’s *Friday* accomplish feats of espionage and deception which Mr. Bond would surely have approved of.

Crossing Star Hero with Danger International can simply be a matter of setting the campaign a few decades in the future. This lets the GM rearrange international politics without worrying about next week’s headlines, and allows the agents to visit Earth orbit or even Mars. Most of the weapons and gadgets are present-day tech, but a few next-generation prototypes like chemical laser rifles or remotely piloted combat vehicles can liven things up.

On the other hand, the GM can take things a step further, setting his “great game” of spycraft

and assassination in the distant future. This presents some of the same problems as crimefighting — high-tech gadgetry may make some forms of spying too easy, or too difficult, which spoils the fun. The campaign may need to fall back on the Human (alien?) element, with scenarios which focus on the characters’ ability to gather information on their own, without spy-tech.

Fantasy Hero

Other than the equipment list and the scope of the typical campaign, the main difference between Fantasy Hero characters and Star Hero adventurers is the existence of magic. Gamemasters who want to run a crossover adventure have to decide what role magic plays in their Star Hero settings. Does it work at all? Does it only work on some planets? Some planets may be washed by different mystic tides and currents, so that a high-magic world could exist in the middle of a high-tech-world space empire. It’s easy to envision a setting where Fantasy spells and Science Fiction starships merge into an intriguing blend; the only question is how much the GM wants of each.

A planet of mages would be an interesting place for space explorers to visit. Imagine the surprise of the heroes when the locals respond to laser fire with fireball spells! This can be amusing even if the mages are actually fakers, doing a “Wizard of Oz” con game using hidden technology or psionic powers to make it appear they can command magic.

Earth’s war with the Sirian Combine stretched on and on, and the Terrans were fed up. To win, they needed an edge, so they set about to create one.

Soon agent James Mowry had been surgically altered to resemble a Sirian — and trained in the arts of espionage, subversion, and propaganda. Then they sent him to Jaimec, one of the planets of Sirius.

James Mowry’s mission was to divert the attention of the Jaimec government from the war with Terra, weakening the Sirian Combine. All he had to do was shake up an entire world. By himself!

—the back cover text of Eric Frank Russell’s delightful Science Fiction espionage novel *Wasp*

Or turn it around and send a group of Fantasy characters out to explore strange new worlds. This assumes magic isn't limited to just one planet, since otherwise a magical spaceship won't get very far. A whole starfaring magical civilization might exist, with Fantasy Hero spells instead of Star Hero technology.

Finally, the GM can just pour it all into the blender at once. Characters can use magic spells, psionic powers, mutant abilities, and technological tools, all at once. Distinctions among them are just a matter of vocabulary. The Galactic Emperor's starships carry scrying-mages and are guarded by powerful enchantments, cyber-wizards jack into the Hypernet to cast spells in virtual reality, dragons carry blaster-armed riders into battle against psionic demon-cyborgs, and stealthy thieves use suction boots and gravitic lockpicks along with a Potion of Insubstantiality when they try to steal the Soulgem from a wizard's orbital fortress.

Pulp Hero

Since modern Science Fiction largely came out of the pulps, drawing a distinction between it and Pulp adventure often seems kind of arbitrary. Most Pulp campaigns are likely to have at least a dose of Weird Science and fantastic inventions. But even the most hard Science Fiction campaign can benefit from an infusion of pulpish vitality and pacing. If the heroes spend too much time finessing the interstellar trade system or upgrading their cyberware, toss in a sneering, double-dyed Pulp villain with a beautiful-but-deadly daughter, a lair full of deathtraps and exotic creatures, and a Sinister Plan.

Swashbucklers

Ever since Jack Williamson took the Three Musketeers and enrolled them in the *Legion Of Space*, Science Fiction has borrowed freely from the tropes and clichés of Swashbuckling adventure. Swordplay on primitive worlds or with energy blades lets any spaceman rival D'Artagnan, and pirates as bad as Blackbeard infest remote star systems. (The artist Kelly Freas once painted a space pirate crawling aboard a merchant spaceship with a slide-rule clenched in his teeth.) Swashbuckling adventure is a major element of both Planetary Romance and Space Opera, and even gritty Cyberpunk campaigns contain a startling proportion of katana-wielding cyber-samurai.

But a more orthodox Swashbuckling campaign can take on elements of Science Fiction. Shift it into an alternate history and deploy weird "steampunk" technology a couple centuries or so early for a swashbuckling "clockpunk" campaign. The King's Musketeers battle Cardinal Richelieu's clockwork fencing automatons, while the dread pirate Bartholemew Roberts terrorizes the skies in his black balloon-frigate.

Western Hero

Zoe: Next time we smuggle stock, let's make it something smaller.

Wash: Yeah, we should start dealing in those black-market beagles.

—the Western theme/motif of *Firefly* comes through clearly in the episode "Safe," about transporting a herd of cattle

An old criticism of some Pulp Science Fiction was that it was nothing but "westerns in space." An enterprising GM can make the most of that by playing up the similarities. Almost any interstellar campaign is likely to have remote frontier worlds where the only law is a titanium star and a blaster. The Western ideal is such a powerful archetype in American culture that space colonists may well try to create a society based on a real or imaginary version of the Old West. For a completely over-the-top campaign, give the heroes six-shot lasers and robot horses when they try to clean up a lawless sector of space.

Going the other way, Science Fiction can creep into Western adventures via the "steampunk" route. Remember, Jules Verne set his fantastic adventures in the 1860s and 1870s, the golden age of the gunslinger. Perhaps a group of heroic cowpokes could run afoul of a mad inventor and his amazing steampunk gadgets, or find themselves acting as Earth's first line of defense against an alien invasion (as in the amazing story "Night of the Cooters," by Howard Waldrop).

One of the most common time travel/alternate history changepoints is the American Civil War, which overlaps considerably with the classic period of Western adventures. Time Police may have to prevent Confederate sympathizers from smuggling machineguns or death rays to Robert E. Lee's troops, or else an alternate history campaign might involve cowboy adventures as the Union and its rival Confederacy struggle for control of the West.

Other Eras

The Victorian period is the home time for Steampunk Science Fiction, discussed above. The Classical era of Greece and Rome is a natural destination for time travellers, or else might survive the onslaught of the barbarians in an alternate history, with laser-armed legions bearing the Imperial Eagle to the stars. Shorn of its Fantasy trappings, the real-historical Middle Ages could be an interesting time for Science Fiction adventures — either full-bore Space Opera as knights battle alien invaders and fight as mercenaries on distant worlds, or genuine Hard Science Fiction in the days when science itself was in its infancy.



CHAPTER TWO



CITIZENS OF THE GALAXY: CHARACTER CREATION

RACIAL TEMPLATES

Characters in Science Fiction adventures come in a variety of types and shapes: aliens, cyborgs, mutants, gene-modified animals, androids, telepaths, and robots... and maybe a normal Human or two. In a star-spanning campaign, players may want to create characters from a variety of non-Human species. Even if the PCs are all Human, the GM may still wish to create alien foes.

Individual GMs must decide for themselves whether to allow players to create their own alien species. In a setting with only a few starfaring species, it's probably best for the GM to define all the alien types and let players choose from that menu of possibilities. If the campaign is wide-ranging and includes hundreds of different species, then GMs may wish to allow players to do some of the work by creating their own exotic aliens to run as characters. (Of course, the GM should always review player-created Templates, and can veto abusive alien designs, or ones which simply don't fit in with the campaign's universe.)

Although each Science Fiction setting is different, with its own unusual aliens and locales, certain archetypal species tend to occur throughout Science Fiction, and particularly in Science Fiction RPGs. This section includes Templates not only for various species, but which reflect the culture or unusual environment the character grew up in (or was genetically designed to thrive in).

Typically a character should only have one Species Template, plus one Cultural Template, and one Environment Template, if those are appropriate and/or desired. However, a GM might allow a character to take more than one in some cases. See also the *Crossbreeds* sidebar on page 46.

See Chapter Six for more information on creating alien species.

Captain Spock: *But Captain, we both know that I am not human.*

Captain James T. Kirk: *Spock, you want to know something? Everybody's human.*

—some philosophical banter from
Star Trek VI: The Undiscovered Country

SPECIES TEMPLATES

These Templates represent common types of alien species found in much Science Fiction. They're all presented “generically,” without reference to any particular setting or location, since Star Hero isn't a setting book. You should consider making slight changes to them to adapt them to your specific campaign, or to create alternate forms of the same general species.

There is no Human Template, because Humans serve as the “baseline” from which other species Templates are derived — the Template indicates how the species in question is “better” or “worse” than Humanity in some respects. Human characters can, of course, take Cultural or Environment Templates (see below).

ANDROID/ROBOT

A character with this Template is an incredibly sophisticated android or robot. Though obviously a “manufactured” sentient being, the character is advanced enough to interact normally with other people. His systems are so high-tech that he takes damage like other characters (loss of STUN represents systems being knocked offline temporarily, expenditure of END represents strain on his internal power sources, and so forth). The character may also need the Fringe Benefit *Free Robot* (page 70) in some settings.

This Template assumes the character looks like an android, and exists in a setting that restricts androids' civil rights (which most do). You can easily remove those Complications if you prefer.

For more information about robot and android characters, see page 196.

BOTANOID

A “botanoid” is a species of sentient plant. Although tough, and usually strong, they also tend to be a little slower than other species. Some have the ability to communicate with other, non-sentient, plant species (though plants rarely have anything interesting to say), or other plant-based powers.

CANINOID

Caninoids are aliens who evolved from canine stock — wolves, dogs, hyenas, foxes, or the like. Wolfoids are perhaps the most common in Science Fiction gaming, but they're certainly not the only type possible. Caninoids tend to work well in groups (coming, as they do, from animals that live in packs), and can be both tenacious and rapacious.

CANINOID TEMPLATE**Cost Ability**

2	+2 STR
2	+1 DEX
4	Caninoid Legs: Running +4m
5	Caninoid Eyes: Nightvision
3	Caninoid Senses: +1 to PER Rolls with all Sense Groups

Total Cost Of Template Abilities: 16

Value Complications

None

Total Value Of Template Complications: 0

ENERGY BEING

This Template represents an alien composed primarily of energy, though not to the extent that it's normally insubstantial or totally immune to physical effects. Depending on the nature of the being and the campaign, it may only be able to survive in certain environments, may have trouble communicating with organic beings, or the like.

ENERGY BEING TEMPLATE**Cost Ability**

-3	-3 STR
10	+5 DEX
-2	-2 BODY
30	Energy Body: Physical and Energy Damage Reduction, Resistant, 25%
27	Energy Body: Blast 4d6, Area Of Effect (personal Surface — Damage Shield; +¼), Constant (+½), Reduced Endurance (0 END; +½), Persistent (+¼), Inherent (+¼); Always On (-½), No Range (-½)

Total Cost Of Template Abilities: 62

Value Complications

20	Vulnerability: 1½ x STUN and BODY from opposite energy type, or some similar attack (Common)
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Total Value Of Template Complications: 20

Cost Option

20	Energysense: Detect Energy (INT Roll) (Sight Group), Discriminatory, Analyze
15	Zap Touch: Blast 6d6; No Range (-½), Side Effect (character loses 1 BODY every time he uses the power; -½)

ANDROID/ROBOT TEMPLATE**Cost Ability**

18	Android Form: Resistant Protection (6 PD/6 ED)
35	Android Form: Life Support: Total
20	Sensors: 20 points' worth of Enhanced Senses of player's choice
5	Computer Memory: Eidetic Memory
29	Onboard Computer Systems: Absolute Time Sense, Bump Of Direction, Lightning Calculator, Universal Translator (INT Roll)

Total Cost Of Template Abilities: 107

Value Complications

10	Distinctive Features: Android (Concealable With Effort; Noticed And Recognizable)
15	Social Complication: Android (restricted civil rights, suffers from prejudice) (Very Frequently, Minor)

Total Value Of Template Complications: 25

2

"I am C-3PO, Human-cyborg relations. And this is my counterpart, R2-D2."

—the robot PCs introduce themselves in *Star Wars*

BOTANOID TEMPLATE**Cost Ability**

3	+3 STR
-4	-2 DEX
1	+1 PD
3	Bark/Fibrous Skin: Resistant (+½) for 3 PD/3 ED
1	Photosynthesis: Life Support (Diminished Eating: only has to eat once per week)
-4	Slow: Running -4m (8m total)

Total Cost Of Template Abilities: 0

Value Complications

10	Vulnerability: 1½ x STUN from Fire Attacks
----	---

Total Value Of Template Complications: 10

Cost Option

26	Plant Communication: Telepathy 6d6 (Plant class of minds), Reduced Endurance (0 END; +½); No Range (-½), Communication Only (-¼)
12	Spines: RKA ½d6, Area Of Effect (personal Surface — Damage Shield; +¼), Constant (+½), Inherent (+¼), Persistent (+¼), Reduced Endurance (0 END; +½); Always On (-½), Activation Roll 14- (-¼), No Range (-½)
12	Spore Projection: Blast 3d6, NND (defense is Life Support [Self-Contained Breathing]; +1); Limited Range (4m; -¼), 3 Charges (-1¼)
2	Tendrils: Reach +2m



2

The nearest Kzin stood up. Rich orange fur, with black markings over the eyes, covered what might have been a very fat tabby cat eight feet tall. The fat was muscle, smooth and powerful and oddly arranged over an equally odd skeleton. On hands like black leather gloves, sharpened and polished claws slid out of their sheaths.

—Nessus and Louis Wu recruit a Kzin to join their expedition in *Ringworld*, by Larry Niven

FELINOID

Cat-people, such as Larry Niven's Kzinti, are one of the most common types of aliens encountered in Science Fiction literature and gaming. This Template represents a sort of "average" felinoid, one not tied to a particular type of cat. You can easily create more specific Templates for lion-men, leopard-men, jaguar-men, ocelot-men, and so forth by altering this Template slightly.

FELINOID TEMPLATE

Cost	Ability
6	+3 DEX
-1	-1 CON
-1	-1 BODY
8	Claws: HKA ½d6 (plus STR); Reduced Penetration (-¼)
4	Felinoid Legs: Running +4m
2	Felinoid Legs: Leaping +4m
5	Felinoid Eyes: Nightvision
Total Cost Of Template Abilities: 23	

Value Complications

None

Total Value Of Template Complications: 0

CROSSBREEDS

In Science Fiction settings with lots of alien species, such as *Star Trek*, it's not uncommon for sentient species to cross-breed. The resulting hybrid offspring usually have some features of both species, often somewhat muted or altered to reflect their "diluted" genetic heritage. The character's Everyman Skills, attitudes, and the like usually depend on which homeworld he was raised on; he may also suffer from prejudice or discrimination (possibly simulated with a Social Complication) if half-breeds are scorned.

Since each crossbreed is different, there's no Template for them. Instead, the player and the GM should work together to come up with an appropriate Template that combines attributes from the Templates for his parent species. In most cases those attributes shouldn't be as strong as in either parent species's Template.

HERDFOLK

Facing him from the middle of the room was something neither human nor humanoid. It stood on three legs, and it regarded Louis Wu from two directions, from two flat heads mounted on flexible, slender necks. Over most of its startling frame, the skin was white and glove-soft; but a thick, coarse brown mane ran from between [its] necks, back along its spine, to cover the complex-looking hip joint of the hind leg. The two forelegs were set wide apart, so that [its] small, clawed hooves formed almost an equilateral triangle. ...

“It has been said that puppeteers were plant-eaters, that they would lead away from battle and not toward it.”

—Louis Wu meets Nessus, a Pierson’s puppeteer, and Speaker-To-Animals later comments scornfully on puppeteers’ well-known cowardice, in *Ringworld*, by Larry Niven

This Template is for sentient species descended from herd animals or other grazing creatures. Typically vegetarians, and often skittish, they are fast runners and surprisingly strong — when angered, or frightened into a violent response, they can be dangerous, especially if they retain horns or hooves.

HERDFOLK TEMPLATE

Cost Ability

3	+3 STR
1	+1 CON
-2	-2 PRE
6	Herdfolk Legs: Running +6m
2	Herdfolk Senses: +1 PER with Smell/Taste Group

Total Cost Of Template Abilities: 10

Value Complications

None

Total Value Of Template Complications: 0

Cost Option

10	Horns: HKA ½d6 (plus STR)
12	Kick: HA +3d6; Hand-To-Hand Attack (-¼)

ICHTHYOID

This Template represents an ichthyoid (fish-like) sentient humanoid species, perhaps one native to a waterworld. Typically Ichthyoids define “water” as their normal environment for breathing; they must take Life Support (Expanded Breathing: air) to breathe normally in gaseous environments, or wear special life support suits (a Dependence; see page 84).

INSECTOID

Insectile species occur fairly frequently in Science Fiction, often as villains or antagonists because of the Human reader’s instinctive loathing for “bugs.” They range from multi-limbed (and often multi-fanged) monstrosities, to members of hive mind species whose thinking is utterly alien to Humans, to industrious laborers renowned across the spiral arm for their diligence.

INSECTOID TEMPLATE

Cost Ability

1	+1 STR
2	+1 DEX
-1	-1 CON
2	Chitinous Skin: Resistant (+½) for 2 PD/2 ED
2	Insect Senses: +1 PER with Smell/Taste Group

Total Cost Of Template Abilities: 6

Value Complications

None

Total Value Of Template Complications: 0

Cost Option

8	Claws/Mandibles: HKA ½d6 (plus STR); Reduced Penetration (-¼)
10	Faceted Eyes: Increased Arc Of Perception (360 Degrees) for Sight Group
15	Hive Mind: Mind Link, any willing target, up to 8 people at once; Only With Others Who Have Mind Link (-1)
6	Multi-Limbed: Extra Limbs (as many as desired), Inherent (+¼)

“What a handsome race.”

—Worf speaks with uncharacteristic diplomacy when describing the Antedeans in the *Star Trek: The Next Generation* episode “Manhunt”

ICHTHYOID TEMPLATE

Cost Ability

4	+2 DEX
4	Ichthyoid Limbs: Swimming +8m
5	Ichthyoid Eyes: Infrared Perception (Sight Group)
4	Ichthyoid Form: Environmental Movement: Aquatic Movement

Total Cost Of Template Abilities: 17

Value Complications

None

Total Value Of Template Complications: 0

REPTILOID

“Like most humans, I seem to have an instinctive revulsion to reptiles.”

—Captain Kirk’s observation on seeing the Gorn captain in the *Star Trek* episode “Arena”

Reptilian aliens — snake-men, lizard-men, and the like — crop up in many different types of Science Fiction stories; like felinoids, they seem to hold a particular appeal for gamers. This Template represents an “average” reptiloid, one easily customizable to suit particular reptile types or perspectives on such species.

REPTILOID TEMPLATE

Cost Ability

- 2 +2 STR
- 1 +1 PD
- 2 **Scaly Skin:** Resistant (+½) for 2 PD/2 ED
- 2 **Reptiloid Legs:** Running +2m
- 1 **Reptiloid Limbs:** Swimming +2m

Total Cost Of Template Abilities: 8

Value Complications

None

Total Value Of Template Complications: 0

Cost Option

- 8 **Claws:** HKA ½d6 (plus STR); Reduced Penetration (-¼)
- 7 **Supreme Climbing:** Clinging (normal STR); Requires A Climbing Roll (-½)
- 5 **Tail:** Extra Limb, Inherent (+¼); Limited Manipulation (-¼)
- 17 **Venomous Bite:** HKA 1 point; No STR Bonus (-½) (total cost: 3 points) **plus** RKA 2d6, NND (defense is appropriate LS [Immunity]; +1), Does BODY (+1); No Range (-½), 2 Charges (-1½), HKA Must Do BODY (-½), Extra Time (onset time begins 5 Minutes after victim is bitten; -2), Gradual Effect (10 Minutes; 1d6/5 minutes; -¾), Linked (-¼) (total cost: 14 points)

SILICON LIFE-FORM TEMPLATE

Cost Ability

- 10 +10 STR
- 4 -2 DEX
- 5 +5 CON
- 3 +3 PD
- 1 +1 ED
- 2 +2 BODY
- 4 **Silicon Body:** Resistant (+½) for 4 PD/4 ED
- 4 **Heavy:** Knockback Resistance -4m

Total Cost Of Template Abilities: 25

Value Complications

- 10 **Physical Complication:** Weighty (about four times Human weight) (Infrequently, Slightly Impairing)

Total Value Of Template Complications: 10

SHAPESHIFTER

Laas: The truth is, I prefer the so-called primitive life forms. They exist as they were meant to, by following... their instincts. No words get in the way, no... lies, no deceptions.

Chief O'Brien: We're not the ones who can disguise ourselves as anything we want.

Odo: Meaning...?

Laas: Meaning, shapeshifters are not to be trusted.

Chief O'Brien: I trust Odo.

Laas: Of course you trust Odo. Look at him.

You've convinced him that he is as limited as you are.

—Laas tries to convince Odo to embrace his heritage as a shapeshifter in the *Star Trek: Deep Space Nine* episode “Chimera”

In some Science Fiction settings, shapeshifters — beings with the ability to alter their forms — exist. The Founders of *Star Trek: Deep Space Nine* are a good example. In most cases the ability to change shape is limited to other humanoid forms, but sometimes the beings can assume any shape they wish. This Template presents the more limited form of shapeshifting, but can easily be expanded by exchanging Shape Shift for Multiform.

Shapeshifters do not often enjoy the trust of non-shifting aliens, who regard them with suspicion and distrust. The Template reflects this with a Hunted, but you could substitute a Social Complication, Negative Reputation, or the like if you prefer.

SHAPESHIFTER TEMPLATE

Cost Ability

- 4 +2 DEX
- 35 **Shapeshifting:** Shape Shift (Sight, Hearing, Smell/Taste, and Touch Groups; any humanoid form), Imitation

Total Cost Of Template Abilities: 39

Value Complications

- 15 **Hunted:** local non-shifting authorities (Frequently, Mo Pow, NCI, Watching)

Total Value Of Template Complications: 15

SILICON LIFE-FORM

Although life on Earth is based on carbon, in a Science Fiction setting that doesn't have to be the case on every planet. Life could be based on other elements. One of the most common “alternate element” life-forms in Science Fiction is sentient beings with silicon bodies — rock- or crystal-men, so to speak. Although tough and strong, they also tend to be slow and ponderous, and quite heavy.

URSOID

Ursoids are aliens who resemble, in form if not in general attitudes, the bears of Earth. Big, strong, tough, and often known for their abilities as fighters, they can be surprisingly gentle and philosophical in the right circumstances.

URSOID TEMPLATE**Cost Ability**

5	+5 STR
5	+5 CON
3	+3 BODY
1	Tough Skin: Resistant (+½) for 1 PD/1 ED
-2	Running -2m

Total Cost Of Template Abilities: 12

Value Complications

None

Total Value Of Template Complications: 0

Cost Option

8	Claws/Fangs: HKA ½d6 (plus STR); Reduced Penetration (-¼)
4	Roar: +10 PRE; Only For Fear/Intimidation- Based Presence Attacks (-1), Incanta- tions (-¼)

WINGED HUMANOID

Sentient humanoids with the ability to fly exist in many Science Fiction settings. They range from bird-men, to bat-men, to gargoyle- or demon-like aliens. They tend to be light and relatively fragile, and often come from low-gravity worlds. If giving a winged humanoid character Flight could potentially unbalance the game, require characters to apply the *Gliding* (-1) Limitation.

WINGED HUMANOID TEMPLATE**Cost Ability**

4	+2 DEX
-2	-2 BODY
11	Wings: Flight 16m; Restrainable (-½)
6	+3 to PER Rolls with Sight Group

Total Cost Of Template Abilities: 19

Value Complications

None

Total Value Of Template Complications: 0

CULTURAL TEMPLATES

In Science Fiction, it's not uncommon to find species that are overwhelmingly associated with a particular lifestyle, manner of interacting with others, or cultural stereotype. In some cases, it may be appropriate to represent this with Cultural Templates, such as the ones described below. Cultural Templates should rarely, if ever, be required; a player can always define his character as a rebel who flouted his species's cultural trends and traditions.

CONTEMPLATIVE CULTURE

Vir Cotto: *They are deeply spiritual people!*

Londo Mollari: *Yes, now that you can leave in. It always scares people.*

—Londo rewrites part of Vir's report on the Minbari to cast them in a negative light in the *Babylon 5* episode "Dust To Dust"

Science Fiction is filled with examples of species renowned for their wisdom, learning, spiritual strength, philosophical depth, and/or contemplative natures. From the Vulcans and Bajorans of *Star Trek* to the Minbari of *Babylon 5*, these species often demonstrate to PCs from Earth just how much potential the Human species has.

Though often peaceful, even pacifistic, Contemplative Species characters may be highly-trained fighters, versed in martial arts and other esoteric combat disciplines. They also often possess psionic powers. They sometimes embrace logic and scorn emotional behavior, which can have its benefits (Eidetic Memory, high Deduction rolls), but also some drawbacks (inability to relate to emotional species, as reflected by various Psychological and Social Complications).

CONTEMPLATIVE CULTURE TEMPLATE**Cost Ability**

3	+3 INT
3	+3 EGO
3	+3 PRE
8	Any four KSs or SSs at 11- each

Total Cost Of Template Abilities: 17

Value Complications

None

Total Value Of Template Complications: 0

She'd looked up at his wings as they'd risen up and toward her over the plain black robe he'd worn. He'd seen her take a deep breath. The lights in her eyes had sparkled brightly. ... Yes, the wings worked, in anything less than 50% standard gravity. Had them since he was thirty.

—Leffid Ispanteli shows off his wings in *Excession*, by Iain M. Banks

CRIMINAL CULTURE

In all the many-colored worlds of the universe no single ethical code shows a universal force. The good citizen on Almanatz would be executed on Judith IV. Commonplace conduct of Medellin excites the wildest revulsion on Earth and on Moritaba a deft thief commands the highest respect.

—Magnus Ridolph contemplates cultural relativism, particularly with regard to the kleptocratic Moritabans, in “The King Of Thieves” by Jack Vance

Many Science Fiction societies are characterized by rampant levels of crime. They may be kleptocracies (rule by thieves, or more accurately by organized crime), or just worlds where anarchy reigns and every person has to look out for himself. This Cultural Template may also be appropriate for characters living in societies like Soviet Russia, where one’s ability to interact with the black market, and one’s contacts, are necessary to survive and thrive.

CRIMINAL CULTURE TEMPLATE**Cost Ability**

- 1 +1 INT
- 1 +1 PRE
- 6 **6 points’ worth of Skills from the following list:**
Bribery, Charm, Climbing, Computer Programming, Conversation, Forgery, Gambling, Lockpicking, Persuasion, Security Systems, Sleight Of Hand, Stealth, Trading, any Background Skill
- 2 WFs (2 points’ worth)
- 4 Contacts (4 points’ worth; player’s choice)

Total Cost Of Template Abilities: 14

Value Complications

None

Total Value Of Template Complications: 0

WARRIOR CULTURE TEMPLATE**Cost Ability**

- 3 +3 STR
- 2 +1 DEX
- 2 +2 CON
- 2 +2 BODY
- 6 WFs (6 points’ worth)

Total Cost Of Template Abilities: 15

Value Complications

- 15 Psychological Complication appropriate to species (Code Of Honor, Belligerent, Hair-Trigger Temper, or the like)

Total Value Of Template Complications: 15

MERCANTILE CULTURE

Gaila: It always comes down to profit with you people, doesn’t it?

Quark: We’re Ferengi.

—the central aspect of Ferengi life and culture plainly stated in the *Star Trek: Deep Space Nine* episode “The Magnificent Ferengi”

It’s not uncommon for some species in a Science Fiction setting to be depicted only with regard to matters of trade and business. The Ferengi of *Star Trek* are the best-known example, but many settings feature species who only seem to enter the story when there’s dealing to be done and profit to be made.

MERCANTILE CULTURE TEMPLATE**Cost Ability**

- 3 Trading
- 6 **6 points’ worth of Skills from the following list:**
Bureaucratics, Charm, Conversation, Electronics, High Society, Oratory, Persuasion, Stealth, Streetwise, any Background Skill
- 4 Contacts (4 points’ worth; player’s choice)

Total Cost Of Template Abilities: 13

Value Complications

None

Total Value Of Template Complications: 0

WARRIOR CULTURE

“We are Klingons, Worf. We don’t embrace other cultures, we conquer them!”

—General Martok encapsulates the essence of Klingon culture in the *Star Trek: Deep Space Nine* episode “You Are Cordially Invited...”

Science Fiction is rife with species best known for their abilities as warriors, such as the Klingons of *Star Trek* or the Kzinti of Larry Niven’s “Known Space” stories. Usually tough, strong, and skilled with a variety of weapons, members of warrior species often embrace elaborate codes of honor that keep their societies from descending into eternal, anarchistic warfare. Others care only about victory, regardless of how they achieve it.



2

ENVIRONMENT TEMPLATES

Even within a single species, people from different environments can show tremendous variation in appearance and abilities. On Earth, the people of Peru and Tibet are more comfortable at high altitude than people native to sea level, and the Inuit are adapted to Arctic conditions. In the future, we may see Humans shaped by other worlds, either naturally or by sophisticated genetic engineering. Sentient aliens could easily have the same intraspecies diversity.

To represent these variations, characters can take Environment Templates. The abilities provided by these Templates could come from heredity, genetic engineering, accidental mutation, or many other factors, but in general they reflect an adaptation of a sentient being to a particular world or environment (hence the name). Characters may buy more than one Environment Template if they have a good explanation for doing so (for example, a Heavyworlder could also be Psionic). If an Environment Template and Species Template provide the same abilities or Complications, the player and GM should decide together whether to combine the abilities (to whatever degree), or to replace one Template's ability with something else to prevent duplication.

HEAVYWORLDER

The most successful [mutagene] world was that of the planet Hoffman (SJ-44K). Hoffman is a Terra-like planet except for a specific gravity three times that of Old Terra itself. ... [T]he planet was actually colonized by humans who had been bred to its conditions. Hoffmanites tend toward the bulky side, but are compensated by vast physical strength, stamina, and agility. Their endo-skeletons are almost impossible to break and their hides are particularly thick.

—a description of the heavyworlder Hoffmanites from the introduction to *Buck Godot: PSmith*, by Phil Foglio

Humans living on planets with heavy gravity are likely to be large and massively strong, simply to survive. Their strength may be the result of genetic modification, or the effect of living in powerful gravity. Heavyworlders's abilities keep them from suffering any particular disadvantages in their home setting, but other members of their species recognize them as heavyworlders instantly, and often find their squat, over-muscled physiques unattractive, even dangerous. (Similarly, heavyworlders may find ordinary members of their species "petite" or "fragile," and thus unappealing in some ways.)

Heavyworlders require a lot of food to support their prodigious bodies, and when away from their homeworlds may be prone to accidentally breaking ordinary objects that can't withstand their weight and strength. Traditionally, heavyworlders and lightworlders don't get along with each other (much like the customary fantasy fiction antipathy between Dwarves and Elves).

This Template assumes a native environment of up to 2 G; for heavyworlders native to even higher-gravity worlds, add +5 STR per +1 G. See also pages 238 and 305.

HEAVYWORLDER TEMPLATE

Cost Ability

5	+5 STR
3	+3 CON
3	+3 BODY
2	Heavy: Knockback Resistance -2m
2	High Gravity Training: Environmental Movement (High-G)
1	Used To High G: Resistant Protection (2 PD/0 ED); Only To Protect Against G Force Damage (-1)

Total Cost Of Template Abilities: 16

Value Complications

5	Physical Complication: Hefty (Infrequently, Barely Impairing)
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Total Value Of Template Complications: 5

LIGHTWORLDER

Just as Heavyworlders are adapted to high-gravity environments, Lightworlders are optimized for planets with between 0.1 and 0.6 G. Humans living on the Moon, Mars, or the moons of Jupiter and Saturn would all be Lightworlders. They tend to be tall and slender, and are usually not as strong and tough as their normal-gravity kin because they have less tissue mass (making them prime targets for brutal criminals in some societies). Since low-gravity planets tend to have low air pressure, lightworlders are also adapted to thin air. Their features may be the result of genetic engineering, or just the effect of living in low gravity.

Most Lightworlders should take the *Low Native Gravity* Physical Complication (page 86). The exact version of Gravity Adaptation chosen depends on the level of gravity in the environment the character's accustomed to.

LIGHTWORLDER TEMPLATE

Cost Ability

-2	-2 STR
2	+1 DEX
-1	-1 CON
-1	-1 BODY
1	Adapted To Thin Air: Life Support (Expanded Breathing: can breathe normally in thin atmospheres)
6	Low Gravity Training: Environmental Movement (Low-G)

Total Cost Of Template Abilities: 5

Value Complications

None

Total Value Of Template Complications: 0

CYBORGS

The term “cyborg” refers to any combination of living and mechanical systems (in the Cyberpunk subgenre, the systems are usually referred to as “cyberware”). The Terminator in the movies is an extreme example (a killer robot clad in living flesh); television's Six Million Dollar Man — a Human equipped with super-powered mechanical limbs — is a more typical example.

Many Star Hero campaigns allow characters to be cyborgs, since replacing biological material with technological counterparts not only expands the characters' capabilities, but raises all sorts of interesting roleplaying issues, such as “where does the man end and the machine begin?”. In some games (particularly Cyber Hero campaigns), GMs let characters buy cyborg parts in-game with money, regarding them as just another form of equipment. In other games, GMs require PCs to spend Character Points for their cyborg parts, because they consider them more like “superpowers” than equipment and want to control their prevalence and use.

Being a cyborg doesn't usually require a Template; characters simply acquire the cybernetic parts they desire by the appropriate method for the campaign. Here's a list of sample cybernetic parts characters could have. They're built with the Limitation *Restrained* at the $-\frac{1}{4}$ level; see 6E1 393 for a discussion of this.

Communications Implant: This tiny device, implanted in the skull, allows a character to receive and broadcast on radio bands without using outside equipment.

Radio Perception/Transmission (Radio Group) (10 Character Points); *Restrained* ($-\frac{1}{4}$). Total cost: 8 points.

Cybernetic Arm: Made of titanium steel, micro-motors, and high-tech plastics, this artificial arm is much stronger than a character's natural arm.

+10 STR (10 Active Points); Only When Using The Right Arm ($-\frac{1}{4}$), *Restrained* ($-\frac{1}{4}$). Total cost: 7 points.

Cybernetic Eye: Incorporating some of the most advanced optical technology available, cybernetic eyes not only replace a character's normal vision, but allow him to see into other spectra as well.

Infrared Perception, Ultraviolet Perception, and Telescopic (+4 versus Range Modifier) (all for Sight Group) (16 Active Points); *Restrained* ($-\frac{1}{4}$). Total cost: 14 points.

Cybernetic Leg: A character with this high-tech artificial leg can run and jump much better than one with ordinary flesh-and-blood legs.

Running +10m (10 Active Points); *Restrained* ($-\frac{1}{4}$) (total cost: 8 points) **plus** Leaping +8m (4 Active Points); *Restrained* ($-\frac{1}{4}$) (total cost: 3 points). Total cost: 11 points.

MERFOLK

Most of Earth is covered by ocean, and many alien worlds could have no landmasses at all, only oceans. Normal Humans can only venture undersea in submarines or diving suits, but genetic manipulation could create a race of Humans capable of living in water permanently. This Template assumes the merfolk's genetic designers wanted them to have the ability to interact with surface-dwellers, so they can still breathe air and walk on land. In appearance, they are stocky, hairless people with webbed hands and feet, and visible gill slits on the sides of their thick necks. Their eyes are large and sensitive, so they normally use sunglasses or similar protective eyewear on the surface.

MERFOLK TEMPLATE

Cost Ability

- 8 **Water-Breathing:** Life Support
(Expanded Breathing: breathe under-water; Safe Environments: High Pressure, Intense Cold)
- 3 **Webbed Hands And Feet:** Swimming +6m
- 5 **Merfolk Eyes:** Nightvision
- 4 **Adapted To The Water:** Environmental Movement: Aquatic Movement

Total Cost Of Template Abilities: 20

Value Complications

- 20 **Vulnerability:** 2 x Effect from Sight Group
Flashes based on bright light (Common)

Total Value Of Template Complications: 20

MUTANT

Grotesque creatures who prowled the fringes of the desert often wore hoods, masks, or voluminous robes to hide deformity. Among them were those whose deformity was not limited to the body, those who sometimes looked on travelers as a dependable source of venison.

—from *A Canticle For Leibowitz*, by Walter Miller

In real life, most mutants are stillborn, or else go through life with crippling handicaps. In Science Fiction stories (especially the cinematic kind), some people (be they Human or alien) are born with or develop favorable mutations. They may be the children born a generation after an atomic war, the direct victims of that selfsame war (or a similar one involving biological or chemical mutative agents), or the unfortunate inhabitants of a high-radiation planet. Mutants are a particularly common feature of Post-Apocalyptic Science Fiction stories.

Because Science Fiction mutants always seem to be recognizable — either due to their deformities, a distinctive manner of dress, or both — this Template includes a *Distinctive Features* Complication. You can discard the Distinctive Features if you prefer, or replace it with appropriate Physical Complications, Social Complications, and the like.

MUTANT TEMPLATE

Cost Ability

- 10 One mutant ability (see accompanying sidebar)
- 3 Striking Appearance (ugliness), +1/+1d6

Total Cost Of Template Abilities: 13

Value Complications

- 15 **Distinctive Features:** Mutant (Concealable With Effort; Causes Major Reaction [Prejudice])

Total Value Of Template Complications: 15

MUTANT ABILITIES

These mutant powers are all based on realistic biology, usually the effect of an enlarged or duplicated body part. Each is worth 10 Character Points. In a comic book-, pulp, or cinematic-oriented game, more astonishing powers are possible — psionic abilities, Blasts, shapeshifting, and so forth.

Double Heart: +3 CON, +10 END, +2 BODY, +6 STUN

Four Arms: +4 STR and Extra Limbs (2), Inherent (+¼)

Four Eyes: Increased Arc Of Perception (240 Degrees) (Normal Sight) and Nightvision

Giant Brain: +5 INT and Eidetic Memory

Fangs: HKA 1d6; No STR Bonus (-½)

Huge Eyes: Increased Arc Of Perception (240 Degrees) (Sight Group) and Nightvision

Incredible Digestive System: Life Support (Diminished Eating: once per week; Immunity: Alcohol, Phytotoxins; Longevity: ages at half normal rate)

Incredible Immune System: Life Support (Immunity to all diseases and bioagents of character's homeworld)

Thickened Skin: Resistant Protection (3 PD/3 ED) and Life Support (Safe Environment: High Pressure)

PSIONIC

Captain John Sheridan: *So, how did you find out about all this?*
Psi Corps Agent Alfred Bester: *I'm a telepath. Work it out.*

—Agent Bester shows off his abilities in the *Babylon 5* episode “Ship Of Tears”

If psionic abilities exist in a game world, characters who have them are members of a powerful elite. The nature of psi powers is too variable for a single Template; in some game worlds Talents like Danger Sense, Simulate Death, and Universal Translator are psi powers, while in other games you're not a real psionic unless you can wreck cities with a thought. The Psi-Agent Template (page 60) includes one set of Skills and Perks for a working psi; otherwise the GM must determine what powers are available and how many points characters can spend on them.

A character can take this Template together with any Species Template, unless the GM has declared that certain species never possess psychic abilities.

PSIONIC TEMPLATE

Cost Ability

5	+5 EGO
3	+3 INT
30	Psionics: Psionic powers of character's choice (see Chapter Ten for examples)

Total Cost Of Template Abilities: 38

Value Complications

None

Total Value Of Template Complications: 0

SPACER

Have a look at Brennan. He masses one hundred and seventy-eight pounds per one gee, stands six feet two inches tall. Like any Belter, he looks much like an under-muscled basketball player. ... He is forty-five years old. He looks thirty. Gravity has been kind to the muscles of his face[.]

—a brief description of the Belter miner/smuggler, Jack Brennan, in *Protector*, by Larry Niven

Also known as Belters or Freefallers, Spacers are people born and raised in a microgravity environment. For example, Humans raised in the asteroid belt or in orbital space stations without artificial gravity would be Spacers. They may have genetic modifications to help them survive — in particular, bones which don't weaken in low gravity, improved resistance to radiation, immunity to spacesickness, and possibly the ability to use feet more as gripping hands (like those of chimpanzees or orangutans). Spacers tend to be physically weak and very tall. Because they can only visit planets wearing exoskeletons or riding float chairs, Spacers naturally prefer their own artificial environments. In some settings, Spacers may be the norm for certain species, with only a small proportion of “groundlings” or “dirtsiders” living on planets.

SPACER TEMPLATE

Cost Ability

-2	-2 STR
-1	-1 CON
1	Spaceborn: Life Support (Safe Environment: Low Radiation)
6	Feet As Useful As Hands: Extra Limbs (2), Inherent (+¼)
6	Used To Zero Gravity: Environmental Movement: Zero-G Training

Total Cost Of Template Abilities: 10

Value Complications

20	Physical Complication: can only move at half rate in normal gravity (Frequently, Greatly Impairing)
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Total Value Of Template Complications: 15

PROFESSIONAL TEMPLATES



Species Templates reflect a character's genetics, and Environment Templates show how the place he grew up in (or was bio-engineered for) affected him. In many cases a character's background dictates which of these Racial Templates he can select. Professional Templates are different. They represent the training and study people go through to learn a career, and as such usually indicate voluntary choices on a character's part.

The following Templates represent jobs or lifestyles common to Science Fiction stories and settings. Not all Templates are appropriate for all campaigns, and some may need adjustments or additions for specific settings. None of the Templates have the *Galactic Computernet Access Card* Fringe Benefit, since that may not exist in some Star Hero campaigns, but it's an appropriate addition to many of them.

A few of these Templates include a Psychological Complication (such as *Overconfidence* for Pilots). That's because those attitudes or codes are very closely associated with that profession in Science Fiction. However, if it's not appropriate for the character you have in mind, you can easily switch it for another Complication.

Darth Vader: *There will be a substantial reward for the one who finds the Millennium Falcon. You are free to use any methods necessary, but I want them alive. No disintegrations.*

Boba Fett: *As you wish.*

—Darth Vader puts several bounty hunters on Han Solo's trail in *The Empire Strikes Back*

"This bounty hunter is my kind of scum: fearless and inventive."

—Jabba the Hutt admires the daring and resourcefulness of a disguised Princess Leia in *Return Of The Jedi*

BOUNTY HUNTER

Space is full of criminals — and that means bounties, which in turn means bounty hunters. A bounty hunter is a (usually well-equipped) character who specializes in tracking down and capturing fugitives and wanted men for whoever's willing to pay for them. Honorable bounty hunters (such as most PCs) only take jobs from legitimate government authorities; more mercenary ones don't care who they work for as long as the money's good.

2

BOUNTY HUNTER TEMPLATE

Cost Ability

- 2 KS: Open Bounties 11-
- 2 PS: Bounty Hunter 11-
- 3 Shadowing
- 3 Stealth
- 3 Streetwise
- 2 TF (2 points' worth)
- 2 Weaponsmith (one category)
- 4 WF (4 points' worth)
- 12 **12 points' worth of Skills from the following list:** Breakfall, Bureaucratics, Combat Driving, Combat Piloting, Computer Programming, Demolitions, Electronics, Mechanics, Paramedics, Security Systems, Survival, Systems Operation, Tactics, Weaponsmith, any Background Skill

Total Cost Of Template Abilities: 33

Value Complications

None

Total Value Of Template Complications: 0

“The frontier is big and here along the rim the colonies and exploration parties are scattered so thin and far between. On Woden, for example, there are only sixteen men — sixteen men on an entire world. The exploration parties, the survey crews, the little first-colonies — they’re all fighting alien environments, trying to make a way for those who will follow after. The environments fight back and those who go first usually make mistakes only once. There is no margin of safety along the rim of the frontier; there can’t be until the way is made for the others who will come later, until the new worlds are tamed and settled. Until then men will have to pay the penalty for making mistakes with no one to help them because there is no one to help them.”

—EDS pilot Barton explains to a young girl why she’s going to have to die for stowing away in “The Cold Equations,” by Tom Godwin

2

COLONIST TEMPLATES

PLANETSIDER COLONIST

Cost Ability

- 2 Animal Handler (choose group)
- 2 AK: colony’s region 11-
- 3 Mechanics
- 2 PS: Farming or Hydroponic Farming or Mining (player’s choice) 11-
- 2 Survival (choose environment)
- 2 TF (2 points’ worth)
- 2 WF (2 points’ worth)

Total Cost Of Template Abilities: 15

Value Complications

None

Total Value Of Template Complications: 0

ASTEROID OR SPACE STATION COLONIST

Cost Ability

- 2 AK: colony’s region 11-
- 3 Electronics or Mechanics
- 2 PS: Hydroponic Farming or Mining (player’s choice) 11-
- 2 TF (2 points’ worth)
- 2 WF (2 points’ worth)
- 6 Environmental Movement: Zero-G Training

Total Cost Of Template Abilities: 17

Value Complications

None

Total Value Of Template Complications: 0

COLONIST

Also known as Pioneers, *Colonists* are characters who venture out into the unknown regions of space to learn what’s there and settle new planets. A bold new life may await them... or a life where danger stalks them every minute of every day.

Characters who journey into space to settle distant worlds come from a variety of backgrounds. Some leave home because they’re hoping for a better life, others are searching for political or religious freedom. A few are on the run. The only thing they have in common is the determination to stick it out in a hostile environment. Colonists on habitable planets learn farming or mining; those living in space or on hostile worlds learn hydroponics. For more heroic Colonist PCs, the *Jack Of All Trades* Skill Enhancer is very useful.

DIPLOMAT

Captain Spock: *Last month, at the behest of the Vulcan ambassador, I opened a dialogue with Gorkon, Klingon chancellor of the High Council. He proposes to begin negotiations at once.*

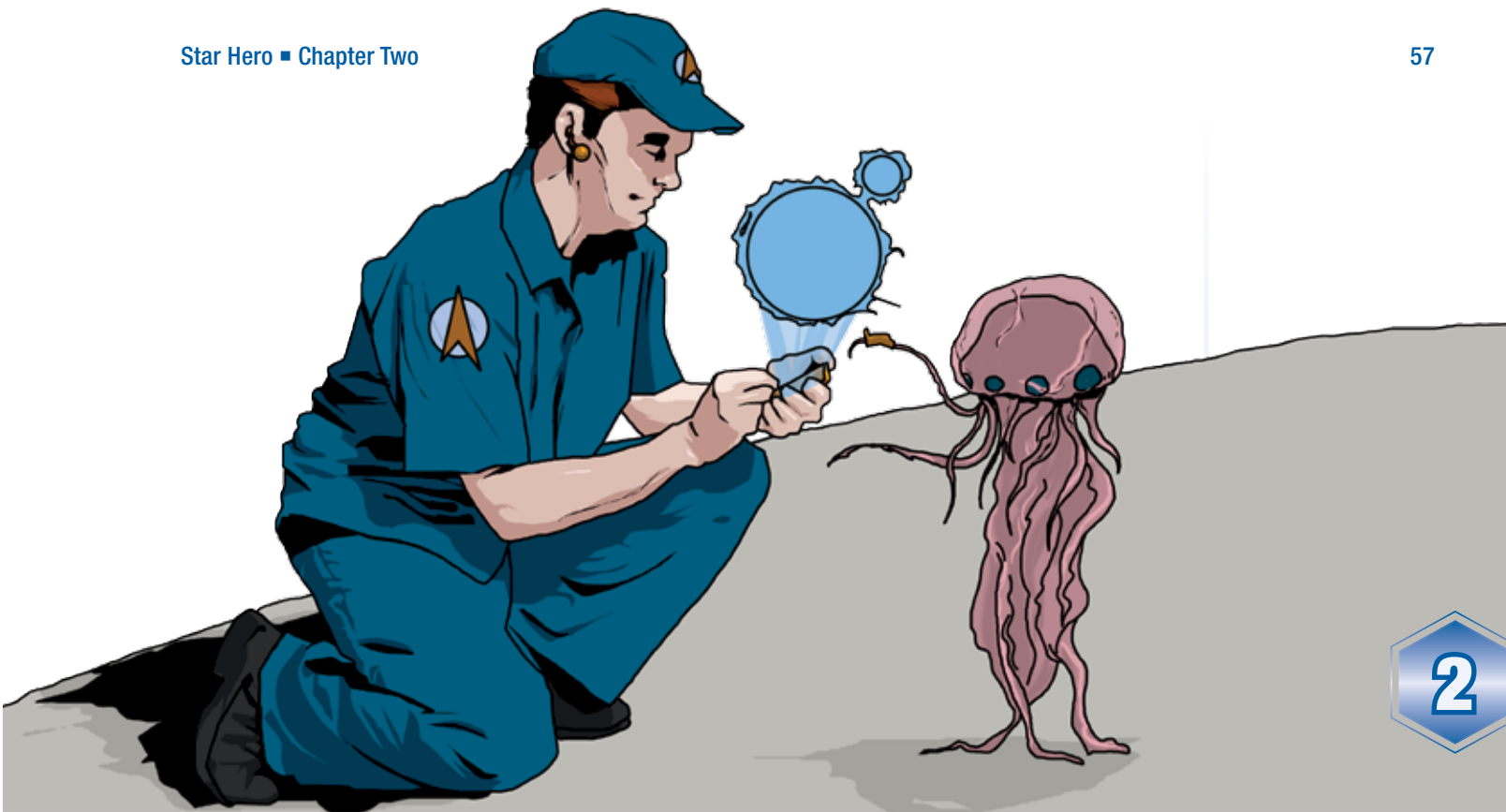
Admiral Cartwright: *Negotiations for what?*
Captain Spock: *The dismantling of our star-bases and outposts along the Neutral Zone — an end to nearly 70 years of unremitting hostility which the Klingons can no longer afford.*

—Spock assumes the role of diplomat in *Star Trek VI: The Undiscovered Country*

On twenty-first century Earth, diplomats are mostly mid-level bureaucrats doing the detail work of policies set by government leaders. In a future world of interstellar travel, they may become more important as communication lags make it impossible for national leaders to simply pick up the phone during a crisis. In that case a diplomat may find himself making policy on the fly, hoping his decisions meet with his superiors’ approval down the line.

Diplomats assigned to make contact with alien species must be able to adapt to strange ways of thinking and communicating. Moreover, intelligence-gathering and occasional discreet espionage have always been part of diplomacy, and that will likely continue in the future.

This Template assumes a diplomat with a fair amount of autonomy and responsibility. It does not include the *Universal Translator* Talent (either naturally or built into a Focus); if that exists in the campaign, most diplomats will have it. Other useful improvements include the *Traveler* and *Well-Connected* Skill Enhancers, *Money*, *Followers*, and lots of *Contacts*. The *Diplomatic Immunity* Fringe Benefit means the character’s host planet cannot prosecute him for ordinary crimes (although anything beyond a misdemeanor will certainly get him sent home). By replacing *Diplomatic Immunity* with some appropriate Skills, you can also use this Template for other types of politicians.



DIPLOMAT TEMPLATE

Cost Ability

- 3 Conversation
- 3 High Society
- 3 KS: Political Science (INT Roll)
- 2 Language (player's choice; fluent conversation)
- 3 Persuasion
- 11 Contacts (11 points' worth of player's choice)
- 5 Fringe Benefit: Diplomatic Immunity

Total Cost Of Template Abilities: 30

Value Complications

- 10 **Hunted:** host government (Infrequently, Mo Pow, NCI, Watched)
- 20 **Social Complication:** Subject To Orders (Very Frequently, Major)

Total Value Of Template Complications: 30

"I'm a doctor, not...

...a bricklayer." ("The Devil In The Dark")

...a coal miner." ("The Empath")

...an engineer." ("City On The Edge Of Forever")

...an escalator." ("Friday's Child")

—one of Dr. Leonard "Bones" McCoy's signature lines in *Star Trek*

DOCTOR

Futuristic medicine can work miracles, but only if there's someone handy to provide treatment. This Template can represent a starship's medical officer, a Cyberpunk "black clinic" operator, or the self-taught general practitioner on a colony planet. The Hippocratic Oath requires doctors to treat any patient (even an enemy), and forbids them to use their skills to cause harm.

If you want to expand this Template, consider adding Contacts (particularly appropriate for a practicing physician with access to the local hospitals and medical community), Cramming (essential for getting through medical school!), Money, and perhaps some Favors from grateful former patients.

DOCTOR TEMPLATE

Cost Ability

- 3 Deduction
- 3 Paramedics
- 3 PS: Doctor (INT Roll)
- 3 SS: Biology (INT Roll)
- 3 SS: Chemistry (INT Roll)
- 3 SS: Medicine (INT Roll)
- 3 SS: Surgery (INT Roll)
- 3 SS: Xenobiology (INT Roll)
- 1 Fringe Benefit: License To Practice Medicine

Total Cost Of Template Abilities: 25

Value Complications

- 20 **Psychological Complication:** Hippocratic Oath (Common, Total)

Total Value Of Template Complications: 20

ENGINEER

Lt. Commander Montgomery “Scotty”

Scott: Do you mind a little advice? Starfleet captains are like children. They want everything right now and they want it their way. But the secret is to give them only what they need, not what they want.

Lt. Commander Geordi La Forge: Yeah, well, I told the Captain I'd have this analysis done in an hour.

Scotty: How long will it really take?

La Forge: An hour!

Scotty: Oh, you didn't tell him how long it would really take, did ya?

La Forge: Well, of course I did.

Scotty: Oh, laddie. You've got a lot to learn if you want people to think of you as a miracle worker.

—Scotty reveals one of the secrets of being a great engineer in the *Star Trek: The Next Generation* episode “Relics”

Engineers are responsible for various scientific and technical tasks on starships, space stations, colonies, and the like. In some settings they're similar to Techs (see below), though they're more likely to have received formal training or work for an organization such as a space navy. They keep the ship in good repair, help upgrade the weapons to fight off an otherwise unbeatable foe, and bring their analytical skills to bear on many problems.

ENGINEER TEMPLATE**Cost Ability**

- 3 Computer Programming
- 3 Electronics
- 3 Inventor
- 2 AK (region of player's choice) 11-
- 1 KS: Regulations 8-
- 3 Mechanics
- 6 Any three SSs at 11- each
- 3 Systems Operation (3 points' worth)
- 2 WF (2 points' worth)
- 6 **6 points' worth of Skills from the following list:** Bureaucratics, Combat Piloting, Paramedics, Persuasion, Stealth, Survival, any Background Skill

Total Cost Of Template Abilities: 32

Value Complications

None

Total Value Of Template Complications: 0

EXPLORER

The scouts aboard the Explorator IV were Adam Reith and Paul Waunder. Both were men of resource and stamina; each was a master of many skills[.]

—Reith and Waunder prepare to explore the planet Tschai in *City Of The Chasch*, by Jack Vance

Explorers survey new worlds and make contact with alien civilizations. They may work for some agency like NASA or the Interstellar Scout Service, or they may be freelancers driven by wanderlust and the hope of finding a valuable world and striking it rich. Explorers are optimized for planetary-surface work; scouts who never leave their spaceships are best modeled with the Pilot Template, below. Player Character Explorers may want the *Jack Of All Trades* or *Traveler Skill Enhancers*. The *Universal Translator* Talent is extremely useful for Explorers, if it exists in the setting.

EXPLORER TEMPLATE**Cost Ability**

- 4 Any two AKs at 11- each
- 3 Navigation (Land, Space)
- 4 Any two SSs at 11- each
- 4 Survival (4 points' worth)
- 4 TF (4 points' worth)
- 2 WF (2 points' worth)
- 9 **9 points' worth of Skills from the following list:** Breakfall, Climbing, Electronics, Gambling, Inventor, Paramedics, Riding, Shadowing, Stealth, Systems Operation, Tracking, any Background Skill

Total Cost Of Template Abilities: 30

Value Complications

- 5 **Rivalry:** Professional (other explorers)

Total Value Of Template Complications: 5

LAW ENFORCEMENT AGENT

Commander Susan Ivanova: You're a vicious man.

Chief of Security Michael Garibaldi: I'm Head of Security. It's in the job description.

—from the *Babylon 5* episode “The War Prayer”

From the cop on the beat in cyberspace, to the incorruptible Space Patrolman, to the hard-bitten security officer on a bustling space station, lawmen are a staple in Science Fiction. They can be upright representatives of order and civilization, or the street-level enforcers of tyranny. Whatever the setting, law enforcers have authority and know how to use it.

This Template assumes a uniformed officer empowered to carry weapons and arrest people on a given world; for authority throughout a region of space, upgrade the Fringe Benefit to Interstellar Police Powers. (On the other hand, authority over just one starship or space station may not require a Fringe Benefit at all — it depends on the extent of the character’s jurisdiction.) For plainclothes officers or private detectives, drop the Distinctive Feature. Private investigators downgrade Police Powers to a 2-point Private Investigator’s License, but also don’t have the *Subject To Orders* Social Complication.

LAW ENFORCEMENT AGENT TEMPLATE

Cost Ability

- 3 Criminology
- 2 KS: Criminal Law 11-
- 2 PS: Law Enforcement Agent 11-
- 2 WF (2 points’ worth)
- 9 **9 points’ worth of Skills from the following list:** Bugging, Computer Programming, Deduction, Forensic Medicine, Interrogation, Lockpicking, Paramedics, Security Systems, Stealth, Streetwise, Systems Operation, any Background Skill
- 10 Contacts (10 points’ worth; player’s choice)
- 5 Fringe Benefit: Planetary Police Powers

Total Cost Of Template Abilities: 33

Value Complications

- 5 **Distinctive Features:** Uniform (Easily Concealed; Noticed And Recognizable)
- 20 **Social Complication:** Subject To Orders (Very Frequently, Major)

Total Value Of Template Complications: 25

PILOT

“He was the best star pilot in the Galaxy, and a cunning warrior. I understand that you’ve become quite a good pilot yourself.”

—Obi-Wan Kenobi tells Luke Skywalker a little bit about his father in *Star Wars*

Pilots fly spacecraft, be they orbital shuttles, space fighters, interstellar merchant vessels, scout ships, or galactic dreadnoughts. They tend to have fast reflexes, good vision, and in Hard Science Fiction settings an intuitive grasp of Newtonian physics. Pilots in fiction traditionally have a healthy ego and a willingness to test the design limits of their spacecraft with risky maneuvers, hence the *Overconfidence* Psychological Complication. You can replace this with *Thrillseeker* instead, or with a suitable Rivalry, Hunted, or DNPC.



PILOT TEMPLATE

Cost Ability

- 3 Combat Piloting
- 2 Navigation (Space)
- 2 SS: Astronomy 11-
- 2 TF: Science Fiction & Space Vehicles
- 9 **9 points’ worth of Skills from the following list:** Computer Programming, Electronics, Mechanics, Paramedics, Stealth, Systems Operation, any Background Skill
- 6 Environmental Movement: Zero-G Training

Total Cost Of Template Abilities: 24

Value Complications

- 15 **Psychological Complication:** Overconfidence (Common, Strong)

Total Value Of Template Complications: 15



PSI-AGENT

Psi Corps Agent Alfred Bester: *I'm in pursuit of an individual who's a danger to your station, Earth, and the Psi Corps.*

Commander Susan Ivanova: *Well, that's two legitimate things to worry about. ...*

Bester: *My blood is the same color as yours, and what I do, I do to protect Earth, same as you. You don't like how I do it, that's your prerogative. But there are things going on out there that you know nothing about.*

Threats to the human race that no one ever hears about... because we stop them. There's dangers all around us! And whether you like us or not, we may be all that stands between you and the abyss.

—from the *Babylon 5* episode “Dust To Dust”

Psi-Agents are law enforcement or espionage specialists with psionic powers. In tyrannical societies, they use their mental powers to seek out rebellion and dissent. In more open cultures, Psi-Agents specialize in solving crimes committed by psionics, tracking psionic bad guys, and assisting ordinary law enforcement officers with “unsolvable” crimes. Unless society is very tolerant of those with psi powers, the combination of public fear and their admittedly formidable powers gives Psi-Agents a frightening reputation. To prevent them from misusing their abilities, Psi-Agents are closely watched, both by the “mundane” authorities and other Psi-Agents.

PSI-AGENT TEMPLATE

Cost Ability

- 40 Psionic powers (as appropriate; must be approved by GM)
- 3 Analyze Psionics
- 2 KS: The Psionic World 11-
- 3 Power Skill (player's choice)
- 2 SS: Psionics 11-
- 2 WF (2 points' worth)
- 6 **6 points' worth of Skills from the following list:** Bugging, Computer Programming, Criminology, Deduction, Forensic Medicine, Interrogation, Lockpicking, Paramedics, Security Systems, Stealth, Streetwise, Systems Operation, any Background Skill
- 5 Contacts (player's choice)
- 8 Fringe Benefit: Interstellar Police Powers
- 3 Fringe Benefit: Psionic Police Powers

Total Cost Of Template Abilities: 74

Value Complications

- 5 **Distinctive Features:** Uniform (Easily Concealed; Noticed And Recognizable)
- 10 **Hunted:** local authorities (Infrequently, Mo Pow, NCI, Watching)
- 20 **Social Complication:** Subject To Orders (Very Frequently, Major)

Total Value Of Template Complications: 35

ROGUE

“When I was security chief for X-Tel, we got flyers on this guy: Der Rock the Destroyer, the most successful thief, the most dangerous assassin in Humanspace, maybe in the entire Gallimaufry! He's wanted on dozens of worlds but has never been captured.”

—Buck describes one of the most dangerous rogues in existence in *Buck Godot: PSmith*, by Phil Foglio

It's hard to make a living. Why not let other people do the work, then live off them? That's how rogues manage: swindling, stealing, and smuggling their way to success. The most honest rogues are merchants who just happen to deal in things forbidden by local laws. The worst are simply predators, willing to kill for hire. A Rogue's exact nature depends on the campaign style and tone. A swashbuckling Space Opera can have colorful space pirates and gamblers (many with hearts of gold, of course). A Cyberpunk game might have “heroes” who really are cynical professional thieves and assassins. Hard Science Fiction runs to slightly shady “entrepreneurs” and smugglers evading oppressive bureaucracy. This Template assumes a rogue whose shady nature is known to, or at least suspected by, the local authorities, but who hasn't been caught — yet.

ROGUE TEMPLATE

Cost Ability

- 7 Streetwise (PRE +2)
- 2 WF (2 points' worth)
- 15 **15 points' worth of Skills from the following list:** Acrobatics, Breakfall, Bribery, Charm, Climbing, Computer Programming, Combat Piloting, Conversation, Forgery, Gambling, High Society, Lockpicking, Persuasion, Security Systems, Sleight Of Hand, Stealth, Trading, any Background Skill
- 8 Contacts (8 points' worth; player's choice)

Total Cost Of Template Abilities: 32

Value Complications

- 10 **Hunted:** local authorities (Infrequently, Mo Pow, NCI, Watched)
- 10 **Negative Reputation:** rogue (Frequently)

Total Value Of Template Complications: 20

SCIENTIST

"I understand, Dr. King — you were compelled by the 'truth-topism' of the scientist. He must go where the data is to be found, even if it kills him."

—Dr. Lentz explains the driving nature of the scientist in "Blowups Happen," by Robert Heinlein

It is called *Science Fiction*, after all. Scientists are often characters in Science Fiction stories, especially in Hard Science Fiction and stories of exploration. In Cyberpunk Science Fiction, scientists are apt to be NPC researchers in thrall to some megacorporation (thus perhaps making them targets for "extraction" by the PCs). In Space Opera, they're often white-coated supergeniuses, capable of whipping up a weapon to stop an intergalactic menace (with a little help from their beautiful daughters). In Military Science Fiction, they may be shipboard engineers, weapon designers, or analysts. Despite their reputation as ivory-tower eccentrics, many are pretty capable and well-rounded individuals.

SCIENTIST TEMPLATE

Cost Ability

- 3 Computer Programming
- 3 Deduction
- 4 Any two KSs at 11- each
- 6 Any two SSs (INT Roll each)
- 4 Any two SSs at 11- each
- 6 **6 points' worth of Skills from the following list:** Electronics, Inventor, Mechanics, Security Systems, Systems Operation, Weaponsmith, any Background Skill
- 6 Contacts (6 points' worth; player's choice)

Total Cost Of Template Abilities: 32

Value Complications

- 15 **Psychological Complication:** Curiosity (Common, Strong)
- 5 **Rivalry:** Professional (another scientist)

Total Value Of Template Complications: 20

*"I'm ready, man. Check it out! I am the **ultimate bad-ass!** State of the bad-ass art! ... Hey, Ripley, don't worry. Me and my squad of ultimate bad-asses will protect you! Check it out. Independently targeting particle-beam phalanx. WHAP! Fry half a city with this puppy. We got tactical smart missiles, phase plasma pulse rifles, RPGs. We got sonic, electronic **ball breakers!** We got nukes, we got knives, we got sharp sticks."*

—Private Hudson sets himself up for a looooonng fall in *Aliens*

SOLDIER

Humans have been waging war for all of recorded history, and there's no reason to expect they'll stop in the future — or that other sentient species aren't equally warlike. Soldiers in Science Fiction include battlesuited Space Marines attacking enemy planets from orbit, tough mercenaries ready to fight anything anywhere, post-apocalyptic warlords, and bioengineered super-troopers. Tactics and technical skills are as important as weapon training.

If necessary, you can easily customize this Template by altering or adding Skills to represent specialized types of soldiers (space marine, tele-artillery officer, mechanized infantryman, and so forth). With a few additions (such as Combat Luck, Combat Sense, Danger Sense, or Mental Powers) you can create "super-soldiers" or "psi-warriors." You can also add some appropriate Complications — conscripts may only feel loyalty to their unit, professionals are responsible to the service or the state, and mercenaries obey whoever signs the paycheck.



SOLDIER TEMPLATE

Cost Ability

- 5 +5 STR
- 8 +4 DEX
- 5 +5 CON
- 10 +2 OCV
- 10 +2 DCV
- 10 +1 SPD
- 2 PS: Soldier 11-
- 3 Tactics
- 1 TF (player's choice)
- 2 Weaponsmith (one category)
- 6 WF (6 points' worth)

- 15 **15 points' worth of Skills from the following list:** Breakfall, Bureaucrats, Combat Driving, Combat Piloting, Computer Programming, Demolitions, Electronics, Mechanics, Paramedics, Security Systems, Stealth, Survival, Systems Operation, any Background Skill

Total Cost Of Template Abilities: 77

Value Complications

- 5 **Distinctive Features:** Uniform (Easily Concealed; Noticed And Recognizable)
- 20 **Social Complication:** Subject To Orders (Very Frequently, Major)

Total Value Of Template Complications: 25

Cost Option

- var **Officer:** Buy Fringe Benefit: Military Rank at an appropriate level
- **Soldier With A Technical Education:** Include Computer Programming, Electronics, Systems Operation, and at least one SS in your Skill choices
- +60 **Bio-Engineered Super-Trooper:** Add +5 STR, +4 DEX, +3 CON, +2 OCV, +2 DCV, +1 SPD, +20 END, +5 BODY, +10 STUN
- +53 **Psychic Warrior:** Add +5 INT, +8 EGO, 40 points' worth of psionic powers (see Chapter Ten for examples)

SPY TEMPLATE

Cost Ability

- 3 Computer Programming
- 3 Conversation
- 3 Systems Operation (3 points' worth)
- 2 TF (2 points' worth)
- 2 WF (2 points' worth)
- 15 **15 points' worth of Skills from the following list:** Bugging, Bureaucratics, Charm, Climbing, Combat Driving, Combat Piloting, Deduction, Demolitions, Electronics, Forgery, Gambling, High Society, Lockpicking, Persuasion, Security Systems, Stealth, Survival, any Background Skill
- 10 Contacts (10 points' worth; player's choice)

Total Cost Of Template Abilities: 38

Value Complications

- 20 **Social Complication:** Subject To Orders (Very Frequently, Major)

Total Value Of Template Complications: 20

STARSHIP OFFICER TEMPLATE

Cost Ability

- 2 AK (region of player's choice) 11-
- 2 KS: Regulations 11-
- 2 PS: Starship Officer 11-
- 2 TF: Science Fiction & Space Vehicles
- 2 WF (2 points' worth)
- 20 **20 points' worth of Skills from the following list:** Bureaucratics, Combat Piloting, Computer Programming, Electronics, High Society, Mechanics, Navigation, Paramedics, Persuasion, Stealth, Survival, Systems Operation, any Background Skill
- 4 Fringe Benefit: Military Rank (Ensign)

Total Cost Of Template Abilities: 34

Value Complications

- 5 **Distinctive Features:** Uniform (Easily Concealed; Noticed And Recognizable)
- 20 **Social Complication:** Subject To Orders (Very Frequently, Major)

Total Value Of Template Complications: 25

Cost Option

- +1 **Lieutenant:** Increase Fringe Benefit to Military Rank (Lieutenant)
- +3 **Commander:** Increase Fringe Benefit to Military Rank (Commander)
- +4 **Captain:** Increase Fringe Benefit to Military Rank (Captain)

SPY

"Suppose I volunteer, what follows?"

"We'll send you to a school. It runs a special course that is fast and tough and take six to eight weeks. You'll be crammed to the gills with everything likely to be useful to you: weapons, explosives, sabotage, propaganda, psychological warfare, map reading, compass reading, camouflage, judo, radio techniques and maybe a dozen other subjects. By the time they've finished with you, you'll be fully qualified to function as a complete and absolute pain-in-the-neck."

"And after that?"

"You will be dropped surreptitiously upon a Sirian-held planet and be left to make yourself as awkward as possible."

—James Mowry is recruited to become a spy/saboteur for Earth in *Wasp*, by Eric Frank Russell

From the shapeshifting saboteurs and wily Romulan espionage agents of *Star Trek: Deep Space Nine* to Robert Heinlein's "courier" Friday, spies are a staple of many Science Fiction settings. Smart, competent, ruthless, and well-equipped, they're often far more dangerous than a squad of soldiers.

STARSHIP OFFICER

Commander William T. Riker: *Why don't we just give everybody a promotion and call it a night... "Commander"?*

Counselor Deanna Troi: *Fine with me, "Captain".*

—Riker and Troi discuss crew evaluations on the *Star Trek: The Next Generation* episode "Lower Decks"

Large, spacefaring navies and exploratory institutions are found in many Science Fiction settings. Any such organization needs officers to crew its starships and keep them safe in the face of the many dangers the universe holds.

Officers range from the captain, who usually has absolute authority over the crew and the ship, to junior officers responsible for the day-to-day operation of various departments. Since ships often spend months or years away from their home bases, officers shoulder a heavy burden — they have to keep morale up and efficiency high, protect the crew, and perform many other duties. Many officers, particularly high-ranking ones, feel responsible for the safety and well-being of their crews. You can simulate this with various Psychological Complications, or even by taking the non-PC crewmembers as DNPCs (assuming it's not too large a crew).

This Template represents the “typical” Skills and abilities possessed by an average starship officer of low rank (“Ensign,” in this case, though you should rename it to suit your campaign if necessary; the options provide costs for higher ranks). It’s meant to be taken in conjunction with another Template that defines the character’s primary training and duties. For example, a Starship Engineer takes the Engineer and Starship Officer Templates; a Starship Security Officer takes Starship Officer and either Law Enforcement Agent or Tactician (or perhaps both!).

TACTICIAN

A tactician is a type of character found in many types of Military Science Fiction, and in Space Opera focused on large (quasi-)military organizations. He’s an officer in charge of tactical and strategic matters. He may be a gunner assigned to a specific weapon, a planner who plots a ship’s (or navy’s) maneuvers during a battle, or the like. He may also function as a security or law enforcement operative.

TACTICIAN TEMPLATE

Cost Ability

- 3 Computer Programming
- 2 AK (region of player’s choice) 11-
- 3 Systems Operation (3 points’ worth)
- 7 Tactics (INT +2)
- 4 WF: Small Arms, plus 2 more points’ worth
- 2 Weaponsmith (choose category)
- 9 **9 points’ worth of Skills from the following list:** Bureaucratics, Combat Driving, Combat Piloting, Paramedics, Persuasion, Security Systems, Shadowing, Stealth, Streetwise, Survival, Teamwork, any Background Skill

Total Cost Of Template Abilities: 30

Value Complications

- 5 **Distinctive Features:** Uniform (Easily Concealed; Noticed And Recognizable)
- 20 **Social Complication:** Subject To Orders (Very Frequently, Major)

Total Value Of Template Complications: 25

TECH

Kaylee Frye: *Catalyzer on the port compression coil blew. It’s where the trouble started.*

Captain Malcolm Reynolds: *‘Kay, I need that in captain dummy-talk, Kaylee.*

Kaylee: *We’re dead in the water.*

—Kaylee has some bad news for the crew of the *Serenity* in the *Firefly* episode “Out Of Gas”

As technology becomes more important, so do the people who are able to keep it running. A character who knows how to keep devices functioning and can perhaps build new ones when necessary may be the most important person on a starship. And how would Cyberpunk’s street samurai or cyberspace cowboys do their cool stuff without someone to keep their cyberware and computers working? This Template represents an ordinary skilled mechanic or technician, capable of maintaining systems, constructing things from existing designs, or even creating his own inventions.

Both in the real world and Science Fiction, technicians are often better with machinery than people. You can represent this by adding an appropriate Psychological Complication.

TECH TEMPLATE

Cost Ability

- 4 Any two SSs at 11- each
- 25 **25 points’ worth of Skills from the following list:** Bugging, Computer Programming, Deduction, Demolitions, Electronics, Inventor, Lockpicking, Mechanics, Security Systems, Systems Operation, Weaponsmith, any Background Skill

Total Cost Of Template Abilities: 29

Value Complications

None

Total Value Of Template Complications: 0



TRADER

“The riskier the road, the greater the profit.”

—Pel states the Sixty-Second Rule of Acquisition to Quark in the *Star Trek: Deep Space Nine* episode “Rules Of Acquisition”

Omnipotent beings with godlike powers, or advanced societies with access to replicator technology, can make whatever they want simply by wishing for it. Everyone else has to buy things from a trader or a merchant. Wherever somebody has something and wants something else, someone can make a profit on the deal. A reliable trope of Science Fiction is the daring interstellar trader, seeking out new life and market opportunities. On a backwater planet or among the blasted ruins of a post-apocalyptic future, the trader in his battered truck may be the only thing keeping civilization alive. On a space station, the trader may set up shop and become a more sedentary merchant. Even in cyberspace there are traders, brokering secrets and vital data.

Improvements for more powerful trader characters include the *Lightning Calculator* Talent, a few points in Money, and the *Traveler* or *Well-Connected* Skill Enhancers.

TRADER TEMPLATE

Cost Ability

- 3 Bureaucratics
- 3 High Society or Streetwise
- 2 AK: trading area 11-
- 7 Trading +2
- 2 TF (2 points' worth)
- 9 **9 points' worth of Skills from the following list:** Charm, Combat Piloting, Conversation, Electronics, High Society, Mechanics, Oratory, Paramedics, Persuasion, Security Systems, Stealth, Streetwise, Survival, any Background Skill
- 8 Contacts (8 points' worth; player's choice)

Total Cost Of Template Abilities: 34

Value Complications

- 10 **Psychological Complication:** Always Has His Eye On The Bottom Line (Common, Moderate)
 - 5 **Rivalry:** Professional (with competitor[s])
- Total Value Of Template Complications: 15**

Cost Option

- var **A Little Shop Of My Own:** character also buys a Base

CHARACTER CREATION ELEMENTS

Mal: Well, look at this! Appears we got here just in the nick of time. What does that make us?

Zoe: Big damn heroes, sir.

—Malcolm Reynolds and Zoe Washburne banter while rescuing some of their friends in the *Firefly* episode “Safe”

The *HERO System* character creation rules are tremendously broad and flexible. Here are some suggestions, re-interpretations, and “tweaks” to make them more appropriate or useful for Star Hero games.

CHARACTERISTICS

The Characteristics are the same in any setting, but some of them become more important in Star Hero campaigns.

STRENGTH

“The whole thing hardly weighs ten tons.”

—Robbie the Robot effortlessly lifts a stack of heavy lead sheets in *Forbidden Planet*

With machinery to do the heavy work, physical strength is generally less important in most Science Fiction settings than in many other genres. An old cliché of Science Fiction is the people of the future with huge heads and puny bodies. As noted in the *Heavyworlder* and *Lightworlder* Environment Templates (see pages 51-52), a character’s Strength may vary with his home gravity. The relation isn’t direct, because even in free fall a person still needs some strength.

Gravity affects both how much a character can lift and how far he can throw things. See pages 308-09 for more information.

DEXTERITY

Some Science Fiction characters, particularly spacers who are used to working in cramped but delicate environments, have high manual deftness, but their reflexes aren’t necessarily any faster than other peoples’. You can simulate this by buying DEX with the Limitation *Only For DEX Rolls* (-1). DEX with that Limitation increases DEX Rolls and Agility Skill rolls, but doesn’t affect a character’s initiative in combat.

CONSTITUTION

The effects of spending long periods in different gravity are poorly understood, but it appears that both low and high gravity environments might reduce a Human’s fitness. (Presumably alien species would suffer similar effects when away from their normal gravity.) Gamemasters in Hard Science Fiction campaigns may wish to include a CON penalty in Templates for characters and species native to zero gravity or anything over 1.5 G.

SPEED

Cyberpunk computer hackers or space pilots who fly their ships through direct brain links may wish to purchase extra SPD with Limitations such as *Only In Cyberspace* (-1) or *Only For Flying Vehicles* (-1). See APG 13 for rules about Limited SPD.

SKILLS

Given the breadth of the Science Fiction genre, any of the Skills in the *HERO System* could come into play at some point. Here are a few notes on special applications for various Skills. You can find detailed discussion of all the Skills, including information on how they function in the Science Fiction genre, in *HERO System Skills*. (In particular, the expanded rules for technological Skills such as Computer Programming, Electronics, Inventor, and Systems Operation are useful for many Star Hero campaigns.) That information is not reprinted here; anything you read below is in addition to what you’ll find in HSS.

For information on Skill Roll penalties for dealing with alien or obsolete technologies, see HSS 39 or APG 30.

GRAVITY PENALTIES

Skills involving physical motion, such as Acrobatics, Breakfall, or any technology-manipulation Skill, may suffer penalties due to higher or lower gravity. The *HERO System* rules assume a character grew up, as Humans tend to, in an environment of about 1.0 G. If a character was trained in a different environment, he may suffer different penalties — for example, a heavyworlder is fine in 1.5 G, but might suffer low-gravity penalties at 1.3 G, when most characters would experience high-gravity penalties instead. Characters trying to perform tasks in high-G may have to make STR Versus STR Rolls to move (page 305); those in either type of environment may suffer Skill Roll penalties of -1 to -2 to reflect their unfamiliarity with the environment.

Characters can buy various forms of the *Environmental Movement* Talent to eliminate different types of gravity penalties; see page 71.

2

EVERYMAN SKILLS

Different Science Fiction settings have different Everyman Skill sets. Listed below are suggested Skill sets for various types of Star Hero campaigns.

CYBERPUNK

- Acting
- Climbing
- Computer Programming
- Concealment
- Conversation
- Deduction
- Native Language (4 points' worth; includes literacy)
- Paramedics
- Persuasion
- One PS at 11- (job, hobby, or other area of interest)
- Shadowing
- Stealth
- TF: Small Motorized Ground Vehicles
- AK: Home City *or* Cyberspace

HARD SCIENCE FICTION

- Acting
- Climbing
- Computer Programming
- Concealment
- Conversation
- Deduction
- Native Language (4 points' worth; includes literacy)
- Paramedics
- Persuasion
- One PS at 11- (job, hobby, or other area of interest)
- Shadowing
- Stealth
- TF: Small Motorized Ground Vehicles *or* Hovercraft *or* Personal-Use Spacecraft
- AK: Home Planet

LOW SCIENCE FICTION

- Acting
- Climbing
- Computer Programming
- Concealment
- Conversation
- Deduction
- Native Language (4 points' worth; includes literacy)
- Paramedics
- Persuasion
- One PS at 11- (job, hobby, or other area of interest)
- Shadowing
- Stealth
- TF: Small Motorized Ground Vehicles
- AK: Home Planet

MILITARY SCIENCE FICTION

- Acting
- Climbing
- Computer Programming
- Concealment
- Conversation
- Deduction
- Native Language (4 points' worth; includes literacy)
- Paramedics
- Persuasion
- One PS at 11- (job, hobby, or other area of interest)
- Shadowing
- Stealth
- TF: Small Motorized Ground Vehicles *or* Hovercraft *or* Personal-Use Spacecraft
- AK: Home Planet

POST-APOCALYPTIC SCIENCE FICTION

- Acting
- Climbing
- Concealment
- Conversation
- Deduction
- Native Language (4 points' worth; no literacy)
- Paramedics
- Persuasion
- One PS at 11- (job, hobby, or other area of interest)
- Shadowing
- Stealth
- Survival (choose one 1-point environment subcategory)
- TF: Small Motorized Ground Vehicles *or* Riding Animals (choose one 1-point subcategory)
- AK: Home City *or* Region

SPACE OPERA

- Acting
- Climbing
- Computer Programming
- Concealment
- Conversation
- Deduction
- Native Language (4 points' worth; includes literacy)
- Paramedics
- Persuasion
- One PS at 11- (job, hobby, or other area of interest)
- Shadowing
- Stealth
- TF: Hovercraft *or* Personal-Use Spacecraft
- AK: Home Planet, Star System, *or* Sector

BACKGROUND SKILLS

Star Hero characters often buy KSs, PSs, and SSs with the prefixes “xeno-“ or “exo-,” such as SS: Exobiology, SS: Xenoarchaeology, or KS: Xeno-Art History. Both prefixes mean “foreign” or “alien,” and refer to a character’s knowledge of the subject in question as it pertains to species other than his own. A Human with SS: Exobiology might know a lot about Denebian biology, whereas a Denebian with the same Skill would know about Human biology instead.

In a setting featuring few alien species, a Xeno/Exo Background Skill is easier to use, because there’s less to know, and therefore the Skill Roll penalties are likely to be smaller. In settings featuring dozens, hundreds, or even thousands of alien species, a general Xeno/Exo knowledge may not help the character much — he’d be better off buying Background Skills relating to particular species he knows about.

Technically, a Xeno/Exo Skill provides a character with knowledge of the subject as it pertains to *any* species besides his own. However, this may entail some hefty penalties; GMs can adapt the expanded rules for KSs (HSS 209) if necessary. For better results and/or greater realism, characters should buy Background Skills by species.

ANALYZE

Psionic characters with *Analyze Psionics* can determine another psionic’s abilities with a Skill Roll, per the normal rules for the Skill. Technicians and scientists who study alien technology may also learn *Analyze Alien Tech*. Astrobiologists or xenologists who study lots of different alien beings with weird powers can learn *Analyze Alien Powers* — a tremendous help when dealing with unknown creatures and strange abilities.

DEMOLITIONS

Improvements in technology make chemical explosives both more powerful and safer to use. Asteroid miners, large-scale engineers, and militaries may make more use of nuclear explosives, or even antimatter explosives. Apply the penalties for Obsolete and Advanced Technology when characters try to use unfamiliar demolition gear, and be ruthless about the effects of failures.

ELECTRONICS

In pulpish Science Fiction, being able to fix one electronic device lets you fix any electronic device. In more realistic campaigns, characters need to purchase the appropriate categories of Systems Operation (see HSS 320-30) to define which types of devices they know how to fix and build. Working with other types of systems imposes a -3 penalty... and of course working with obsolete, advanced, or alien technologies only makes things worse.

MARTIAL ARTS

In most Star Hero campaigns, a character’s opportunity to learn new and intriguing martial arts styles increases dramatically. After all, a potential student now has not just dozens of styles to choose from, but dozens of *worlds’* worth of styles, with all the variation that implies.

Of course, some types of aliens are so non-Human that mankind cannot learn their fighting styles. An octopoid alien whose fighting depends on using his many tentacles to Grab and crush, or a clawed alien with a martial art that emphasizes his natural weaponry, probably can’t teach a Human anything. But in most Science Fiction universes a substantial portion of the alien species are humanoid, so Humans can probably study their martial arts without much problem.

At the GM’s discretion, some maneuvers (such as Nerve Strikes) may only apply to a single species (typically, the character’s own species) when learned. Characters have to buy a Science Skill in the anatomy of an alien species before they can use such attacks successfully on members of that species.

One option for Science Fiction martial arts is to limit or abolish the *Style Distinctive Feature* (see HSMA 209). In a galaxy possibly featuring thousands of martial arts forms, it’s extremely unlikely a particular fighter has in-depth knowledge of more than a tiny fraction of them. Therefore the odds are against the *Style Distinctive Feature* actually being a Complication most of the time, particularly if the character travels extensively. Therefore the GM should think about giving fewer points for the Complication, or even disallowing its use entirely.

Alternately, a character’s *Analyze Style* Skill might only apply to martial arts developed by his own species; he would have to purchase the Skill for each species or region whose fighting styles he studies (for example, Analyze Bandarian Styles, Analyze Fomalhauti Cluster Styles, and so forth).

See also HSMA 234-35 for three Science Fiction martial arts styles (Da’paru, Maashira, and Zero Gravity Combat).

MIMICRY

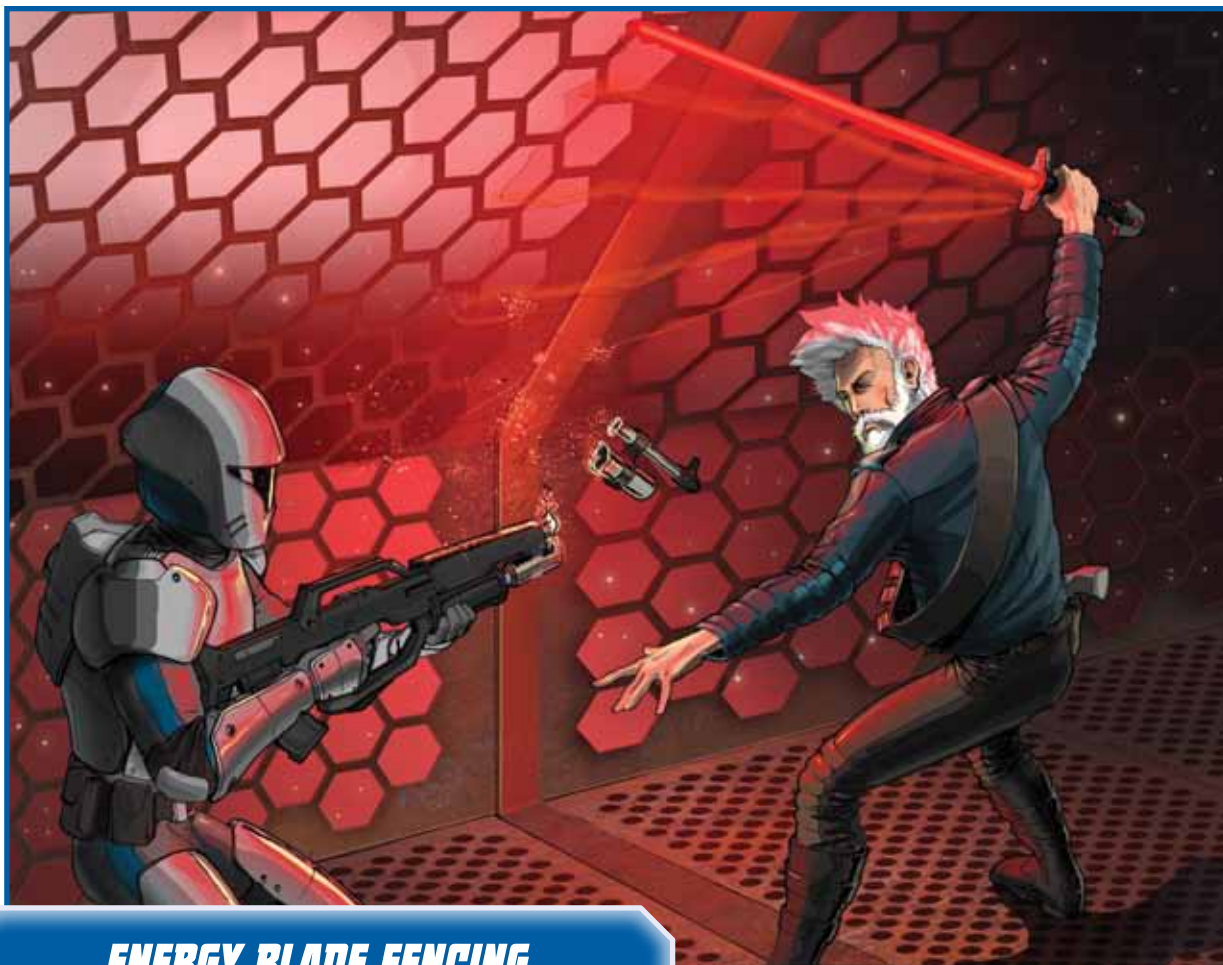
When mimicking an alien, assume the base Skill Roll penalty is -2 for species which speak in the same sound range as the character, -3 to -5 for aliens using very difficult sounds in their language. (This is in addition to the penalty for foreign languages.) Characters cannot use Mimicry to imitate beings who make sounds the character cannot produce. If a species communicates through means other than sound (such as flashing lights or pheromonic emissions), the GM must decide whether a character can mimic their “speech” at all, and if so what penalties this entails (usually at least -5).

SKILLS AS TOOLS

One trend of technology has long been to move the skill from the user to the device. Rifle sights are built-in accuracy, and nowadays things like microwave ovens have a little bit of built-in cooking skill. This is only going to accelerate in the future. It’s fairly easy to model this using the *HERO System* — simply buy the Skill as a Power with the *Focus Limitation*, using the rules on 6E1 283.

If direct brain links exist, it may be possible to “jack in” a skill module which contains a skill the user doesn’t already know. This is purchased the same way — the controlling Characteristic is 0, because presumably the skill module software is generic and doesn’t get to take advantage of the user’s own abilities. But of course, the better the software, the higher the roll it provides the character.





ENERGY BLADE FENCING

Energy Blades (see page 190 or HSEG 190) are an elite weapon, and the techniques for fighting effectively using them are closely guarded secrets of the masters. Because Energy Blades do serious damage and pierce most defenses on their own, this fighting art emphasizes hitting one's opponent, avoiding hits, and disarming, rather than increasing the amount of damage done. Battles between Energy Blade warriors are often long, drawn-out affairs, but against unskilled opponents, Energy Blade masters can kill with devastating speed.

ENERGY BLADE FENCING

Usable with Energy Blades Weapon Group; Energy Blades Weapon Element is free

Maneuver	Phs	Pts	OCV	DCV	Damage/Effect
Disarm	½	5	+0	+1	Disarm, +10 STR
Dodge	½	4	—	+5	Dodge all attacks, Abort
Parry	½	4	+2	+2	Block, Abort
Swift Strike	½	4	+2	+2	Weapon Strike
Wary Strike	½	5	+1	+3	Weapon Strike

SKILLS

- Acrobatics
- Breakfall
- Defense Maneuver
- Fast Draw
- Two-Weapon Fighting
- WF: Blades
- WF: Energy Blades*
- WF: Off Hand

POWER

This Skill occurs in Star Hero under a variety of names. If a character is psionic, he may have *Psionics*. Alien species with natural powers may get it as an Everyman Skill.

PROFESSIONAL SKILL: ZERO-G OPERATIONS

Professional Skills abound in Star Hero, as in any other Heroic campaign. But one in particular is of note for Science Fiction characters — PS: Zero-G Operations.

Zero-G Operations is a DEX-Based Professional Skill. A character with this Skill can perform all ordinary tasks in Zero-G with none of the penalties listed on pages 308-09. If a task is especially difficult or complicated, or the character must perform it under crisis conditions, he has to make a PS: Zero-G Operations roll. If he succeeds, he can perform the task without penalty. (That includes suffering none of the difficulties described on pages 308-09.) If he fails, he can still attempt the task, but suffers the standard penalty and other associated difficulties.

PERKS

Star Hero characters find Perks just as useful as modern-day or Fantasy characters do. They even have access to a few that aren't available in other genres.

ADVANCED TECH

This new Perk is suitable primarily for Star Hero campaigns that have a defined system of Tech Levels (see page 182). It represents a character who has access to equipment more advanced than the campaign setting standard. Maybe he's from a planet with better technology, found a cache of ancient technology, or is a highly-skilled inventor.

The GM should monitor and control all uses of this Perk. Having Advanced Tech does *not* necessarily mean that every piece of equipment a character possesses is better than normal, or that he can at any time re-equip himself with tech as advanced as what he starts the game with (or obtains in mid-game). It also does not allow him to distribute advanced technology to all of his friends (*i.e.*, the other PCs), give it away freely to allies, and then get more; typically he only has enough for himself (and to keep himself re-supplied, as reasonably necessary).

Advanced Tech costs 15 Character Points per Tech Level above the campaign standard (or, at the GM's option, only 10 Character Points per Tech Level for a single type of technology, such as computers, weapons, or sensors). Gamemasters should be *very* cautious about allowing more than one level of Advanced Tech, and characters must get the GM's permission to buy this Perk (particularly after the game starts).

ANONYMITY

As information-gathering technology becomes both more powerful and more ubiquitous, anonymity becomes harder to obtain, and more valuable. In highly-regimented Star Hero societies, GMs may wish to increase the cost of this Perk to 5 or more points.

FRINGE BENEFIT

Most of the existing Fringe Benefits — including Starship License and Galactic Computernet Access Card — are appropriate for Star Hero campaigns.

GALACTIC COMPUTERNET ACCESS CARD

Depending on the nature and extent of the computer nets in a Star Hero setting, the GM may want to change the cost of this Fringe Benefit. In an empire ruled by a cruel overlord, access to the computer networks might be restricted, so the Fringe Benefit would cost more points. On the other hand, in a quasi-utopian Space Opera setting, the cost might drop to 1 point (or even no points) to reflect the openness of society.

Additionally, the cost of the Fringe Benefit may depend on how much access a character has. The standard cost (be it 3 Character Points, as in the rulebook, or 1 point in a less restrictive setting)

reflects the lowest, most common level of access available — the access of the average citizen. Gamemasters may want to charge characters with greater access (such as high-ranking military officers, security agents, and government officials) more. Use the guidelines for the *Computer Link* Perk (which is essentially the same thing) to determine the cost.

In some settings, this Fringe Benefit may count as an "Everyman Perk" — everyone gets it at the lowest level for free. Characters with greater access pay for that access, typically as part of a Professional Template.

Despite the name, this Fringe Benefit doesn't necessarily involve having a "card." It could just as easily be a personal passcode, DNA scan, identity chip, or the like.

See page 192 for more information on the Galactic Computernet.

HEAD OF STATE

Given the size and power of the galactic governments in many Star Hero settings, GMs may wish to expand this Fringe Benefit a little (see accompanying sidebar). For characters who aren't leaders of a government, but instead are powers behind the throne, heirs waiting to take command, or the like, buy the next-lowest Fringe Benefit.

STAR HERO HEAD OF STATE

Cost	Fringe Benefit
10	Head Of State of a single nation
13	Head Of State of a planet
15	Head Of State of a small interstellar society
20	Head Of State of a medium-sized interstellar society
25	Head Of State of a large interstellar society

POLICE POWERS

In Star Hero campaigns, you should rename International Police Powers *Planetary Police Powers* (though the old name still applies on balkanized worlds). For 8 Character Points, characters can buy *Interstellar Police Powers*, giving them the authority to enforce the law throughout a single star-spanning government.

In campaigns which feature special psionic police, GMs may allow a related Fringe Benefit, *Psionic Police Powers*, for 3 Character Points (this is in addition to the cost of the character's Police Powers Fringe Benefit). This Perk means the character is licensed to use psionic powers as part of the investigative process, and gives him primary jurisdiction over crimes involving the use of psionics.

Similarly, campaigns involving "time cops" who travel back and forth in time to prevent "chronocriminals" from disrupting the time-stream may use the Fringe Benefit *Temporal Police Powers* for 3 Character Points (again, this is in addition to the cost of standard Police Powers).

“Poverty is acceptable because then there is no way but up. Rich people worry about losing their wealth, but I like this worry far more than the worry of scratching the wealth together in the first place. Also, people are nicer to you when they think you are rich — although they’ll often hit you over the head to find out where you hide your money.”

—Eustace Chilke philosophizes in *Araminta Station*, by Jack Vance

STARSHIP LICENSE

This Fringe Benefit gives a character the right to own and operate a single starship. Characters who own more than one ship have to buy the Fringe Benefit multiple times. Alternately, the GM can allow a new Fringe Benefit, *Starship Master’s License*, for 2 Character Points. This qualifies the character to captain any civilian vessel (there may be restrictions as to size or type), and allows him to own as many vessels as he can afford.

NEW FRINGE BENEFITS

Here are a few Fringe Benefits specific to *Star Hero*:

Free Robot (1 point): In most cases, robots and androids, even artificially intelligent ones, are considered property. One with this Fringe Benefit is not property; it is recognized as an independent sentient being with legal rights and citizenship. (Robotic characters may also need to change or not take Social Complications pertaining to their status.)

Licensed Psionic (1 point): A character with this Fringe Benefit may use his psionic powers for legal purposes and according to established regulations — for example, to assist with business negotiations, find lost objects, or the like. In some settings, the authorities hunt down and capture unlicensed psis.

Time Machine License (2 points): A character with this Fringe Benefit is allowed to own and operate a time machine for legal purposes — scientific and historical research, noninvasive tourism, recovery of endangered species and lost artworks, and so forth. The Time Police may pursue and arrest unlicensed time travelers.

MONEY

In some Science Fiction settings, money is obsolete or useless. The “Culture” of Iain M. Banks’s novels and the Federation of *Star Trek* are post-economic societies where individuals can get pretty much whatever they want without money. Of course, even there a person can’t just walk off with a starship or a space habitat. For anything over a defined limit in value (set by the GM based on local resources and the needs of the campaign), post-economic characters must make a roll to persuade whoever’s in charge of production facilities that they really need the item. Use Bureaucratics, Charm, Persuasion, or Trading (whichever is most appropriate for the situation), with a penalty to the roll based on how much the value of the requested item exceeds the established limit (typically -1 for every +10% value, but the GM makes the final determination).

See the *Economics* section of Chapter Seven for more information.

POSITIVE REPUTATION

Andy Warhol once observed that in the future, everyone will be famous, but only for fifteen minutes. Certainly mass media makes it possible for people to have a widespread reputation, but the constant “churn” of the media landscape means this year’s hero is next year’s trivia question. At the same time, improved communications allow people to have groups of colleagues and friends spread across the world (or even the galaxy), which can provide tremendous “leverage” for a character’s Positive Reputation.

In *Star Hero*, a character’s Positive Reputation could be known across thousands of worlds, or even throughout time; characters almost always have to pay the 2-point cost for “large group” for their Reputation. But they can, and often should, only take the Reputation on an 8-, since it’s difficult to be known by *everyone* (or even a substantial portion of “everyone”) among trillions of aliens.

VEHICLES AND BASES

Since *Star Hero* is a Heroic genre, characters can usually buy starships, houses, and the like with money. However, given the enormous cost of starships in many settings (millions or billions of units of currency), a character may find it more convenient to spend Character Points on these items. That also ensures he won’t have interstellar mortgage brokers constantly pestering him for a monthly payment. On the other hand, the need to acquire enough money to buy a ship with cash is a great character motivator for the GM to use. See Chapter Eight for more information about Vehicles and Bases generally, including options for acquiring them.

TALENTS

Science Fiction dramatically expands the opportunities for people to have unusual abilities. For example, you can simulate the abilities possessed by many aliens with Talents. All members of a serpentine species might be Double-Jointed, and rigorous training in childhood might give all members of a contemplative species Eidetic Memory. Some Talents may become universal, like Absolute Time Sense in a world with implant computers (see “Everyman Powers,” page 74). In campaigns involving psionic powers, many Talents are probably low-grade psi abilities. Danger Sense, Simulate Death, and Universal Translator are good candidates for truly uncanny powers.

Existing Talents

The following notes, suggestions, options, and guidelines apply to existing Talents for Star Hero. Talents not mentioned generally function as described in 6E1.

ABSOLUTE TIME SENSE

Characters may define this Talent as a computer implant, since all computers have a built-in clock function. (The same “implant” special effect can apply to many other Talents, such as Bump Of Direction, Lightning Calculator, or Universal Translator.)

This Talent becomes particularly useful in campaigns involving time travel. At the GM’s discretion, a character with Absolute Time Sense can, with a successful PER Roll, also tell approximately how far he’s traveled in time from his normal time-frame. Alternately, for +5 Character Points, a character can convert Absolute Time Sense into *Time Travel Sense*, which gives him the innate ability not only to gauge the passage of time, but to determine how far he has travelled in time and the current date.

DANGER SENSE

In worlds with psi powers, a character could define his Danger Sense as a low-powered form of Precognition. Gamemasters may decide to let characters with Danger Sense improve their ability to full-fledged Precognition with proper training and experience.

EIDETIC MEMORY

Eidetic Memory crops up frequently in Science Fiction settings. Not only is it handy for super-scientist types and technical geniuses, it’s *de rigueur* for species oriented toward logic, regimentation, or the like (such as the Vulcans of *Star Trek*). It’s virtually required for robotic characters.

ENVIRONMENTAL MOVEMENT

Running? It was more like trapeze artistry. Lear pulled himself along by handholds, kicked off from walls, braked with a hard push of hands or feet. Moving in free fall is hard work when you’re in a hurry, and Lear was a forty-year-old astrophysicist, not an athlete. He was blowing hard when he reached the control bubble.

—Andrew Lear demonstrates how to move in zero gravity in “The Hole Man,” by Larry Niven

Zero-G Training (the form of Environmental Movement that eliminates penalties for performing tasks in zero gravity) is common among space travelers. Here are a few other gravity-related forms of Environmental Movement; see pages 305-09 for more information about gravity penalties.

High Gravity Training (2 Points): Negates the -1 penalty for heavy gravity, but does *not* change the encumbrance penalty.

Low Gravity Training (2 to 6 Points): Negates penalties for low gravity. For 2 Character Points, characters can negate up to -1 worth of low gravity penalties; for 4 points, up to -2; for 6 points, up to -3.

Zero G, high G, and low G are all separate environments for purposes of Environmental Movement; a character who wants to function in two or more of them must buy the Talent multiple times.

SIMULATE DEATH

Besides being an appropriate psionic power, Simulate Death works perfectly for simulating “cold sleep pods” for STL travel, “stasis boxes” in which objects (or people) are kept for decades or centuries without deterioration, and similar technologies. Some alien species may have this Talent to reflect their ability to slow down their metabolic processes without harm.

STRIKING APPEARANCE

Beauty, they say, is only skin deep. As plastic surgery gets easier and cheaper, buying a beautiful skin becomes only a little more difficult than getting some nice clothes. In futuristic settings, everyone may have the same good looks, and trends in personal appearance might come and go like trends in clothing and music. Only rebels and eccentrics would leave their appearance unimproved or below average. In such a world, a genuinely beautiful person might stand out in the crowd of “generic” good looks.

The Universal Translator is an extremely sophisticated computer program that is designed to first analyze the patterns of an unknown form of communication, then to derive a translation matrix to permit realtime verbal or data exchanges. Although the Universal Translator is primarily intended to work with spoken communications, it has been used successfully for translation with a wide range of language media.

—*Star Trek's* Universal Translator is explained in *The Star Trek: The Next Generation Technical Manual*, by Rick Sternback and Michael Okuda

UNIVERSAL TRANSLATORS

Universal Translation Matrix: This device, commonly built into communications systems, hand-held translators, and the like, can convert a person's speech into any of the thousands of languages in its database without effort. It can analyze and convert languages not in its database, but this takes time and a sufficiently large sample of the new language. This device doesn't necessarily confer literacy; that depends on the situation and the GM's evaluation of the technology.

Universal Translator 15- (26 Active Points); OAF (hand-held translator; -1), Restricted Function (only works instantly on languages in its database, others require time and samples to analyze; -0). Total cost: 13 points (or 17 points for OIF).

Intrinsic Language: The character speaks the "hard-wired" language embodied in the Human brain structure. He can make himself understood by any Human being, past or future. Aliens are still too alien to understand, but this is a good way to let time travellers speak to everyone they meet. It doesn't necessarily convey literacy; that depends on the situation and the GM's evaluation of the technology.

Universal Translator (INT Roll) (20 Active Points); Human Languages Only (-1). Total cost: 10 points.

Psychotronic Translator: Campaigns including psionic powers sometimes have these devices, which essentially read people's surface thoughts as they speak and broadcast them as words. Psychotronic Translators don't work with written languages, recordings, or machines, and are blocked by Mental Defense.

Detect Meaning Of Speech (INT Roll) (10 Active Points); OAF (-1), Living Beings Only (-¼), Does Not Work Against Beings With Mental Defense (-¼). Total cost: 4 points.

Translator Chip: Implanted in a character's skull, this device allows easy real-time translation of known languages, but is useless when dealing with some tongue outside its database.

Universal Translator (INT Roll) (20 Active Points); Restricted Function (only works instantly on languages in its database, others require time and samples to analyze; -0). Total cost: 20 points.

UNIVERSAL TRANSLATOR

This Talent shouldn't exist in Hard Science Fiction campaigns or other settings emphasizing realism. It's hard enough for Humans to learn and understand other Human languages, much less alien ones.

Gamemasters who want to dodge the issue of having characters learn new languages every game session can allow this Talent, typically bought as a psionic ability or device; such gadgets are common in many Science Fiction settings. See the sidebar for some examples. Don't forget the penalties for translating languages "extremely different" from the ones the character (or the designers of his translation device) knows; there are lots of weird ways for aliens to communicate.

New Talents

The following Talents appear in many Science Fiction campaigns. As always, the GM should review and approve them before allowing PCs to buy them.

To make it easy for GMs and players to adapt these Talents to different Science Fiction settings, they're presented using the standard *HERO System* ability template, with options where appropriate. As noted in the templates, some of them cost END to use.

This section certainly doesn't exhaust the possibilities for new Talents and similar abilities in Star Hero! For example, Chapter Three of H SMA has dozens of martial arts-related special abilities that would adapt well to some Science Fiction settings, as would some of the Heroic Talents in *Pulp Hero*.



FTL PILOT

Effect: Navigation (FTL or Hyperspace) and TF: FTL/Hyperspace Spacecraft

Target: Self

Duration: Persistent

Range: Self

END Cost: 0

Description: Some Science Fiction settings limit the ability to pilot FTL-capable ships to only certain persons. Typically, FTL pilots have to possess certain "perceptions" or analytical skills that make it possible for them to fly at superluminal speeds safely. Anyone else who tries to pilot an FTL ship quickly runs it into a star, destroying the entire vessel and everyone aboard. If FTL travel involves hyperspace, only some people know how to open hyperspace portals, or can stand to look at the chaotic vista of hyperspace (as a pilot must) without going insane.

In Star Hero settings that adopt this trope, characters who want to be able to pilot FTL ships must buy this Talent.

Game Information: Navigation (FTL or Hyperspace) and TF: FTL/Hyperspace Spacecraft. Total cost: 4 points.

HOTSHOT PILOT

Effect:	2 to Combat Piloting plus Aid Starship DCV 4d6
Target:	Self/One starship
Duration:	Persistent/Instant
Range:	Self/No Range
END Cost:	0/2

Description: This Talent represents a character who's a naturally gifted or highly-trained pilot. This has two effects. First, he receives a +2 bonus for all Combat Piloting rolls. Second, when piloting a ship no larger than 100 ktons in starship combat, his piloting skills make the vessel harder to hit (typically granting it +2 DCV, though up to +4 is possible).

Game Information: +2 to Combat Piloting (total cost: 4 points) **plus** Aid DCV 4d6 (24 Active Points); Only Aid Other (-½), Only Works On Starship Character Is Piloting With Mass Of 100 Ktons Or Less (-1½), Requires A Combat Piloting Roll (-½) (total cost: 7 points). Total cost: 11 points.

LATENT PSIONIC

Effect:	Enables purchase of psionic powers after the campaign begins
Target:	Self
Duration:	Special
Range:	Self
END Cost:	0

Description: In Star Hero games featuring psionic powers, typically characters gain those powers through heredity, *i.e.*, they're born with them, and thus should start the game with them. However, some players might not want their characters' psionic abilities to have manifested at the time game play begins (either for dramatic reasons, or because they can't afford to spend Character Points on Mental Powers yet). The GM might allow such characters to buy the Talent *Latent Psionic* for a set cost (typically 5 Character Points). This means the character can buy psionic abilities later in the game — without this Talent, or some appropriate in-game explanation, characters cannot buy psionic powers after game play begins. When a character is ready for his latent psionic potential to be realized, he simply converts the points spent on this Talent into points spent on his first psionic ability.

Game Information: 5 Character Points set aside for later purchase of Mental Powers. Total cost: 5 points.

POWERS

In Science Fiction settings, *HERO System* Powers have numerous uses. In addition to high technology — FTL starship drives, teleportation pads, advanced sensors — and weapons such as laser pistols, Powers simulate the abilities of aliens and alien fauna. Described below are some potential uses for various powers; other, more obvious uses (such as Resistant Protection to build Space Marine armored battlesuits) aren't mentioned (though they may be used for examples in Chapter Seven).

DEFENSE POWERS

In Star Hero campaigns, many Defense Powers, particularly those protecting spacecraft, use the optional form of Ablative described on 6E1 147-48, under which shots subtract Active Points from the defense. See Chapter Eight for some examples.

MOVEMENT POWERS

Many Movement Powers are affected by gravity. See page 305 for further information.

SENSE-AFFECTING POWERS

In Space Opera settings featuring lots of aliens with lots of weird senses, it may prove difficult or impossible to affect or “blind” a reasonable percentage of any group of characters with any given Sense-Affecting Power. Gamemasters may wish to consider either (a) lowering the cost of all Sense Groups to the “Nontargeting” rate, or (b) raising the cost of all Sense Groups to the “Targeting” rate.

In campaigns featuring a lot of starship combat, GMs may want to declare the Radio Group a Targeting Sense Group, at least for purposes of building stealth defenses for starships. Most of the Senses used by one ship to target another are based on Radar or are assigned to the Radio Group.

ABSORPTION

Alien creatures who feed directly on energy may have this Power. Realistically, it should only work against a tightly-limited group of effects, but a Space Opera energy creature may have the ability to absorb any type of energy.

Some fictional spaceship defensive screens actually absorb energy rather than reflecting it. You can build this using the optional rules for Absorption as a defense on 6E1 166. However, overloads may be a problem — the device may specify as a Side Effect that any energy “Absorbed” beyond the maximum translates directly into damage to the ship in some fashion.

AID

Aid shows up quite a bit in the form of Science Fiction wonder drugs to boost a person's performance. Just about any Characteristic can have an appropriate booster drug. Usually there's a cost or side effect — booster drugs may have the *Costs Endurance* Advantage, or Side Effects that apply when the power stops working (once the Aided points wear off, the user "crashes," taking STUN and/or BODY damage).

EVERYMAN POWERS

Some settings assume a fairly impressive arsenal of genetic and cybernetic modifications for ordinary people: the inhabitants of Iain M. Banks's "Culture" novels have longevity, are immune to most poisons and diseases, and can trigger the release of artificial bloodstream chemicals to go without sleep, overcome fatigue, and boost reaction time. Gamemasters may consider giving certain abilities out for free if they're universal in the campaign.

One good example is advanced medicine. If some means of delaying aging or preventing diseases exists, anyone who can afford it will want it. In any setting more advanced than the present, a near-total immunity to viral diseases could be universal, and if medical nanobots are available, this could even be immunity to any and all forms of infection. Genetic modification or nanosurgery could give everyone increased longevity or even immortality!

Widespread cybernetics opens up other possibilities for "Everyman Powers." In a world where everybody has a communicator implant, then the Radio Perception/Transmission power could be available for free.

Some common "Everyman Powers" for future settings:

Chronometer Implant: Absolute Time Sense. Total cost: 3 points.

Communication Implant: See the "Cyborgs" sidebar, page 52.

Gland Override: Aid Characteristics 2d6, Variable Effect (either STR, CON, DEX, or EGO, one at a time; +½), Delayed Return Rate (points fade at the rate of 5 per Minute; +1) (30 Active Points); Only Aid Self (-1), 2 Charges (-1½). Total cost: 8 points.

Longevity Treatment: Life Support (Longevity: half normal aging rate). Total cost: 1 point.

Nanobot Immune Enhancers: Life Support (Immunity: all diseases and biowarfare agents common to one planet or species) (10 Active Points); Activation Roll 15- (-¼). Total cost: 8 points.

Superefficient Sleep: Life Support (Diminished Sleep: 8 hours per week). Total cost: 1 point.

Universal Vaccine: Life Support (Immunity: all viral infections). Total cost: 3 points.

BARRIER, RESISTANT PROTECTION

Paul snapped the force button at his waist, felt the cirnkled-skin tingling of the defensive field at his forehead and down his back, heard external sounds take on characteristic shield-filtered flatness. "In shield fighting, one moves fast on defense, slow on attack," Paul said. ... "The shield turns the fast blow, admits the slow kindjal!"

—Paul Atreides describes the basics of shields and shield-fighting in *Dune*, by Frank Herbert

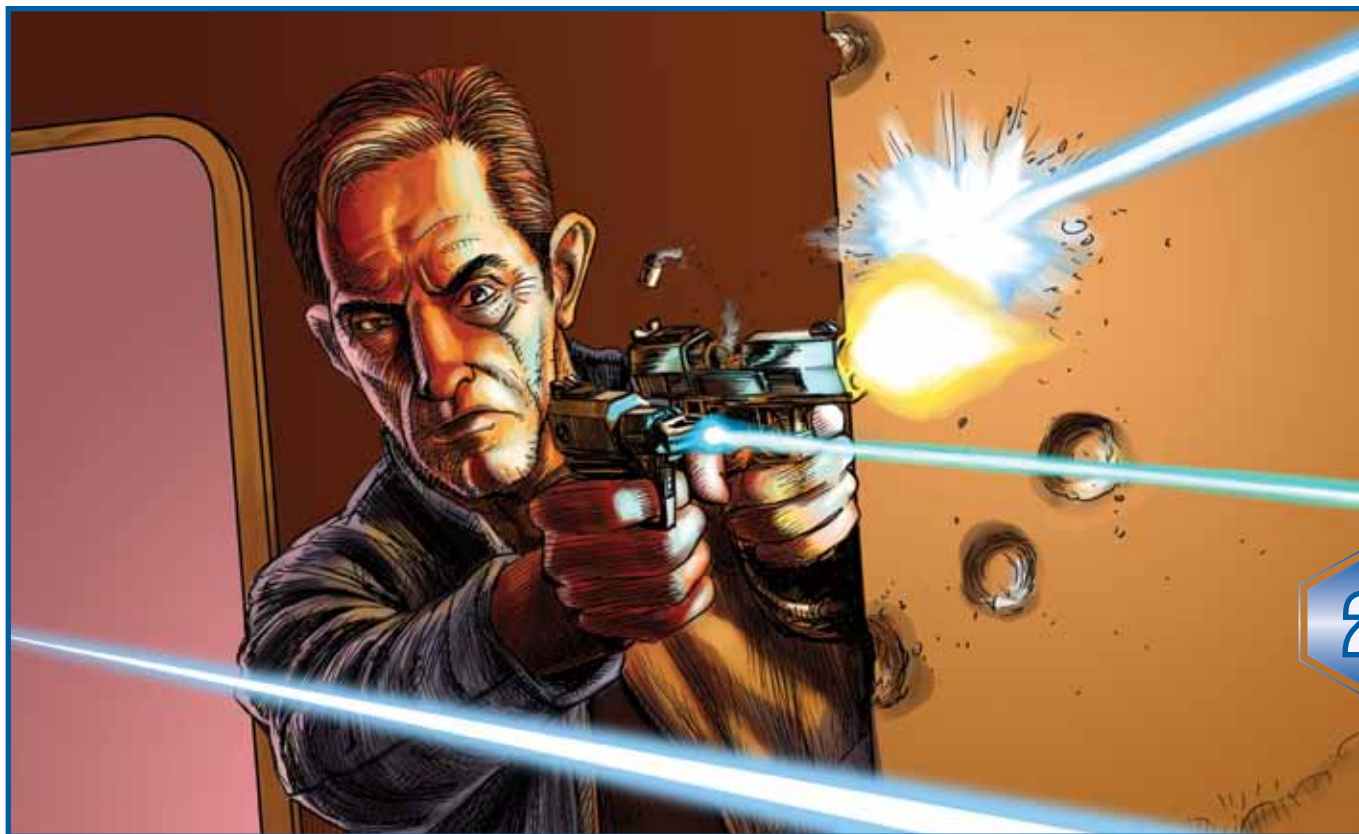
These two Powers occur frequently in Science Fiction because they're used to create "force-fields." Typically this means applying the *Costs Endurance* (-½) Limitation to either Power, as discussed in 6E1, but that isn't necessarily required.

To real scientists, a "force-field" is a technical term used to describe the effects of things like gravity and magnetism. Humans live in a force-field that holds them to the surface of the Earth. The only type of protective "force-field" plausible under hard science is a magnetic shield like the Earth's magnetic field, offering protection against charged particles and cosmic rays. Otherwise, armor is the only real defense.

But in Space Opera, force-fields are everywhere, from personal shield belts, to starship "integral defense fields," to planetary force shields. These often have Limitations or other restrictions. For example, common to some Science Fiction settings, particularly those combining spaceships and swordplay, are energy-only shields. These stop energy attacks and high-velocity projectiles, but not slow-moving attacks like blades and punches. This would best be modeled as a Resistant Protection with lots of Energy Defense and the Limitation *Only Against High-Velocity Projectiles* (-½ or more) for the Physical Defense.

It's traditional for Science Fiction force-fields to be transparent. Some writers who pay attention to detail make them mirror-surfaced or matte black so visible-light lasers can't pierce them. In that case, they block the vision of anyone inside the shield (a -½ Side Effect).

Many Science Fiction force-fields behave more like Barriers in game terms — they create a barrier or bubble rather than hugging the user's skin. In some cases, a force-field generator may be able to switch modes and do both (a Multipower). Characters cannot normally use Barriers to push against things, but many Science Fiction shields can; you can simulate this power by Linking Telekinesis with Barrier.



BLAST

Devers snarled and reached slowly for his own gun. The lieutenant of police smiled more broadly and squeezed the contacts. The blasting line of force struck Devers' chest in an accurate blaze of destruction — that bounced harmlessly off his personal shield in sparkling spicules of light.

Devers shot in turn, and the lieutenant's head fell from off an upper torso that had disappeared.

—a force-field and a blaster get Devers further than just a blaster in *Foundation And Empire*, by Isaac Asimov

Slinging bolts of energy has been a staple of Science Fiction since H.G. Wells's Martians first used their Heat-Rays to incinerate the British Army. While many of these attacks work better, in game terms, as RKAs, Blast is appropriate for several types, including the ones listed below. See Chapter Seven and/or HSEG for examples of some of these weapons.

Blasters are superscience weapons which fire bolts of undefined energy at the target. They are straight Blast effects, and in some models are set for “stun only.” They're most appropriate for Space Opera settings.

Electric Guns fire a bolt of electricity along a path of ionized air heated by a small laser beam. The intensity of an electric shock can be set to do STUN only, so they're usually bought as a

Multipower with two slots (one an ordinary Blast, one with the *STUN Only* Limitation) and Charges on the reserve. They take the Limitation *Not In Rain, Vacuum, Or Water* (-½).

Force Projectors shoot a beam of “force” (by means unknown to modern science) which hits the target like a physical blow. This is typically a physical Blast with the *Double Knockback* Advantage (+½) (assuming the campaign uses Knockback).

Heat Beams are like a giant searchlight projecting intense heat (a favorite of Wells's Martians). Heat Beams can be built using either Blast or RKA; they usually have the Power Modifiers *Area Of Effect (Line)* and *Reduced By Range*.

Particle Beams project a stream of subatomic particles accelerated to near the speed of light. They damage the target both with radiation effects and an ionizing blast. They're built as Blasts with the *Armor Piercing* and *Beam* Power Modifiers.

Plasma Weapons, such as fusion guns or plasma blasters, fire or spray superheated matter at the target. They tend to be straightforward Blasts, often with high numbers of dice.

Sonic Weapons in Science Fiction are usually harmless stunners — Blasts with the *NND* Advantage and the Limitations *Does Not Work In A Vacuum* (-¼) and *Reduced By Range* (-¼). Deadlier sonic blasts, capable of disrupting tissue and shattering rigid materials, are Killing Attacks.

Tachyon Beams fire bolts of tachyons — theoretical particles that can only travel faster than light. In game terms, this is just a special effect, but when combined with faster-than-light sensors it enables spaceships to do battle over extremely long distances without worrying about time lag.

CHANGE ENVIRONMENT

This power may show up as a psionic ability, especially with pyrokinesis or cryokinesis, which alter the temperature around the psionic character. Sometimes the temperature change is an uncontrollable side effect of other psionic abilities.

Terraforming — the conversion of planets that cannot support Human (or other) life into inhabitable worlds — could be represented as a form of Change Environment suitable for settings or planets where the effects have to be maintained through powerful atmospheric generators or similar technology. (Permanent changes require Area Of Effect Transforms.) This type of terraforming is Change Environment bought with the *Megascale* Advantage (enough to affect the entire planet), and Limitations such as *Extra Time*, *Focus*, and *Requires A Skill Roll* (depending on how the ability's constructed, Damage Over Time might be necessary as well). Although the environmental changes may be immense, they may take decades or centuries to effect. (See page 118 for some examples.)

CHARACTERISTICS

There are many ways to enhance a character's basic abilities, including:

- *Tools*: Powered exoskeletons (increased STR)
- *Cyberware*: Nerve-boosters (improving Dexterity), respiratory superchargers (improving Constitution or Endurance), implanted dermal Resistant Protection (providing extra PD and ED), and so forth
- *Drugs*: These can boost just about any Characteristic, though they're often better modeled with Aid (see above).

Genetic engineering can also increase Characteristics, but it's best applied by simply buying up the individual's Characteristics during character creation, since it isn't really possible after character conception except in truly fantastic Space Opera campaigns.

CLAIRSENTIENCE

In Science Fiction stories and films, Clair-sentience is usually a psychic or psionic ability, often with the *No Conscious Control* or *Activation Roll* Limitations. You can also use it to model "telepresence" devices which allow people to connect their senses to robots at remote locations, or to build security monitor cameras.

The perception point for Clair-sentience is not normally perceivable by other characters. If it is, the Clair-sentience may take the *Focus* or *Perceivable* Limitations to reflect that.

CLINGING

This power is surprisingly common in Hard Science Fiction, since it's useful to simulate things like magnetic boots (for walking around on spacecraft hulls or in zero-g environments) or suction-cup gloves. These are usually OIFs, with Limitations indicating what types of surfaces they can cling to (metal for magnetic boots, smooth hard things for suction cups). Alien beings may have this power naturally, in which case it may qualify for the *Inherent* Advantage.

DAMAGE NEGATION; DAMAGE REDUCTION

Tough aliens, especially those with silicon-based biology, may have either of these Powers naturally, as may Cyberpunk characters with artificially reinforced bones and flesh. Robots with good power-surge control may have Energy Damage Negation, and psionics with layered mental defenses can purchase Mental Damage Reduction.

DARKNESS

Darkness can represent several effects in Science Fiction. The first is natural Darkness defenses analogous to a squid's ink jet. They are usually Sight Group Darkness, although a spray of nasal anesthetic could affect the Smell/Taste Group instead. Most animals have only a few Charges of their Darkness defense available. You can also use Darkness to model sensor countermeasures, like chaff or jamming; see page 236.

DISPEL

You can use Dispel to create sensor jamming strong enough to burn out the opposing communications device, or "reverse harmonic" countermeasures to bring down an enemy's force-fields. Cyberpunk computer hackers may use Dispel to create various sorts of offensive or defensive software. Most such uses of Dispel have Limitations reflecting the fact that they only affect certain special effects of the power they target (a device that shorts out electronically-generated force-fields won't necessarily have any effect on an alien's self-generated Resistant Protection power).

DRAIN

You can simulate rubber science "suppression fields" or "draining fields" with a Drain against a specific Power. Campaigns with Psi powers may include "Psi Suppression Helmets" to negate an individual's abilities. This is simply a special effects-based Drain bought through a Focus.

2

STAR HERO POWERS

Adreno-Booster Drug: Aid STR 3d6, Delayed Return Rate (points fade at the rate of 5 per Minute; +1) (36 Active Points); OAF (-1), 4 Charges (-1), Side Effects (character suffers Drain STUN 3d6 when drug's effects wear off, always occurs; -1). Total cost: 9 points

Sensor Drone: Clair-sentience (Sight and Hearing Groups), 16x Range (5,600m), Mobile Perception Point (cannot move through solid objects) (55 Active Points); OAF (-1) (total cost: 27 points) **plus** Stealth 15- (total cost: 15 points). Total cost: 42 points.

Mag-Boots: Clinging (normal STR) (10 Active Points); OIF (-½), Only To Cling To Ferrrous Objects (-½). Total cost: 5 points.

DUPLICATION

Splitting into Duplicates is rare in Science Fiction. Shapeless blob creatures might be able to do it, or colony beings. Duplication could also represent the mindless drones of a hive creature.

Another application of Duplication is the creation of clones. Assuming the setting has even the slightest respect for “realism,” creating the Duplicate should take a while — days, at least, and possibly months (you can simulate this with the *Extra Time* Limitation). Unless artificial-aging and memory-implantation methods are available, the clone has to grow up and be educated in the normal fashion for members of its species (which may require the *Altered Duplicates* Advantage, if care isn’t taken to make the clone turn out just like its “parent”). Of course, the *Cannot Recombine* Limitation is necessary.

Time cops and other characters who can move through time may have a “Temporal Fugue” power that’s effectively Duplication: they hop back in time to the very recent past, creating a multitude of alternate selves to help in a battle or with a difficult task. This form of Duplication requires a $-\frac{1}{2}$ form of the *Feedback* Limitation — STUN and BODY damage done to any Duplicate affects all “later” ones, and the death of any Duplicate is the death of the character.

ENDURANCE RESERVE

Batteries, power cells, or a vehicle’s fuel supply are all examples of Endurance Reserves. In especially realistic campaigns, different devices and systems may have independent Reserves which aren’t compatible — the sensors draw power from their batteries, and the laser cannons from their power packs, while the engine requires fuel. Reserves often have the *Limited Recovery* Limitation to reflect their specialized requirements. Chapter Seven offers some suggestions on how to simulate different power sources with Endurance Reserve.

Because Endurance Reserve doesn’t cost END to use, ordinarily characters cannot Push it. At the GM’s option, resourceful starship engineers in cinematic or Space Opera campaigns might be able to “Push” a device’s Endurance Reserve to get just a little bit more power efficiency out of it. Have an properly-trained character (typically, the engineer) take an appropriate amount of time (minimum of a Full Phase) and make a Skill Roll (typically Electronics or Mechanics). For every point he makes the roll by, he can “Push” the Reserve’s END by 1, to a maximum of 10. Characters can only do this once per Reserve per game session, unless the GM rules otherwise.

ENHANCED SENSES

Olivia Presteign ... was beautiful and blind in a wonderful way, for she could see in the infrared only, from 7,500 angstroms to one millimeter wavelengths. She saw heat waves, magnetic fields, radio waves, radar, sonar, and electro-magnetic fields.

—from *The Stars My Destination*, by Alfred Bester

Technology has been boosting Human senses since the first telescopes were invented, and Star Hero campaigns often feature many different types of sense-enhancing technology (not to mention alien species with strange senses of their own).

In Hard Science Fiction settings, the available senses should be those which detect real phenomena: electromagnetic radiation, trace chemicals, electrical or magnetic fields, sound and vibration, gravity, the passage of time, and changes in position. Senses relying on chemical detection (such as smell and taste) usually have very short ranges. Sound and vibration senses require some medium, like water, air, or solid material. Sensors are generally built to detect one specific effect or emission, and cannot be tuned to read an “unknown form of energy.”

More cinematic campaigns typically have more capable and flexible sensors. To save time and effort, GMs should consider allowing characters to build starship sensors (and perhaps some forms of personal sensor technology) as Power Frameworks (typically Variable Power Pools) only for Enhanced Senses. That way the ship’s crew can shift from one type of sensor to the next, limited only by the science officer’s ability to twiddle the dials and the engineer’s skill at reconfiguring the main dish antenna.

Star Hero GMs should also let characters apply appropriate Advantages, particularly *MegaScale*, to Senses, even though this is not allowed in most genres. Otherwise, it becomes difficult to simulate many of the abilities and actions typically seen in Science Fiction, which allow characters to detect space phenomena from light-years away or find out what’s happening on a planet while they’re in orbit.

Because Active Detects make the user’s presence and location obvious, most spacecraft have both active and passive sensors. That lets them lurk silently when they have to and then “light up” when they attack. If sensors are accurate and defenses are limited, space battles often resemble submarine actions — lots of listening and waiting, and then sudden all-out attacks. For a more Space Opera feel, limit the sensors to make space pilots rely on their own steely eyes.

STAR HERO POWERS

Jetpack: Flight 20m (20 Active Points); OIF (-½), Only On Earth (-1), 1 Continuing Fuel Charge (special fuel cells, Easily obtained, 1 Hour; -0). Total cost: 8 points.

Personal Force Barrier

Belt: Barrier, 8 PD/8 ED, 8 BODY (2m tall, 4m long, ½m thick), Non-Anchored, Dismissable (54 Active Points); OIF (-½), No Range (-½), Restricted Shape (only surrounds wearer; -¼), Self Only (-½), 1

Continuing Fuel Charge (special fuel cells, Easily obtained, 1 Hour; -0). Total cost: 20 points.

Personal Force Shield

Belt: Resistant Protection (14 PD/14 ED) (42 Active Points); OIF (-½), 1 Continuing Fuel Charge (special fuel cells, Easily obtained, 1 Hour; -0). Total cost: 28 points.

2

EXTRA-DIMENSIONAL MOVEMENT

Ever since the idea of higher and parallel dimensions was put forth, Science Fiction writers have been using them for all kinds of effects. Some of the more common include:

Cyberspace: If virtual reality worlds are a major part of the campaign, then one way to model them is to describe entering Cyberspace as a Limited form of Extra-Dimensional Movement (see page 195).

Hyperspace Drive: One method of faster-than-light travel shifts the starship into an alternate universe or dimension in which distances are smaller, then back into our world at the appropriate destination. See page 226 for more information and examples.

Mindscapes: Telepaths exploring a person's mental landscape may model it as a form of Extra-Dimensional Movement, taking them to the "world" inside the target's head.

Microverse Travel: When scientists determined that atoms resemble tiny solar systems, a number of authors quickly turned out stories about Humans visiting the tiny planets inside an atom (these were usually Pulp Science Fiction planets with beautiful princesses). Traveling inside the Human body, as in movies like *Fantastic Voyage*, could also be considered a form of traveling in the Microverse. (See *Champions Powers* for some abilities appropriate to being in the Microverse, and the character Shrinker in *Champions Villains, Volume 3* for an example of those abilities in action.)

Time Travel: This is Extra-Dimensional Movement to any date in time.

Most Extra-Dimensional Movement devices are bought either as vehicles, or as Fragile Foci. Typically, they require a Skill Roll to use properly, with failure meaning the characters either don't go anywhere, or end up somewhere they hadn't intended!

FASTER THAN LIGHT TRAVEL

One of the key concepts in Science Fiction is the ability to travel to other stars and encounter other civilizations. To get around that spoilsport Einstein's universal speed limit, writers have come up with a variety of faster-than-light travel methods. Exactly how fast stardrives go depends on the GM and the rules of the campaign setting. Most forms of FTL travel assume there are no relativistic time-dilation effects, though GMs willing to calculate such effects can sometimes use them to create plot points (as in Dan Simmons's *Hyperion* novels, where characters have to account for time-debt when using FTL ships).

FTL Travel is the simplest way to create a faster-than-light craft, because the cost and effects of travel are easy to calculate. See page 223 for more discussion of FTL drives.

FLIGHT

In Hard Science Fiction settings, Flight requires either wings or some kind of thruster capable of lifting the character's weight. Realistic flying gear is usually specialized for a given environment: helicopters built for Earth's gravity and atmosphere won't work properly on Mars (and definitely won't work on the Moon). In campaigns which span multiple planets, some Flight equipment may have the Limitation *Only On [Planet]* (-½ to -2, depending on how much of the campaign takes place on that world). Obviously any kind of aerodynamic or aerostatic flight won't work at all in vacuum.

Less realistic campaigns aren't so restricted. They may feature jetpacks (a staple of Pulp Science Fiction), antigravity belts, or superscience "repulsorlift" devices. Some of these devices work as well in the vacuum of space as in atmospheres, others do not.

See page 306 for more information regarding the effects of gravity on Flight.

HEALING, REGENERATION

You can model the improved medical technology found in most Science Fiction settings with Healing (or in some cases with Regeneration). Realistic Healing should take lots of extra time — at least a day per die of Healing. Even nanotech medicine can't just magically make you well. Space Opera and Pulp Science Fiction have near-magical healing, invoking rubber science devices like "regeneration fields" and "cellular stimulators" to cut the time down to mere hours.

Regeneration is still close to rubber science, although since some animals can regrow limbs Humans may someday learn the trick. It takes a while — on the order of weeks or months.

The literal resurrection of dead people is impossible even in Space Opera, but if "brain taping" or other means of recording a person's mental state exists, then one can simply grow a new body (cloned from a tissue sample) and input the personality and memories. In some settings this requires characters to keep clones in storage at a "clone bank" and make periodic updates to their recorded selves. This is Resurrection with at least a week of Extra Time and various other Limitations (including Immobile Fragile Focus); destroying any of the equipment stops the Resurrection.

There are singularities in the mathematics of hyperspace. One such singularity surrounds every sufficiently large mass in the Einsteinian universe. Outside of these singularities, ships can travel faster than light. Inside, they disappear if they try it.

—Larry Niven sets the rules for FTL Travel in his setting in *Ringworld*

IMAGES

The invention of holography quickly made three-dimensional projected images a standard feature of Science Fiction. Decades later, it appears that creating free-standing visual images in thin air may not be possible (but of course that's no barrier to having such things in Space Opera Star Hero campaigns; see HSEG 319-20 for an example). On the other hand, sophisticated computer-controlled speakers do make sound or sonar images quite feasible. Some forms of electronic countermeasures would have the effect of creating Images for the Radio sense group. The *Set Effect* Limitation is appropriate for many such uses.

While most Star Hero Images require a projector (a Focus), some alien beings may be able to create them unaided. Creatures like dolphins or bats with sonar senses may be able to generate false sonar images. David Brin's novel *Sundiver* included an alien with an organic laser eye that could generate holograms.

INVISIBILITY

"It came suddenly, splendid and complete into my mind. ... "One could make an animal — a tissue — transparent! One could make it invisible! All except the pigments. I could be invisible!" ... And I beheld, unclouded by doubt, a magnificent vision of all that invisibility might mean to a man — the mystery, the power, the freedom. Drawbacks I saw none."

—Griffin (the Invisible Man) reveals to Dr. Kemp both the breadth and the limitations of his vision in *The Invisible Man*, by H.G. Wells

When H.G. Wells wrote *The Invisible Man*, the idea of making someone invisible seemed plausible. Later discoveries made it seem completely fantastic, but modern developments in stealth technology, "smart" camouflage materials, and fiber optics have put it back into the realm of the possible in a certain sense.

Stealth coatings create Invisibility, either for the Radio Group (airplanes, spacecraft) or the Hearing Group (submarines). (Or, if you want to be "realistic," build those technologies with Change Environment to impose penalties on appropriate PER Rolls.) Smart or reactive camouflage can provide visual Invisibility, usually with the *Chameleon* or *Only When Not Attacking* Limitations. Invisibility without some kind of "fringe" effect is very hard to achieve in Science Fiction — if nothing else, no amount of camouflage can get rid of your shadow! To achieve that effect, you'd need sophisticated light-bending devices or the like, appropriate only in Space Opera and Pulp Science Fiction-style games.

Alien beings may have chameleon powers, giving them Invisibility to whatever sense their natural enemies use for hunting. Psionic Invisibility is another possibility, in games with mental powers. Psi invisibility can have no fringe and work when the character is moving and fighting, but it would have the Limitation *Doesn't Affect Machines* — a sensor, lacking any mind for the character to affect, still perceives him normally.

LIFE SUPPORT

Just about all Science Fiction stories which take place away from Earth involve some form of Life Support — without it, the characters can't get very far. Space suits and starships provide their occupants with a Safe Environment against vacuum, radiation, and intense cold.

Most forms of Life Support are created by protective suits or vehicles (diving suits, medical cleansuits, radiation-shielded capsules, and the like). But various medical treatments can also provide forms of Life Support: vaccinations or nanotech immune-enhancers create Immunity against certain diseases and toxins. Good medicine in general can create Longevity, as can rubber science substances like the boosterspice used in Niven's "Known Space" stories.

IMMUNITY

In a Hard Science Fiction campaign, Terran medical science can't vaccinate against unknown diseases. Immunity only applies to viruses and pathogens known to the people creating the vaccines. Alien bugs may not be able to affect Humans... or might be incredibly lethal.

At the GM's option, in appropriate campaigns characters can buy Immunity to "All Galactic Diseases" or "All Galactic Poisons" for 10 Character Points each, and to "All Universal Diseases" or "All Universal Poisons" for 20 Character Points each.

ZERO GRAVITY

NASA and Russian space medicine specialists have learned a lot about the effects of zero gravity. Without gravity, Human muscles and bones get weaker over time (presumably the same would apply to alien species). Any "realistic" campaign that involves a lot of time in zero-G should probably include some way to avoid those effects — a serum to counter the degeneration, or "resistance suits" to keep the muscles toned. Hard Science Fiction characters can buy this as a 1-point form of Life Support, *Safe Environment: Zero Gravity*. Space Opera and cinematic characters don't have to worry about such things, and at the GM's option any character with Environmental Movement (Zero-G) doesn't suffer from these negative effects anyway.

MENTAL DEFENSE

In game settings where psionic powers are known and reasonably common, Mental Defense of some sort will definitely be widespread. This is likely to be true even in a world dominated by powerful psionic individuals: they won't want other psis spying on their thoughts. The exact nature of the defenses depend on what mental powers are common and how they work in the game world. The most obvious is some kind of helmet, headband, or "tin-foil hat" providing Mental Defense through a Focus.

Non-psionic characters without access to psi-blocking technology can sometimes "hide their thoughts" by mentally repeating catchy tunes, concentrating on unpleasant images, or cloaking ideas in obscure metaphors (see, for example, Alfred Bester's *The Demolished Man*, in which Ben Reich has a songwriter create a jingle so catchy and persistent he can repeat it to block Espers from reading his mind). It isn't infallible and requires effort, but sometimes it's just what's needed: Mental Defense (10 points) (10 Active Points); Concentration (½ DCV, must Concentrate throughout; -½), Requires An EGO Roll (-½). Total cost: 5 points.

MIND CONTROL

Stormtrooper: *Let me see your identification.*

Obi-Wan Kenobi: *[with a small wave of his hand] You don't need to see his identification.*

Stormtrooper: *We don't need to see his identification.*

Obi-Wan: *These aren't the droids you're looking for.*

Stormtrooper: *These aren't the droids we're looking for.*

Obi-Wan: *He can go about his business.*

Stormtrooper: *You can go about your business.*

Obi-Wan: *Move along.*

Stormtrooper: *Move along... move along.*

Luke Skywalker: *I don't understand how we got by those troops. I thought we were dead.*

Obi-Wan: *The Force can have a strong influence on the weak-minded.*

—Obi-Wan Kenobi uses the power of the Force to control a Stormtrooper's mind in *Star Wars*

Mind Control is fairly common in Science Fiction. In addition to psionic forms of mental domination (see Chapter Ten), characters can control others' minds by mundane methods. Mind control drugs, alien pheromones that overwhelm the senses to induce lust or rage, and "brain hacking" with neural probes are all forms of Mind Control.

She had a momentary impression of thick, defensive mists forming around Aretenon's mind, shielding all his thoughts from the outer world. Then the reply came, curiously muffled, and with a sense of distance that was very rare in telepathic contact.

—Jeryl can't read Aretenon's powerful mind in "Second Dawn," by Arthur C. Clarke

2

POWER EXAMPLES: MIND CONTROL

Mind Control Drug:

Mind Control 12d6, ACV (uses OCV against DCV; +0) (60 Active Points); OAF Fragile (easily spilled or diluted drug; -1¼), No Range (-½), Based On CON (ED applies; -1). Total cost: 16 points (or 13 points if the drug has the Set Effect Limitation).

Alien Pheromones:

Mind Control 10d6, NND (defense is Life Support [Self-Contained Breathing]; +0), Reduced Endurance (½ END; +¼) (62 Active Points); Limited Range (6m; -¼), Set Effect (defined when character buys power, typically sexual arousal or rage; -1). Total cost: 27 points.

Neural Probe: Mind Control 15d6, Reduced Endurance (0 END; +½) (112 Active Points); OAF Bulky Fragile (neural probe equipment; -1¾), Extra Time (1 Hour; -3), Requires A PS: Brain Hacking Roll (-¼). Total cost: 19 points

MULTIFORM

Shape-changing aliens are a fixture of Space Opera and Pulp Science Fiction, but are less common in Hard Science Fiction. Realistically, it's difficult for creatures to change their shape — think of how long it takes a caterpillar to become a butterfly, or a woman to recover from pregnancy. For all but the most cinematic Star Hero campaigns, Multiform should usually take the *Extra Time* Limitation (hours or days), and perhaps *Costs Endurance* and *Increased Endurance Cost*, to reflect the fact that changing your body around is physically demanding.

Halfway plausible shapeshifters have a set "menu" of alternate forms, using the standard Multiform rules. Completely cinematic shapeshifters can adopt any form, but that's really a Variable Power Pool limited to Multiform powers, or a Multiform with a *large* menu of additional shapes.

SHAPE SHIFT

While characters who can actually change their features to resemble others are best left to pulpish or cinematic campaigns, this power does have a place in Hard Science Fiction or Cyberpunk games. A computer hacker who can adopt someone else's identity in cyberspace is effectively using Shape Shift (Radio Sense Group) with several Complications. Spacecraft with electronic countermeasures to let them fool IFF systems have Shape Shift (Radio Sense Group). A high-tech disguise kit is Shape Shift (Sight and Touch Groups) with a Required Skill Roll, Extra Time, and a Focus.

SKILLS

One effect of advanced technology is that the machines get more skillful rather than their users. Devices like GPS receivers essentially give the user the *Navigation* Skill at a higher level than they could ever attain on their own, for example. This trend is likely to continue; many Science Fiction settings feature technology able to perform almost any Skill, often with Skill Levels to boot.

Characters in Cyberpunk games can purchase Skills "off the rack" as programmed chips that plug into neural interface sockets. These are Skills bought as OIFs, typically as part of a Power Framework (assuming the GM permits this). While handy for the character, they raise a host of questions and can lead to all sorts of plot hooks for the GM to exploit: if an enemy has used the same chip, can he figure out what the character will do and take advantage of that knowledge? What happens if a chip is mis-programmed, or has a "bug" in it? If a chip is "used," is it possible it accidentally stored some information from its previous owner's brain — information that owner desperately wants to keep secret?



2

TELEKINESIS

From the planet-moving telekinesis displayed by the characters in some Space Opera stories, to the barely-useful “arm” of Larry Niven’s character Gil Hamilton, Telekinesis occurs frequently in Science Fiction. Psionic telekinesis (psychokinesis) works as described on 6E1 295. Force projectors or “tractor beams” are Telekinesis bought with the *Focus* and *Affects Whole Object* Limitations, and often able to function across MegaScale ranges.

TELEPATHY

“There were two main difficulties. One was bound up with that curious limitation of our normal telepathic powers — the fact that, except in rare cases, we can only have contact over a distance with someone we already know, and can communicate with strangers only when we are actually in their presence.”

—Aretenon discusses the creation of the Composite Mind weapon in “Second Dawn,” by Arthur C. Clarke

In fiction, “telepathy” and “telepathic” are often used as a broad term to describe many different types of psionic abilities, even if those powers aren’t built using this Power. In addition to straightforward psionic telepathy, this can also represent invasive “brain scanning” using devices to remotely read out a brain’s electrical impulses (similar to the Neural Probe on page 80 — just substitute Telepathy for Mind Control). Telepathy versus the Machine class of minds can simulate special electromagnetic sensors that read what’s inside a computer.

TELEPORTATION

In Space Opera, Pulp, and other cinematic forms of Science Fiction, devices for teleporting characters across great distances are common, since they make it easy for the author to avoid wasting time on boring travel scenes. The transporters of *Star Trek*, transmats beams of *Doctor Who*, and transfer booths/stepping disks featured in Niven’s “Ringworld” novels are all good examples. For crossing interplanetary distances, a few levels of MegaScale are usually required. You can even simulate some FTL drives, such as stargates, with MegaScale Teleportation (plus a few appropriate Limitations, like Extra Time) rather than Flight or FTL Travel.

Gamemasters striving for “realism” should disallow the *No Relative Velocity* and *Safe Blind Teleport* Advantages for this Power. They can also take the different rotation speed and direction of places on a planet’s surface into account — jumping to the other side of the world means you arrive with a velocity of 3,200 kilometers per hour eastward. This limits the maximum jump to no more than a couple of degrees of longitude or latitude, or about 200 kilometers.

The existence of teleportation technology raises all sorts of interesting dilemmas and potential story hooks; *Star Trek* has explored many of them. Can characters use a teleportation device to create armies of “cloned” soldiers, or to instantly heal someone? Is it possible to accidentally duplicate a character, or merge two characters, and what are the legal and moral implications of such an accident? Does using the device pose any other risks? What happens if the equipment fails in mid-teleport? By developing a reasonable explanation for how teleportation devices work (even if it’s a rubber science theory), GMs can answer these questions consistently, and even plan stories around them. See Chapter Seven for more information.

“Beam me up, Scotty.”

—the most famous line never actually uttered on *Star Trek*

TRANSFORM

Science Fiction involves many forms of transformation, both voluntary and involuntary.

Viruses or nanotech machines can Transform characters' bodies — usually with the *Damage Over Time* Power Modifier, and often with No Normal Defense (the defense is an appropriate Life Support [Immunity]). Such transformations can be Severe, Major, or Minor. Healing may occur normally, or may require an all-or-nothing cure.

Nanotechnology can also transform inanimate objects into other things. Again, the process takes some time, and a key Limitation is that the nanobots can only make one specific product. As described in Chapter Seven, realistic nanotech should require lots of cooling and energy to accomplish in less than several days' time.

In Pulp Science Fiction, various rubber science rays and serums can transform hapless victims — de-evolution rays, monster serums, accelerated time projectors, and so forth. Unlike viruses and nanotech, Pulp devices work quickly, and tend to be massive Immobile Foci.

Psionic powers and sophisticated brainwashing can transform the Mind and Spirit, typically using the rules for Mental Transforms on 6E1 306. Healing from this sort of Transform can be normal healing as the character's brain readjusts, or it may require a specific cure (usually some kind of counter-brainwashing).

POWER ADVANTAGES

Most Power Advantages work in the normal fashion in Star Hero campaigns. Here are a few notes on non-standard applications.

AREA OF EFFECT

Depending on special effect, Explosions may behave unusually in a vacuum (such as outer space). In that situation, fragments of shrapnel and such may travel much further than they otherwise would, while still retaining the ability to inflict damage; GMs should consider giving them an extra 2m per -1 DC effect. On the other hand, the expanding gases of an Explosion may dissipate so quickly that they're not as effective as they could be without air or some other medium to propagate through; GMs may want to forbid characters to buy some Explosions with a greater than -1 DC per 2m damage reduction rate.

ATTACK VERSUS ALTERNATE DEFENSE

As the rulebook indicates, not belonging to a particular species is not generally a valid defense against an AVAD. However, GMs should remember that in a Space Opera setting with many different species, an AVAD that affects one may not affect others. A substance poisonous to Humans may be a delicious taste treat to Fomalhauti, for example. It may be worthwhile for the GM to define which species a given poison, drug, or other attack does or does not affect; this may justify a Limitation (see *Limited Power*, below).

DAMAGE OVER TIME

Many realistic powers take time to work. Even nanotech super-medicines won't make injured characters well in an instant. In addition to poisons and drugs, DoT can simulate Space Opera weapons like "plasma envelopes" that take time to chew through a starship's shields (thus allowing the heroic engineer to develop a countermeasure before the hull melts).

DELAYED EFFECT

This Advantage is most useful in situations like Cyberpunk campaigns, where a computer hacker can have only a certain number of programs running at a given time. The hacker prepares his attack software (using Extra Time to keep the cost down) and applies Delayed Effect so he can trigger it when he meets stiff opposition in cyberspace.

DOES BODY

This powerful Advantage is useful for simulating certain types of nanotech weapons, psionic powers, bizarre alien poisons, and the like. Because attacks with Does BODY are often lethal, GMs should be wary about allowing them unless the PCs at least have a chance to apply countermeasures.

2

STAR HERO POWERS

Sonic Multitool: Electronics 15- (15 Active Points); OAF (-1) (total cost: 7 points) and Mechanics 15- (15 Active Points); OAF (-1) (total cost: 7 points). Total cost: 14 points.

Underwater Impeller Pack: Swimming +20m (10 Active Points); OIF (-½), Side Effect (noisy, -3 to Stealth rolls or +3 to Hearing PER Rolls to perceive user, always occurs; -½). Total cost: 5 points.

Personal Tractor Beam: Telekinesis (20 STR) (30 Active Points); OAF (tractor beam device; -1), Affects Whole Object (-¼), Limited Range (20m; -¼). Total cost: 12 points.

Skillchip Interface System: A 13-point Multipower with four ultra slots; each slot is an OIF (skillchip), and as a result, the reserve also takes the OIF Limitation (defined as the interface system installed in the character's head, which is easily removed for cleaning and maintenance). Four example slots for a burglar character: Climbing 14-, Electronics 14-, Lockpicking 14-, Security Systems 14-. Total cost: 13 points.

If the GM doesn't permit Skills as Powers in Power Frameworks, buy each chip separately, with the Limitations *Lockout* (cannot use any other chip while this chip is in use; -½) and *Extra Time* (takes a Full Phase to switch chips; -½). Total cost: 24 points (6 points per chip).

DURATION ADVANTAGES

The *Persistent Advantage* is a good way to represent that hoary Science Fiction chestnut, the machine that keeps running for centuries or millennia after its creators vanish (though of course there may be a malfunction or two to make the PCs' lives interesting when they find the device...). And *Inherent*, of course, is appropriate for many aliens' innate powers, such as a reptiloid's tail.

MEGASCALE

Because of the vast distances involved in most Science Fiction stories, particularly those featuring a lot of starship combat or space travel, this Advantage is extremely common in Star Hero campaigns. It's most often applied to engines (and other movement devices), weapons, and sensors.

As mentioned above under *Teleportation*, MegaScale Teleportation is a good way to simulate devices like the transporter of *Star Trek*. Similarly, starships may model jump drives as MegaScaled Teleportation (usually at the 1m = 1 light-year or 10 light-years level, if not higher), and fixed star-gates may combine the "gate" rules with extremely long-range MegaScaling (say, 2m = 100 or 1,000 light-years, or more). Some FTL drives may work better if built with MegaScale Flight instead of FTL Travel.

For beam weapons, a good scale is 1m equals 10, 100, or 1,000 kilometers. See page 234 regarding lightspeed lag.

PENETRATING

Penetrating can simulate the way radiation weapons interact with armor. Resistant Protection (or any mass) stops a part of radiation energy, but some always gets through. When combined with Constant, Penetrating can represent attacks like chemicals or nanobots that gradually seep through armor.

STICKY

This is a great way to model the horrifying effects of things like nanotech "gray goo" weapons or voracious swarms of weird alien insects. It can also represent computer viruses, when applied to attacks in cyberspace. Realistically, electric current is Sticky — touching someone in contact with a powerful electric source means you get shocked, too.

TRANSDIMENSIONAL

If the GM defines a "hyperspace" or "subspace" dimension for his campaign setting, powers that can "reach into" or affect that dimension without leaving normal space need this Advantage. (The same applies to most powers that can affect other points in time.) Transdimensional attacks are even possible — a ship that can attack targets in hyperspace from normal space (or vice versa) would have a significant tactical advantage against a species lacking such technology.

VARIABLE ADVANTAGE

Powers with a technological or biological basis tend to have a set effect, so Variable Advantage usually isn't appropriate. If the GM allows it at all, it should be limited to a specific set of Advantages — like a blaster which can switch among High-Intensity (Armor Piercing), Wide-Angle (Area Of Effect), and Autofire modes.

VARIABLE SPECIAL EFFECT

This is really hard to justify in a Science Fiction setting — how can a device have the same effect but switch between causes? A laser can't suddenly start emitting sound waves. One really weird example of this Advantage in an Science Fiction story is the Lazy Gun in Iain M. Banks's *Against A Dark Background*, which never destroys its target the same way twice. (Nobody in the story can explain it, either.)

POWER LIMITATIONS

Most Limitations work in the normal fashion in Star Hero campaigns. Here are a few notes on non-standard applications.

ALWAYS ON

This Limitation is particularly suitable for certain psionic powers. A favorite cliché in Science Fiction stories is the telepath who wants to get away from other people's thoughts because he can't fully shut down his Telepathy. (In some cases you can simulate this with a Physical Complication instead of Limiting the Telepathy itself.)

CONCENTRATION

Psionic powers in Science Fiction stories often take this Limitation — the mentalist has to stop, focus on his target, furrow his brow, and really *think* about affecting the target. The same applies to devices that require a lot of focusing or adjusting. Vehicles may have this Limitation on their Movement Powers, if the vehicle has to power down or come to a halt to use a special engine (such as a "jump drive").

INCANTATIONS

This Limitation has relatively few applications in Science Fiction. However, you can sometimes use it to simulate a spoken security password a character has to recite to make a device work, or the spoken protocol used to engage a starship's self-destruct sequence (such as in *Star Trek III: The Search For Spock*).

LIMITED POWER

Technological devices are often designed to work in very specific conditions, and GMs can use the *Limited Power* Limitation to reflect that. However, it's only a Limitation if the characters can reasonably be expected to encounter other conditions! If the campaign is set on Titan and all the characters' gear is built for a methane atmosphere at low temperatures, then there's no reason to reduce the point cost just because things wouldn't work right on Mercury.

If the characters travel from planet to planet regularly, then it's a fair Limitation. The value of the Limitation typically varies from $-\frac{1}{2}$ to -2 , depending on how often the GM expects characters to encounter those conditions (or visit that planet).

Many medical devices (and poisons) are species-specific. Human medical tech won't help aliens much, and vice-versa. This is a $-\frac{1}{2}$ Limitation in situations where aliens are present most of the time, $-\frac{1}{4}$ if they only turn up occasionally, and -0 if they rarely appear in the campaign. Obviously, if aliens don't exist at all in the campaign, it isn't a Limitation (and in some settings, the GM may prefer to simulate this by including an appropriate Physical Complication [see page 187] in each species's Template, rather than Limiting medical devices).

Similarly, some devices or abilities may only work against a particular species's technology. This most often occurs with defensive technology — a force field attuned to defend against Mondabi blasters may have little or no effect against Seëcra weaponry. This is worth $-\frac{1}{4}$ to -1 , typically, depending on how often the GM expects the character to encounter technology he cannot affect.

Does Not Work In A Vacuum is a common form of Limited Power, and is usually worth $-\frac{1}{4}$ in most campaigns. In some Star Hero campaigns, it may be worth more — $-\frac{1}{2}$, or even -1 — if the characters spend a lot of time in space. But even in Star Hero, most characters stay in pressurized, breathable environments most of the time, so the $-\frac{1}{4}$ may still be appropriate.

SIDE EFFECTS

Many Science Fiction powers have Side Effects, especially in the prototype stage. Examples include superweapons which may blow up, psi powers which cause everyone nearby to suffer a splitting headache, machines that make a deafening roar when running, or an alien's native ability that negatively affects the environment or people around him.

COMPLICATIONS

Most Complications work in the normal fashion in Star Hero campaigns. Here are a few notes on non-standard applications. Gamemasters should also refer to page 300 for information on using Complications in the campaign.

ACCIDENTAL CHANGE

Beings with multiple forms, who might be susceptible to Accidental Change, are most common on the Pulp or Space Opera end of the Science Fiction spectrum. Examples include things like alien shapeshifters masquerading as Humans, bioengineered super-soldiers keeping their enhancements hidden, or possibly aliens who change sex in response to certain stimuli.

DEPENDENCE

Current addiction is the youngest of mankind's sins. At some time in their histories, most of the cultures of human space have seen the habit as a major scourge. It takes users from the labor market and leaves them to die of self-neglect. ... People who can be hooked by drugs are happier with the wire. They take longer to die, and they tend not to have children.

It costs almost nothing. ... The user isn't a wirehead until the wire has been embedded in the pleasure center of his brain. ... And the joy comes pure, with no overtones and no hangover.

—Louis Wu has become a “wirehead” in *The Ringworld Engineers*, by Larry Niven

All characters have a “Dependence” on their natural breathing gas — Humans on the proper oxygen-nitrogen mix, for example. However, they don't get any Complication points for this unless the campaign requires them to spend significant amounts of time (more than half of their in-game time) in other environments. For example, a character who belongs to a methane-breathing species who's part of a PC group where all the other characters are oxygen-breathers could take a Dependence, since he spends most of his time in oxygenated atmospheres. He'd have to wear special breathing equipment most of the time, and if he lost it could easily suffocate. On the other hand, if the campaign features a variety of environments, with all characters equally inconvenienced over the course of the game, then this sort of Dependence counts as an “Everyman Complication” for which no character gets points.

Of course, breathing gases aren't the only thing PCs could become Dependent on. Characters may well develop exotic addictions in a Science Fiction setting; there's a universe of drugs and other seductive forms of entertainment out there. But food, even rare and specific types, doesn't normally qualify for a Dependence; everyone has to eat to survive (see *Weird Diets*, page 152).

DEPENDENT NPC

In a Science Fiction setting, characters can have a startling variety of DNPCs. Besides the usual cast of loved ones and relatives, alien characters can have nonsentient mates, parasites can have their hosts, and time-travelers can have ancestors or descendants as DNPCs. Robots are another popular form of “sidekick,” and if not particularly capable might qualify as a DNPC rather than a Follower. A character with a sentient Vehicle or Computer might even take that piece of “equipment” as a DNPC, with the GM's permission, though this should be rare.

DISTINCTIVE FEATURES

In a Star Hero campaign featuring a wide range of aliens, cyborgs, mutants, and androids who commonly show up during stories, few (if any) species should get a *Distinctive Features* Complication (few of the Species or Environment Templates listed earlier in this chapter have it, for example). In that sort of campaign, a species should qualify for Distinctive Features only if there's some significant hindrance or restriction related to it — for example, a Distinctive Feature defined as a noxious body odor that offends most other species, or a species so reviled throughout the galaxy that everyone automatically distrusts its members. Even then, don't forget to apply the *Not Distinctive In Some Cultures Or Societies* -5 point modifier, if appropriate; an alien's not likely to be distinctive on his homeworld. (See also *Interspecies Society* on page 150.)

In more “realistic” campaigns, where most characters are Human and aliens are rare, any non-Human species might qualify for Distinctive Features. It all depends on how disadvantageous the GM considers “alien appearance” to be. Remember, just looking different isn't necessarily enough to earn Complication points; the alien character has to suffer because of his appearance for some reason.

Advanced technology opens up new forms of Distinctive Features, such as a recognizable android whose particular model is notorious for erratic behavior. In a high-tech setting, a character's Distinctive Feature may require special senses to detect, such as “unusual genome.”

Take the campaign's tech level into account when determining how easily a character can conceal his Distinctive Features. If holographic disguise technology or rapid-healing plastic surgery are available, few features may count as anything other than “Easily Concealed.”

ENRAGED/BERSERK

Characters in a futuristic setting can become Enraged just as often as those in a modern or Fantasy environment, but some unique Science Fiction variations exist. A person might be psychologically conditioned to attack something in response to a code phrase or visual stimulus. (Call this “the Manchurian Complication.”) These “Human time bombs” aren't necessarily angry or irrational; they're behaving like programmed machines.

The more conventional form of Enraged is acceptable, too; Science Fiction is full of characters who like to pick fights out of species hatred or anger at having been on the losing side in a war. They're a dependable source of distractions in play. A hero who gets Enraged around Rigelians is going to get into lots of bar fights in spaceports where Rigelian freighters dock.

HUNTED

Quark: *I don't understand, Commander. Why would you want me to stay?*

Odo: *I'm curious myself. The man is a gambler and a thief.*

Quark: *I'm not a thief.*

Odo: *You are a thief!*

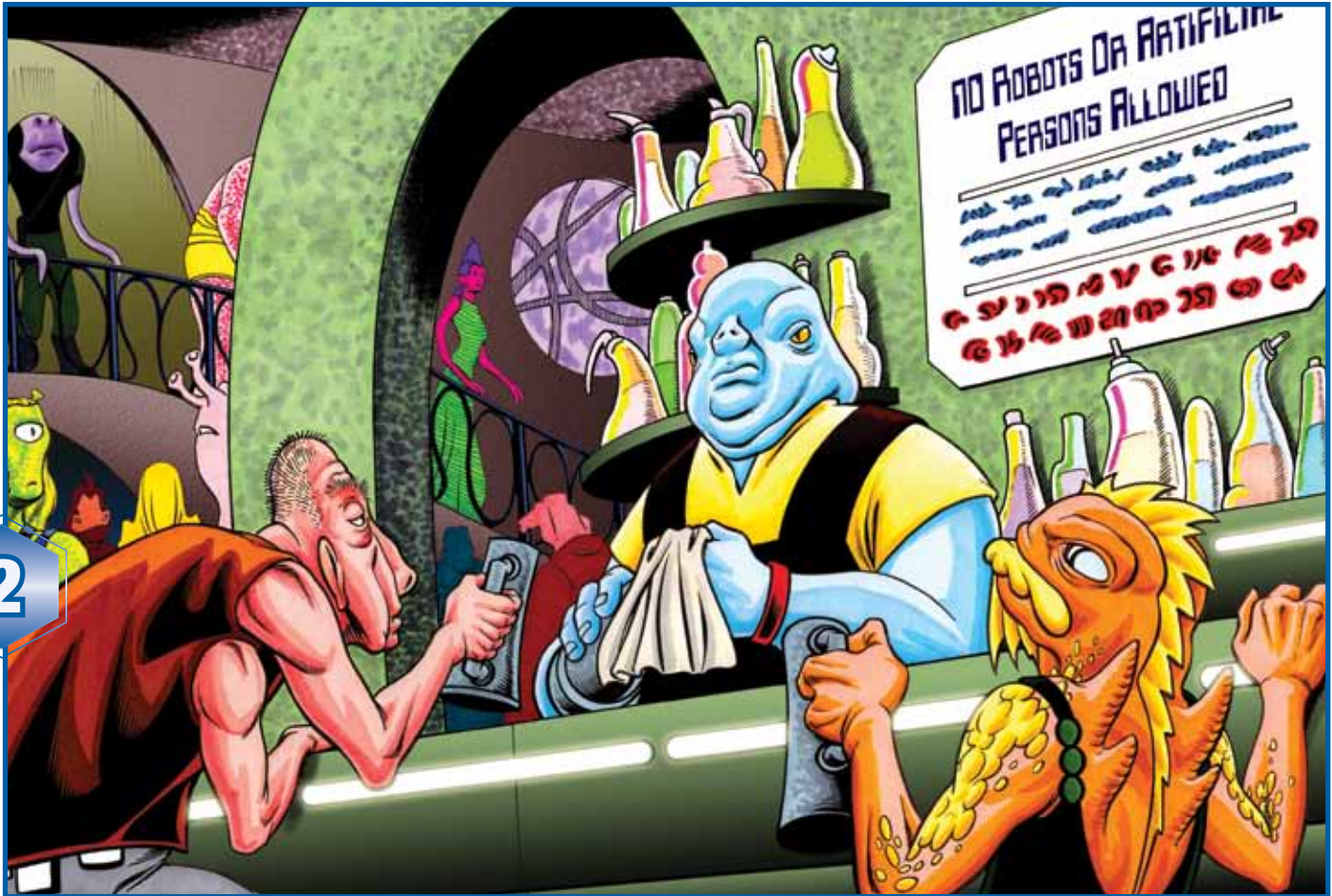
Quark: *If I am, you haven't been able to prove it for four years.*

—Commander Benjamin Sisko tries to convince Quark to remain on Deep Space 9 in the *Star Trek: Deep Space Nine* episode “Emissary”

In high-tech Science Fiction societies, being Hunted by the authorities is no joke. It becomes a serious problem when widespread data networks, DNA tracing, foolproof facial-recognition software, and the like exist. To avoid being found the character has to live outside normal society — no credit cards, no System Identification Code, no passport, no government jobs (or jobs requiring a background check), no higher education, and no medical insurance. Having a fake identity helps somewhat, but dedicated investigators equipped with high-tech surveillance methods can find specific individuals given enough time. Thus, in Star Hero, the police and similar agencies almost always count as More Powerful and have Non-Combat Influence. If appropriate, the GM may want to make all Hunteds involving “the authorities” or persons/institutions with access to official records worth another +5 Character Points (similar to the “Public Identity” bonus), to reflect how difficult it can be to hide in such settings.

On the other hand, with convenient interstellar travel, fugitives may be able to hop from world to world ahead of the authorities. Teleportation technology provides even better escape opportunities, especially if, as in Dan Simmons's novel *Hyperion* and its sequels, it's extremely common and has interstellar range. Gamemasters may forbid characters to take Hunters with the *Limited Geographical Area* modifier for this reason.

Of course, plenty of other types of Hunteds exist. A character who offends a particular alien species may find that species Hunting him (at the GM's option, being Hunted by an entire species gains a character +10 Character Points for his Complication). After an interstellar war, a known war hero may find his “victim's” relatives seeking vengeance. The possibilities are as endless as the Galaxy itself.



2

NEGATIVE REPUTATION

A Negative Reputation is worth -5 points if it's known to only a "small or limited" group. That takes on new meaning in a Star Hero campaign that uses an entire star sector or galaxy as its setting. In such a vast area, a Negative Reputation that's only known on a single world should be worth even less. The accompanying table has suggested guidelines for reducing the value of a Negative Reputation based on how widely it's known; the numbers listed are approximate, GMs may use others if necessary. As always, the minimum value of the Complication is zero.

In campaigns involving time travel, GMs should also consider how well known the character may be in his future (or, in some settings, even his past!). If a Negative Reputation is so strong and/or widespread that it's known throughout time, it's worth +5 Character Points.

NEGATIVE REPUTATION SCALE MODIFIERS

Campaign Scale	Number Of People Aware Of Reputation		
	-5 Points	-10 Points	-15 Points
Planet (1-5 billion)	1 million beings	50,000 beings	1,000 beings
System (20 billion)	100 million beings	1 million beings	50,000 beings
Sector (100 billion)	1 billion beings	100 million beings	1 million beings
Quadrant (10 trillion)	20 billion beings	1 billion beings	100 million beings
Galaxy (1 quadrillion)	100 billion beings	20 billion beings	1 billion beings

PHYSICAL COMPLICATION

Physical Complications in most Science Fiction settings have to be pretty severe, or pretty distinctive, to overcome advanced medicines, medical nanobots, and other high-tech methods of keeping bodies functioning properly. Typical ones, like *Blindness* or *Missing One Limb*, aren't applicable in most Star Hero settings; players have to be more imaginative than that. At the very least, they have to explain why, for example, a character's blindness cannot be cured through implants or neurotechnology (as with Geordi La Forge on *Star Trek: The Next Generation*), or his missing limb replaced with a prosthetic (as with Luke Skywalker at the end of *The Empire Strikes Back*). On the other hand, contact with alien life-forms might create as-yet unsuspected physical problems.

Two types of Physical Complications that medical science can't cure relate to characters' acclimation to different levels of gravity, and their alien physiologies.

LOW NATIVE GRAVITY

Characters who come from species or groups native to low-gravity environments experience difficulties in normal-gravity settings. At the GM's discretion, the following Physical Complications may be appropriate, assuming the character spends most (if not all) of his in-game time in normal gravity environments.

Low Home Gravity (All The Time, Slightly Impairing; 25 points): The character is used to 0.6-0.8 G. In normal gravity, he tires more quickly; increase the END cost of any physical activity by ten percent (10%) (minimum of +1 END).

Very Low Home Gravity (All The Time, Greatly Impairing; 30 points): The character is used to 0.3-0.5 G. In normal gravity, he tires more quickly; increase the END cost of any physical activity by twenty percent (20%) (minimum of +1 END). Additionally, he can't move as quickly; he must sell back his Running and Swimming by 4m (minimum of 2m).

Extremely Low Home Gravity (All The Time, Fully Impairing; 35 points): The character is used to 0-0.25 G. In normal gravity, he tires more quickly; increase the END cost of any physical activity by one-third (33%) (minimum of +2 END). Additionally, he can't move as quickly; he must sell back his Running and Swimming by 8m (minimum of 2m).

ALIEN PHYSIOLOGY

Doctor McCoy: *If you don't get him to Vulcan within a week, eight days at the outside, he'll die. He'll die, Jim.*

Captain Kirk: *Why must he die? Why within eight days? Explain.*

McCoy: *I don't know.*

—Doctor McCoy explains the seriousness of Spock's onset of the *pon farr* mating drive, and the inability of Human medicine to correct the situation, in the *Star Trek* episode "Amok Time"

In some campaigns, some types of aliens have physiologies so unusual that it's difficult for them to get proper medical attention in the usual campaign setting. This is fairly rare; most Science Fiction doctors are pretty well-versed in "xenomedicine" and can usually cope with whatever medical emergencies arise. But some characters are *so* alien that doctors have trouble treating them when they get sick or suffer injury.

The value of the *Alien Physiology* Physical Complication depends on two factors: how unusual the character's physiology is; and how often this causes him difficulty (*i.e.*, how often he tends to need medical care). The first factor is reflected by the penalty doctors suffer to Paramedics, SS: Medicine, and any similar rolls when treating the character. If doctors suffer Skill Roll penalties of -3 to all rolls, the Limitation is Slightly Impairing. For each additional -3, the Impairment increases one step (-6 for Greatly Impairing, -9 for Fully Impairing).

The second factor varies from campaign to campaign; discuss the situation with your GM before determining a value. Typically Alien Physiology affects a character Infrequently, but in some games (like Military Science Fiction campaigns), it may rise to Frequently.

PSYCHOLOGICAL COMPLICATION

"Leave any bigotry in your quarters; there's no room for it on the bridge."

—Captain Kirk deals with a problem of prejudice in the *Star Trek* episode "Balance Of Terror"

In a Star Hero game, a character can have Psychological Complications from his Templates (rare, but possible), his own individual Psychological Complications, and perhaps even Psychological Complications imposed by brainwashing or conditioning. For example, in Science Fiction stories it's not uncommon to find alien species who all subscribe to some bizarre code of honor, or at least pretend to (like the Klingons in *Star Trek*), or whose societal or cultural pécadilloes rise to the level of imposing a Psychological Complication on all the natives (as in many of Jack Vance's short stories, including "The Moon Moth").

RIVALRY

In addition to the ordinary kinds of Rivalries, characters in a Science Fiction setting could face Rivals who are, in essence, themselves — robots or androids from the same manufacturer, identical clone-siblings with the same implanted memories, or even their past or future selves in a time travel campaign. If this would give the Rival special insight into how the character acts and thinks, he may qualify for the +5 point "More Powerful" modifier.

SOCIAL COMPLICATION

Bartender: *Hey! We don't serve their kind here!*

Luke: *What?*

Bartender: *Your droids. They'll have to wait outside. We don't want them here.*

—anti-robot prejudice rears its ugly head in *Star Wars*

The possibilities for Social Complications are as broad as the possibilities for societies in Science Fiction. For example, in many Science Fiction settings, the *Minority* Social Complication (Very Frequently, Minor; 15 points) occurs frequently — proving that neither Humanity, nor other alien species, necessarily outgrow prejudice when they become smart enough to build starships. Common targets of discrimination in Science Fiction stories include aliens (in a society dominated by a single species), the genetically engineered, mutants, telepaths and other psionics, and artificial life-forms (robots, clones, and the like).

Other Social Complications depend on the setting or the nature of the campaign. In a Military Science Fiction game, most characters are *Subject To Orders*. In a campaign focusing on a barbaric star-empire, slavery may exist, making the *Slave* Social Complication appropriate.



Other forms of Social Complication change or become obsolete in future societies. For example, maintaining a Secret Identity is difficult when DNA tracing, computer image-enhancement, and voiceprint analysis let the authorities see through any disguise. (The GM may want to require anyone who has a Secret Identity to also buy a Deep Cover.) For a computer hacker, a Secret Identity in cyberspace is the only thing keeping him out of jail!

Given the scale of most Star Hero settings, and the ease with which characters can travel vast distances, it may be possible to escape, at least temporarily, the effects of social stigma. Characters can reflect this by decreasing the frequency at which the Complication applies, or GMs may impose the same modifiers as indicated in the *Negative Reputation Scale Modifiers* table.

SUSCEPTIBILITY

Artificial beings or aliens may be Susceptible to things which ordinary Humans ignore; if so, the GM should include the Complication in the appropriate Species Templates. And unless a species is very rare or secretive, its Susceptibilities are probably common knowledge. This means villains can take advantage of them, but that ways to counteract the Susceptibility likely exist.

For example, if the nocturnal Akrai are Susceptible to sunlight, a villain facing Akrai heroes will only go out in the daytime — but Akrai characters can buy protective suits and sunglasses in stores, and many businesses stay open all night for the convenience of Akrai customers. Assuming these effects cancel each other out, characters get no additional points for their Susceptibilities being well-known; if they're more restricted than normal, GMs may allow a +5 Character Point modifier.

VULNERABILITY

Like Susceptibility, Vulnerability most often occurs in Star Hero as part of a Species Template. Many alien species may be more sensitive to certain attacks than Humans are. Engineers may deliberately manufacture synthetic beings like robots or androids with a Vulnerability to make them easier to control.

Of course, social customs and laws will reflect widely-known Vulnerabilities: if sonic attacks are deadly to Chiroptans, then the laws on Chiroptan worlds regulate sonic weapons as strictly as lasers or particle blasters. By the same token, however, mercenaries hired to attack a Chiroptan installation know to load up on heavy sonics. As with Susceptibility, the GM may allow a +5 Character Point modifier to a Vulnerability if the drawbacks of its being public knowledge are more severe than any related benefits.

CHAPTER THREE



THE UNIVERSE, PART 1: GALAXIES AND STARS



GALAXIES

One of the attractions of Star Hero is the vast landscape characters can explore and adventure in. The Milky Way Galaxy alone contains more stars and planets than most people can comfortably think about, and Humans can see millions of other galaxies! Given that much real estate to work with, the GM can create just about any sort of setting or locale he needs for an adventure — all he has to do is find a way to get the PCs to it.

Galaxies are very big collections of stars. Big galaxies contain up to half a *trillion* individual stars, and can be 100,000 light-years across. Galaxies exist singly and in clusters of up to a dozen. Within a group, galaxies are relatively close together — starships that can quickly cross a single galaxy can also handle intergalactic distances. Typical separations within a cluster are about 1 million light-years, but some galaxies can get much closer, actually touching each other in some cases... or even colliding.

Galaxies are pretty self-contained — stars form inside them out of interstellar dust and gas, live out their lives orbiting the galactic center, and then explode, replenishing the interstellar medium for the next generation of stars. Only when galaxies brush past each other can stars be kicked out into intergalactic space.

Scientists classify galaxies into four main types:

- *Irregular galaxies* have no identifiable structure, and are usually the result of collisions or close encounters with other galaxies.
- *Elliptical galaxies* are simply big spherical or egg-shaped blobs of stars.
- *Lenticular galaxies* are disk-shaped but have no internal structure.
- *Spiral galaxies* are the most structured, with distinct spiral arms and a defined core.

“The Universe is big. It’s vast and complicated and ridiculous and sometimes, very rarely, impossible things just happen and we call them miracles[.]”

—the Doctor opines about the way things are in the *Doctor Who* episode “The Pandorica Opens”

Spiral galaxies come in two subtypes, spirals and barred spirals. In regular spiral galaxies the arms converge at the central core, while barred spirals have a straight “bar” across the central region, and the arms trail from the ends of the bar. Astronomers have recently found evidence that the Milky Way is a barred spiral galaxy.

Elliptical and lenticular galaxies appear to be old objects, with no more star formation going on and little interstellar gas and dust. It’s likely that spiral galaxies gradually turn into lenticulars or ellipticals as they age.

ENERGY BARRIERS AND INTERGALACTIC PERILS

Gamemasters who don’t want their campaign to go intergalactic, but who do like the convenience of rapid travel within a galaxy, can solve that dilemma by making the trip from one galaxy to another very dangerous. *Star Trek* postulated an “energy barrier” at the edge of the Galaxy, by analogy with the radiation belts created by the Earth’s magnetic field. The Milky Way does in fact have a magnetic field, though it’s a hundred thousand times weaker than Earth’s and so isn’t much of a barrier. In a Star Hero campaign that shouldn’t stop you from having an impassable barrier if you want it.

Other writers have suggested that physical laws may work differently in intergalactic space; Vernor Vinge made it home to incomprehensibly powerful entities who could destroy intruding spacecraft on a whim. A. Bertram Chandler’s stories set among the “Rim Worlds” at the edge of the Galaxy suggested that the fabric of *reality itself* grows thin beyond the Milky Way’s edge, so that starships venturing into intergalactic space may find themselves in a completely different universe!

DANGEROUS GALAXIES

Not all galaxies are as peaceful and stable as the Milky Way. Astronomers can see galaxies wracked by titanic and highly energetic events — huge jets of matter shooting into space, blasts of energetic particles bombarding planets, and energy emissions thousands of times greater than normal. Jets and particle emissions are probably caused by massive black holes in the galactic core, which consume stars and catapult some material out at high speeds. The radiation produced by this would certainly render the central part of a galaxy uninhabitable.

A *quasar* (short for “quasi-stellar radio source”) is a highly energetic compact region surrounding the supermassive black hole in a galactic core. Quasars emit visible light, radio waves, and other electromagnetic radiation in a point-like fashion similar to a star, making them some of the brightest objects in the universe. They’re typically ten to 10,000 times the size of the black hole they surround. Quasars can emit as much energy as a trillion stars like the Sun, which means that any galaxy containing one would be full of lethal radiation. Fortunately, all known quasars are billions of light-years away, and may only have existed during the early stages of galactic formation.

Even the Milky Way’s core can generate some impressive activity. Astronomers have detected two huge “bubbles” of gamma radiation extending out some 25,000 light years from the north and south poles of the galactic core. Nobody knows what caused them, but since they appear symmetrical it seems likely they were created by some big event at the black hole in the center of the Milky Way.

In his “Known Space” series, science fiction writer Larry Niven decided to blow up the Milky Way’s core region in a chain reaction of supernova explosions. The discovery of this calamitous event and the reactions of people and civilizations become a major plot thread. Similar disasters can drive major events in a roleplaying campaign.

One interesting possibility is that some destructive galactic events may be artificial. A sufficiently advanced civilization might create a mass jet to rearrange the useful matter in a galaxy, getting it out into space instead of locked up in stars. A high-energy particle beam could be a galaxy-sized weapon — aimed at a galaxy-sized foe! Aliens might even be trying to *move* their galaxy, either to get away from some unimaginable danger, or to get closer to a cluster of other galaxies for piracy on a cosmic scale.

THE MILKY WAY

The sky was black, and the rising body of the Galactic Lens was spreading its bespanglement across the velvet depths of space. All that haze of nebula was a mass of stars so numerous that they melted one into the other and left nothing but a cloud of light.

—the Mule contemplates a Milky Way he intends to conquer in *Second Foundation*, by Isaac Asimov

Earth’s home galaxy is a big barred spiral. It’s accompanied by two dwarf galaxies called the Magellanic Clouds, and is in the process of absorbing two others, called the Sagittarius Dwarf Galaxy and the Canis Major Dwarf Galaxy (this is happening on the far side of the Milky Way’s core from Earth, so Humans can’t see the gory details). The Milky Way contains 400 billion stars, and can be divided into three distinct regions: the core, the galactic disk, and the halo.

The *core* is a spherical bulge at the center, where much of the Milky Way’s mass is concentrated. It’s as much as 6,000 light-years thick. Scientists believe the core of the Milky Way holds a large black hole (and, in fact, that all galaxies have one). A bar-shaped structure of stars extends out on either side of the core, and the Milky Way’s spiral arms stream off of the bar.

Most of the remaining mass is the *galactic disk*, a flat plane extending out from the core. The disk is about 100,000 light-years across and less than 1,000 light-years thick in most places. The spiral arms winding out from the core are the disk’s most visible feature, but they’re something of an illusion. The density of stars is roughly constant throughout the disk (densest near the core, thinnest at the rim); the arms are visible only because they contain a high proportion of new, bright stars. Current theory holds that the arms are “ripples” where the interstellar gas is more concentrated than elsewhere, so that new star formation goes on there. Between the arms there are plenty of stars, they’re just old, stable, and dim — like the Sun.

The spiral arms of the Milky Way include (from innermost to outermost) the 3 Kiloparsec Arm, Norma Arm, Scutum-Crux Arm, Sagittarius Arm, Orion Arm, and Perseus Arm. Earth’s sun is on the inner edge of the Orion Arm.

The rest of the galaxy’s mass is in the *halo*, a spherical region extending up and down from the plane of the galactic disk. The halo contains few stars, and most of those are clumped into globular clusters. Stars in the halo orbit the center of the Galaxy, which means they plunge through the disk every few million years.

COUNTING THE STARS

Despite years of study, astronomers differ on some basic facts about the Milky Way Galaxy. Some say it contains 400 billion stars, others only 200 billion. Some say it’s 2,000 light-years thick on the average, others 1,000 light-years. Effort has been made to choose the most plausible (or probable) facts for use in Star Hero, but GMs and players can always use different numbers and measurements if they prefer.



3

POPULATION I AND II STARS

Generally speaking, stars come in two types: Population I and Population II. *Population I* stars contain hydrogen, helium, and lots of stuff astronomers lump together as “metals.” Earth’s Sun, and most nearby stars, are Population I. *Population II* stars, on the other hand, are most common in globular clusters and around the galactic halo. They consist of nearly pure hydrogen and helium as created in the Big Bang. Most astronomers believe Population II stars are “first growth timber” formed from the original interstellar medium, while Population I stars are “second growth” formed from gas enriched with heavy metals created in the cores of Population II stars and blasted into space in supernova explosions.



3

GALACTIC REAL ESTATE

Recently, scientists have determined that only some parts of the Milky Way are suitable for the formation of planets capable of supporting life (as Humans currently know of and define “life”). The same is likely to be true of all galaxies — each one has a “Galactic Habitable Zone” where conditions favor the development of life.

Two factors establish the bounds of the habitable zone: radiation and metals. Radiation is deadly to most life forms, and it’s difficult to see how life as Humans know it could evolve in a high-radiation environment. The core of the Milky Way has a high level of background radiation, and moreover is prone to frequent supernova explosions. Scientists estimate that life is impossible within 14,500 light-years of the galactic center. (Of course, the radiation levels may not bother suitably exotic kinds of life; see Chapter Four.)

There’s also evidence that the Galaxy’s magnetic field protects us from intergalactic cosmic radiation. Some scientists have traced a pattern of mass extinctions in the fossil record to periods when the Sun’s orbit about the galactic core takes it up out of the plane of the Galactic disk into regions where the intergalactic radiation flux is stronger. If this is true, pretty much all the stars in the halo are unsuitable as abodes for life.

To astronomers, “metals” are everything that isn’t hydrogen and helium. All the heavy elements like oxygen and iron, the building blocks of planets as well as living things, are formed in supernova explosions. Consequently older Population II stars (see sidebar) tend to be very metal-poor, and are unlikely to have planets. They’re most common in the galactic halo and out at the edges of the galactic disk. Current estimates suggest that the zone beyond 37,000 light-years from the center of the galaxy is too metal-poor to have lifebearing planets.

Of course, there’s still plenty of room in the Galactic Habitable Zone; it contains about 100 billion stars. Moreover, the boundaries are hardly fixed; it’s certainly possible to have a lifebearing world at the rim, just very unlikely. Other galaxies probably have a similar “habitable zone” scaled appropriately by size. Small galaxies may have no radiation-filled core, but probably have more of a metal shortage, so it balances out.

THE DRAKE EQUATION

The astronomer Frank Drake was among the first modern scientists to think seriously about the possibility of intelligent life elsewhere in the galaxy. He devised a mathematical expression to estimate the number of technological civilizations in the galaxy, which nowadays is known as the “Drake Equation” in his honor. This is one version:

$$N = N^* \times fp \times Np \times fh \times fl \times fc \times (Lc/Lg)$$

N is the number of civilizations capable of sending out a message detectable across interstellar distances. It’s the product of the other terms.

N* is the number of stars in the Milky Way Galaxy, about 400 billion. In the light of recent discoveries about the Galactic Habitable Zone this can be reduced this to 100 billion, representing the number of stars in the zone. Space Opera campaigns may wish to ignore the Galactic Habitable Zone in favor of a larger and more populous galaxy. This is about the only number in this equation which is known with any certainty. The rest are estimates, and Star Hero GMs can adjust them as they wish.

The term **fp** is the proportion of stars which last long enough for lifebearing worlds to form around them. Astronomers believe a star needs at least 5 billion years for planets to reach a state where life can exist. This means mostly dim, long-lived stars like the Sun. The proportion isn’t known exactly, but estimates for **fp** range from 0.5 to 0.9 or so.

Np is the average number of planets per star. Until recently, this was complete guesswork. The only star available for study (the Sun) has eight planets, but there was no way to know if it was ordinary or rare. Since 2000 astronomers have discovered *hundreds* of planets orbiting other stars, suggesting that most if not all stars of appropriate age have a planetary system. So we can assume the Sun’s family is typical, and take 10 as the average number of planets per star.

The term **fh**, the proportion of planets suitable for life, requires more guesswork. The planet must be the right size, must be in the life zone (or close to a giant planet capable of heating it to liquid-water temperatures), and must have a stable orbit. Data from the Kepler orbiting telescope suggests an average around 0.025, which means one in every four planetary systems has a habitable world.

The next term, **fl**, represents the number of potentially lifebearing worlds where life actually does arise. We know life formed on Earth, but we don’t know if that was a lucky fluke or an inevitable result. The value of **fl** could be 1 (meaning life evolves wherever conditions are right) or so low as to be effectively 0. A value of 0.5 seems a plausible estimate.

The term **fc** is complete guesswork. It represents the proportion of lifebearing worlds that produce a technological civilization. Earth got by for billions of years without intelligent life, and a study of Human history suggests the path to high technology is not straight and inevitable. An optimistic figure (suitable for a Space Opera setting) would be 0.5; more brutal realism could put the figure at 0.001 (one in a thousand) or lower.

The final term is the ratio of a civilization's average life (**Lc**) to the life span of the Galaxy (**Lg**). We know the Galaxy has existed for about 10 billion years, but how long do civilizations endure? Our own has had advanced technology barely a century. On the other hand, once a species has space travel it could potentially survive indefinitely. A short average lifespan means a galaxy has a few widely-separated civilizations which don't have enough time to communicate before self-destructing. A long life means space should be crowded — which leads to the question, "Where are they?"

INTERGALACTIC TRAVEL

Since the distances between galaxies are only an order of magnitude or so greater than the scale of galaxies themselves, any galactic-scale civilization can probably manage intergalactic expeditions. The exact mechanics of FTL drive do have tremendous influence on intergalactic travel, though. (See page 223 for information on the types of FTL drives.)

Hyperspace and warp drives presumably operate the same in intergalactic space as they do within galaxies. Traveling between galaxies with those drives is simply a matter of packing enough supplies and making sure there's enough fuel for the journey.

Jump drives may have problems on an intergalactic scale. If ships must refuel after each jump, or can only jump between stars, then intergalactic trips are impossible. A chain of stars linking one galaxy with another (the result of past close encounters) could become a vital highway in that case.

Wormhole drives or stargates depend on the existence of intergalactic connecting links. Whether such links are possible is entirely up to the GM — natural wormholes might only link points within a given galaxy, or *all* links could be intergalactic, so that star systems right next door in normal space are thousands of wormhole jumps apart. The range of stargates depends entirely on the builders' level of technology and area of exploration. Perhaps most gates link nearby stars, but a few very rare and valuable ones are intergalactic gates — which means that whoever controls the intergalactic gate controls all traffic between galaxies.

For game purposes, assume civilizations last about 10,000 years before they go extinct, enter a "higher stage," or otherwise lose interest in communicating with primitive starfaring beings. Stars live about 10 billion years, so that makes the ratio 1 to 1 million, or .000001.

Now run the numbers. Taking the most "realistic" values we get $N = 100 \text{ billion} \times 0.5 \times 10 \times .025 \times 0.01 \times 0.001 \times .000001$, which works out to 0.125 civilizations in the Galaxy — in other words, we *are* alone.

Taking highly optimistic "Space Opera" values we get $N = 400 \text{ billion} \times 0.9 \times 10 \times 0.025 \times 1 \times 0.5 \times 0.000001$, or 45,000 technological civilizations in the Milky Way Galaxy, with an average separation of about 700 light-years. Clearly Earth is overdue for a visit!

OTHER GALAXIES

The Milky Way is part of a small cluster of galaxies known as the Local Group. The Local Group contains two large galaxies (the Milky Way and M31 [Andromeda]) and several dozen small satellite galaxies.

ANDROMEDA

The Andromeda Galaxy, also known as M31, is the Milky Way's closest large neighbor. It lies 2.5 million light-years away in the northern sky. M31 is about the same size as the Milky Way, and could have at least as many civilizations as the Milky Way. Its galactic core is an unusual double structure, possibly incorporating the remnant of a "cannibalized" dwarf galaxy.

In Science Fiction, the Andromeda Galaxy is most often used as a potential home of extragalactic menaces. A mighty empire has conquered all of Andromeda and now looks hungrily at the Milky Way; a cosmic disaster (like a gamma-ray burster or a black hole collision in the core) will soon render most of Andromeda uninhabitable so its civilizations seek new homes here; an ancient evil driven out by the Andromedans is now hiding out in the Milky Way; and so on.

THE MAGELLANIC CLOUDS

The Magellanic Clouds are a pair of irregular dwarf galaxies near the Milky Way. They're connected to the Milky Way by a ribbon of gas called the Magellanic Stream, apparently the result of a close encounter in the distant past. They're called clouds because that's what they look like in the southern sky.

The larger of the two (called, logically enough, the Large Magellanic Cloud) is about 200,000 light-years away and contains some 20 billion stars, making it 1/20 the size of the Milky Way. The Large Magellanic Cloud is rich in dust and gas and has many young bright stars. Among others, it contains the brightest known star — S Doradus, a star which is believed to have a mass several *thousand* times that of the Sun, and a brightness several *million* times greater (see page 142).

3

"You're not thinking. At three days to the light year, it would take one of our ships about six hundred years to reach the Clouds of Magellan."

—Louis Wu explains to Teela Brown why Humanity needs the Puppeteers' much faster hyperdrive in *Ringworld*, by Larry Niven

The Small Magellanic Cloud is connected to its big sister by a streamer of gas and dust called the Magellanic Bridge, and many astronomers consider the two of them a single body. The Small Magellanic Cloud holds about a billion stars.

In fiction, the Magellanic Clouds are good targets for pioneering intergalactic voyages. Explorers using a new super-fast interstellar drive can aim for them on a test flight, or get accidentally catapulted to the Magellanics by some cosmic accident or wormhole. Since they're smaller than the Milky Way they probably contain fewer civilizations, and those are likely to be less advanced; the smaller scale of the Clouds also means civilizations there wouldn't have the resources available to empires in the Milky Way.

STELLAR ENGINEERING

Stars represent a very valuable resource, so advanced civilizations may wish to exploit them for more than light and heat. Since massive stars burn brightly but blow up soon, civilizations might take steps to “bank their fires” and extend the lifespan of stars. In the process the civilization would gain access to large amounts of mass from the star's outer layers.

Here's how it might work: the civilization constructs a chain of huge stations orbiting over the star's equator, using solar energy to generate powerful magnetic fields, driving matter from the star upward in two huge streams from the poles. Immense collectors (similar in principle to the Bussard ramjet discussed on page 223) would gather and sort the material. The heavy elements would be put aside for use, while hydrogen and helium would be allowed to stream out to the outer reaches of the star system, where it would condense into planet-sized blobs of gas.

The process would continue until the star was reduced to the mass and brightness of a dim Type K or bright M dwarf. In that state, the star could burn for billions of years. When its brightness starts to drop, the managing civilization would drop in a few planet-sized blobs of hydrogen to throw another log on the fire. With proper attention, a star's life could be extended to tens of billions of years.

Messing around with a star's brightness means the civilization must be able to move planets around within the star system, to place them at the proper distance. Alternately, the civilization might abandon or even dismantle the planets and take up residence in various space habitats.

Stellar engineering is more likely in a setting with slow or nonexistent faster-than-light travel. If voyaging to other stars is easy, an advanced civilization could simply abandon its home star in search of a new home.

In a Star Hero campaign, stellar engineering can be either an enigmatic project by long-dead ancient aliens, or something done by inscrutable and powerful beings the heroes are trying to communicate with. Of course, if it turns out they're hostile, how do you fight beings who can take stars apart?

GLOBULAR CLUSTERS

Globular clusters are clumps of stars existing within and around galaxies. Some orbit within a galaxy itself while others follow long orbits taking them hundreds of thousands of light-years out. Scientists think clusters formed early in a galaxy's history, since they contain almost no gas and very old stars.

Due to globular clusters' age, the supply of heavy elements (*i.e.*, anything but hydrogen and helium) is low, so there won't be very many planets and little chance of life. On the other hand, their great age does mean clusters could hold outposts or ruins of very ancient civilizations.

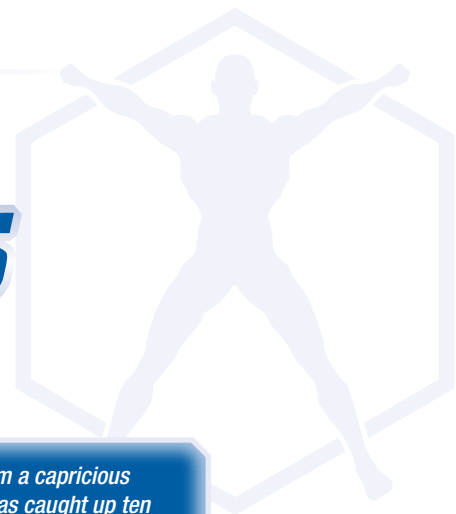
In a universe of slower-than-light travel, a very patient and long-lived civilization could “hitch a ride” in a globular cluster on a long elliptical orbit as a way to reach nearby galaxies. True, there are no planets to settle on, but the stars provide energy and might be dismantled to provide useful mass (see sidebar).

DARK MATTER

When astronomers studied how galaxies rotate, they learned something puzzling. In Earth's Solar System, most of the mass is concentrated at the center, in the Sun. Consequently the inner planets orbit much faster than the outer ones — a phenomenon known as Kepler's Third Law. But galaxies don't behave that way. The outer portions of a galaxy and the inner ones move at about the same speed. This implies that the mass is spread more or less uniformly throughout the galactic disk — but when astronomers count the stars, that just isn't so. Even allowing for interstellar planets and gas clouds, there still just isn't enough *stuff* to account for the way galaxies rotate. As a result, astronomers now believe most of the mass of the universe consists of “dark matter” which is invisible and ghost-like, interacting with normal matter only through gravity.

Gamemasters can use “dark matter” in a number of ways. Since all dark matter has Desolidification, it can be used as the “technobabble” explanation for that power in a Superhero or Space Opera setting. And maybe some of that dark matter is alive and *intelligent* — dark matter aliens would be wonderful shadowy villains in any role-playing campaign.

STAR SECTORS



There's no reason to create an entire galaxy of 400 billion stars for a roleplaying campaign — it would take the GM about 20 million years to generate them all! Instead, most Star Hero campaigns take place either in a more loosely-defined galaxy, or across one or more sectors. A sector is simply a convenient-sized region of space. Depending on the speed of interstellar travel and the frequency of inhabited systems, a sector can be anything from a few light-years across to a slice of the entire Milky Way. The scale should be something the characters can cross in a reasonable length of time (typically no more than three months in-game), and in most cases the number of inhabited systems should be three to 12 (thus ensuring a reasonable degree of variation, while not overwhelming the players with details or the GM with work). If the PCs want to venture beyond their home turf, the GM can always create more sectors to visit.

ACROSS THE ELEVENTH DIMENSION!

The text mentions the possibility of there being ten dimensions. According to “Superstring Theory,” the universe has 10, or maybe 11, dimensions. All but three spatial dimensions are extremely tiny. Basically, the universe is really big in directions X, Y, and Z, and almost flat in directions ZZ through ZZZZZZZZ.

These theories open up some intriguing possibilities for Star Hero games. The relative flatness of Earth's Universe in most dimensions means there could be other universes parallel to it in those “directions.” Cutting through the higher-dimensional space in which our 10-dimensional universe is coiled could be a convenient explanation for FTL travel. As with *Star Trek's* “subspace,” one of the other dimensions could be a source of energy, a communications medium, or a convenient explanation for almost any pseudoscientific fact the GM needs to create.

Halfway along the Perseid Arm a capricious swirl of galactic gravitation has caught up ten thousand stars and sent them streaming away at an angle, with a curl and a flourish at the end. This is Mircea's Wisp. To the side of the curl, at seeming risk of wandering away into the void, is the Purple Rose System, comprising three stars: Lorca, Sing, and Syrene.

—from *The Worlds Of Man*, by the Fidelius Institute, as quoted at the beginning of *Araminta Station*, by Jack Vance

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STELLAR CARTOGRAPHY

You can't create a sector entirely by random generation. The interplay of civilizations, galactic politics, and exploration all affect who lives where. But you can create the basic physical environment randomly — after all, real stars and planets form by essentially random processes.

On average there is one star per 400 cubic light-years in the outer regions of the galaxy. This translates to an average separation of 9 light-years. In the galactic core and in globular clusters the density can be much higher, up to one star per cubic light-year, with an average separation of one light-year or less.

When mapping out a region of space the GM has two options. The simplest way is to pretend the galaxy is flat, so that all stars exist in the plane of your sheet of paper. While this throws astronomical accuracy to the solar wind, it's simple to draw and makes it easy to measure interstellar distances. In such a “two-dimensional” universe, a 20 by 20 light-year sector would contain about six stars (roll 1d6+3, or 2d6, for more variation).

In reality, space has three dimensions (actually, according to current physics it may have *ten*, but don't worry about that). To map a volume of space in three dimensions the GM has to give each star a “vertical” coordinate, indicating how far above or below the plane of the page it's located. On the map you can note the star's distance “above” or “below” the plane of the page in light-years with a + or - sign. A sector measuring 20 light-years on a side would hold about 20 stars (roll 6d6 for more variation).

SECTOR CREATION CHECKLIST

Step 1: Decide if you are mapping in two or three dimensions.

Step 2: Decide on your scale — how many light-years on a side is the sector?

Step 3: Determine how many stars there are. If you have a small sector (20 ly per side or less), roll 1d6 for every 10-lightyear cube. If it is a large sector and only the interesting star systems are being mapped, just roll 2d6 for the number of populated systems.

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Step 4: Determine coordinates, as described in the text.

Step 5: Roll on the System Type Table (page 99) for each system to determine how many stars are multiple systems.

Step 6: Determine orbital separation. For close companions roll 2d6-2 times 10 AU; for distant companions roll 2d6 times 1,000 AU.

Step 7: Roll on the Star Types Table (page 100) to determine the spectral type of the stars.

To determine distances between stars, use the Pythagorean Theorem: if your two stars have coordinates (A, B, C) and (X, Y, Z), the distance between the two is the square root of the sum $(A-X)^2$ plus $(B-Y)^2$ plus $(C-Z)^2$. If you're working in only two dimensions, ignore the third pair of coordinates.

Example (two dimensions): *Rhombus Alpha* is located at coordinates +4, -8; *Beta Manticorum* is located at -2, 5. The distance between them is the square root of $(+4 \text{ minus } -2)^2$ plus $(-8 \text{ minus } 5)^2$, which equals the square root of $(6)^2$ plus $(-13)^2$. This translates to the square root of $36 + 169$, or 205. The square root of 205 is 14.3, so the distance between the stars is about 14 light-years.

Example (three dimensions): *Cambias's Star* is located at coordinates +3, +7, +5, and *Apanar* is at -5, +4, +6. The distance between them is the square root of $(+3 \text{ minus } -5)^2$ plus $(7 \text{ minus } 4)^2$ plus $(5 \text{ minus } 6)^2$. The terms simplify to 64, 9, and 1, which total 74. The square root of 74 is 8.6, which rounds off to 9 light-years.

Note that a flat two-dimensional galaxy will be more sparsely populated and dispersed. A sector will have only a couple of habitable worlds, and even with FTL travel most planets only have a few neighbors. The plus side is that borders are easier to guard, as a space fleet only has to patrol a "line in the vacuum." A three-dimensional sector is denser, with more worlds and easier communication among them. On the other hand, this more populous sector is more vulnerable — borders are *surfaces* rather than outlines and are much harder to monitor and patrol.

On a small scale — sectors of 20 light-years or so — it's possible to actually map out all the stars in a given region of space. On a big scale — 100 light-years or more — GMs have to content themselves with mapping the important systems and simply ignoring uninhabited star systems (or making them up "on the fly" during the game, as needed).

Stars are scattered more or less randomly through space. The simplest way to determine their arrangement is to roll dice to get three coordinates for each star. Ten-sided dice work best, if you happen to have some, but you can break the sector up into smaller "blocks" and use other dice. Roll one die for each of the star's three coordinates, using a second die to determine if the roll is positive or negative as measured from the sector's center point.

Example: *Steve* is generating coordinates for a star in his campaign. He rolls three ten-sided dice and gets 8, 3, and 6. He rolls a second die, using odd numbers to indicate a negative coordinate and evens to indicate positive numbers. The results are negative, negative, positive. So the star's coordinates are -8, -3, +6.

INTERSTELLAR PHENOMENA AND DANGERS

Humans of the twenty-first century don't know much about what lies between the stars. Interstellar space may be completely empty, or it may be full of interstellar comets, wandering planets, cosmic strings, space storms, and spaceborne life. Considering them in order from hardest-science to most-rubbery:

NEBULAE

Captain Spock: *She can still outrun us, and outgun us. But there is the Mutara Nebula at 153 mark 4.*

Lieutenant Saavik: *Trouble with the nebula, sir. All that static discharge and gas will cloud our visual display. Tactical won't function, and shields will be useless.*

Spock: *Sauce for the goose, Mr. Saavik — the odds will be even!*

—Admiral Kirk uses a nebula to tactical advantage in *Star Trek II: The Wrath Of Khan*

Galaxies contain huge clouds of gas and dust that are nurseries for new stars. Interstellar nebulae are vast, extending across hundreds of light-years. They're not very dense, however; compared to planetary nebulae (see page 100) they're essentially "dense vacuum" with only a few dozen atoms per cubic meter. This can make them something of a threat to ships moving through normal space at high speeds. Any ship going more than 90 percent of the speed of light takes 1 point of damage per Phase per two meters of front facing when passing through a nebula (no defense applies). This may or may not apply to warp-drive ships, at the GM's option.

Nebulae also block sensors, but only over distances of light-years. Impose a -1 penalty to any Systems Operation roll for each light-year of nebula between the observer and the target. In Space Opera games, GMs can make these penalties more severe (up to -4) over shorter distances if it serves the dramatic needs of the story (as with the final starship combat in *Star Trek II: The Wrath Of Khan*).

COMETS

Earth's Solar System is surrounded by a shell of comets called the Oort Cloud, extending out to nearly two light-years from the Sun. (Other solar systems have comet clouds of their own.) That far out, the Sun's gravity is very weak, scarcely greater than that of other nearby stars. It wouldn't require much of a push to send a comet or asteroid into an elongated orbit that would carry it into the sphere of influence of some other star. Interstellar comets may be relatively common — in which case they'd be a serious threat to space voyagers traveling at nearly the speed of light. They could also serve as



SPACE STORMS

Star Trek introduced the concept of “ion storms” and “plasma storms” — violent showers or waves of charged particles moving through interstellar space at the speed of light. In *Star Hero*, a particle storm is modeled as a sudden, unexpected Blast attack on ships in space. Science officers or sensor operators can detect them in advance on a successful Systems Operation (or appropriate PS) roll.

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secret bases for pirates, rebels, and spies, or even as a home for colonists who tunnel into the ice and grow crops by the light of fusion reactors. Some highly advanced civilizations might use Oort clouds and interstellar comets for fuel and raw materials.

WANDERING PLANETS

If comets can be found in interstellar space, why not planets? They can either be bodies formed out there in the endless darkness, or exiles, kicked out of the star system where they formed by interactions with other worlds. Planets might also be deliberately sent wandering by a technological civilization. Doing so would require either some kind of rubber-science space drive (like the “Spindizzy” of James Blish’s *Cities In Flight* series, which converts mass to velocity) or a very big explosion which somehow doesn’t just blow the planet into bits.

Wandering planets could be a useful resource, especially if they carry ruins of some ancient civilization. They can also be a menace — a loose planet careening through an inhabited system would do tremendous damage just due to tides and orbital perturbations even if it didn’t crash into a populated world. Powered planets with a space drive steered by a predatory civilization would be the ultimate pirate menace, arriving in peaceful star systems to loot

and conquer before moving on to the next victim. How can the Space Patrol defeat an entire planet of raiders? Or, as with the Puppeteer Fleet of Worlds of Niven’s *Ringworld*, planets on the move could simply be massive passenger-carrying vehicles.

Current astronomy suggests there may actually be large numbers of rogue planets in interstellar space. Most will be “ice balls” like Pluto, but there could be a few giant worlds with multiple moons drifting free in space.

INTERSTELLAR LIFE

And maybe there’s something living out there in the dark between the stars. Humans evolved on a planet, so naturally they assume all life has to develop on planets... but they could be wrong. Astronomers have detected fairly complex organic molecules in interstellar nebulae. Given enough time, they might evolve into vast, wispy organisms living in space. Such space creatures would be very unlike planetary life — instead of using chemical reactions they would be based on magnetic fields, gravity waves, and flows of charged particles. In a Hard Science Fiction setting, interstellar creatures would be a fascinating phenomenon to study. In Space Opera they might be a world-threatening menace, snatching ships that venture too far from the light of the Sun.

Consider a particle storm to do RKA 3d6 damage to objects within an Area Of Effect with a radius of 3d6 x 10,000 kilometers; the storm affects an area for a period of 1d6 Turns, perhaps longer. The GM decides whether some, all, or none of the ship’s defense applies to protect it from this battering.

Another possibility is “gravity tsunamis” — sudden and very powerful gravity waves moving through space which threaten to rip apart anything they pass through. They travel at approximately the speed of light. They do 2d6+12 dice of Killing Damage, Penetrating, over an Area Of Effect (Line) 1d6 times 10,000 kilometers long and 1d6 x 100 kilometers “deep.” The wave should take at least 1 Turn, if not longer, to pass by the ship’s location. The GM decides whether some, all, or none of the ship’s defense applies to protect it from the wave’s effects. Gravity-based drives or artificial gravity systems could be hastily tuned to counter a gravity tsunami, requiring a Systems Operation roll by the engineer.

A space storm may also interfere with sensors and communications, imposing a -1 to -5 penalty to Systems Operation rolls to use those systems.



STARS

JARGON BOX

While this chapter keeps the technobabble to a minimum, astronomy and astrophysics are complex subjects and have developed a technical vocabulary.

Some important terms include:

Astronomical Unit (AU): An

Astronomical Unit is defined as the average distance from the Earth to its Sun. One Astronomical Unit (abbreviated AU) is 150,000,000 kilometers. It's a very handy yardstick for describing distances on the scale of star systems.

Light-year: A light-year (sometimes abbreviated ly or LY) is the distance light travels in a year at the speed of approximately 300,000 kilometers (186,000 miles) per second. One light-year is equal to 9,467,000,000,000 kilometers. When describing interstellar distances it's much more convenient to use light-years than kilometers.

Parsec: Another yardstick for interstellar distances is the parsec (parallax second), defined as the distance at which a star would have a parallax of one second of arc as observed from the Earth. A parsec equals 3.25 light-years, or 30 trillion kilometers.

"My God — it's full of stars."

—the last words of astronaut Dave Bowman as reported in *2010: The Year We Make Contact*

Space is big, but it's mighty cold and empty. Here and there throughout the void are bright, warm little points of light: the stars. There are close to four hundred billion stars in the Milky Way Galaxy. Circling many of those stars are planets, and on some of those planets living beings have developed enough intelligence to look upward and wonder about the stars. This game is called "Star Hero" for a reason; most of the interesting things within a galaxy happen near stars.

This section and the following chapter provide a system for generating stars and star systems which emphasizes scientific accuracy, based on what Humans know as of 2011. You can either use it as a guide to making your worlds more plausible, or you can roll dice to randomly create star systems and see what you get. Note that most star systems won't have planets suitable for "life as we know it." This isn't as big a problem as it might seem, as there are many other forms of life, ranging from silicon-based beings living in furnace heat to liquid-helium beings who thrive at Absolute Zero. (See page 119 for details.) Most star systems have a world which some organism finds comfortable.

Some gamers want hard science accuracy, while some want Space Opera accuracy which fits the spirit of television shows and films. At many points in the process of creating a sector, a star system or a planet, the GM can choose which method to follow. The options are flagged as either Hard Science or Space Opera.

Note that even the Hard Science options are only accurate according to early twenty-first century science. Discoveries next week or next decade can make some of these rules either ridiculously optimistic or far too conservative.

All the tables for system and planet creation are organized for random generation using one or more six-sided dice. Be aware that you never have to rely on random die rolls. *You can always pick what you want.* The dice results are there to make it handy when you need a system in a hurry, and they give an idea of what the most likely results are.

NAMING STARS

Astronomers have used several systems to designate stars. The brightest stars in a planet's sky usually are given individual names. Less distinguished ones are known by their constellation, and the vast majority get a simple catalog number.

Hard Science: This means most star systems have names like "DM+56 3496" or "Lalande 211385," giving the star's number in some star catalog. As new stars are discovered, new catalogs are created. The GM may wish to use Galactic Star Atlas numbers, which should have at least six or seven digits, leading to system names like "GSA 2837961." Any star system that's inhabited by intelligent beings can have a name in the local language, regardless of what the Star Atlas calls it.

Space Opera: In a Space Opera universe, few stars are known by their catalog numbers. Most have old Greek or Arabic names bestowed by astronomers on ancient Earth, or else names given by civilizations on other worlds. Gamemasters can pick real star names from a star atlas (but be warned: most stars bright enough in Earth's sky to get an individual name are probably not suitable for lifebearing planets), or else can invent new names of their own. Other stars can have names which are simply a pair of Greek letters, like Alpha Upsilon or Omicron Theta.

The moment carried itself. Even the most seasoned star tramp can't help but shiver at the spectacular drama of a sunrise seen from space, but a binary sunrise is one of the marvels of the Galaxy.

—from *The Hitchhiker's Guide To The Galaxy*, by Douglas Adams

STAR SYSTEM TYPES

Approximately half of all star systems have more than one star. They can be anything from contact binaries, orbiting so close together their photospheres touch, to stars orbiting light-months apart. In general, the close-orbiting stars are true twins, formed at the same time, while the distant companions tend to be captured as a result of the motions of stars through space. About a tenth of all star systems have three or more members, usually a close binary pair with a distant companion or companion pair.

Gamemasters creating star systems from scratch should avoid making too many complex multistar systems. To determine the number of members randomly, roll 2 dice and consult the System Type Table.

SYSTEM TYPE TABLE

Roll 2d6	System Type
2	Triple star
3	Triple star
4	Single star
5	Single star
6	Single star
7	Single star
8	Double star
9	Double star
10	Double star
11	Double star
12	Four or more stars

ORBITAL SEPARATION

Having figured out how many stars there are in a system, now you must determine the separation of the stars if there are two or more. This becomes important when you start placing planets. Stars can be either close or distant companions. As the names imply, close companions orbit close to the central star while distant companions orbit far away. In any system with more than two members, the central pair will be close binaries; in a system with four members, there's a pair of close binary companions with a second pair orbiting them at distant binary ranges. Two stars are close companions on a 1d6 roll of 1-3, distant companions on a 4-6.

Close companions orbit at “planetary” distances — within about 100 AU — while distant companions can be thousands of AU apart. For close binaries pick a distance or roll 2d6-2 and multiply by 10 AU; a result of 0 indicates a close binary pair separated by less than a million kilometers. Distant binaries are 2d6 times 1,000 AU apart. For most purposes a distant binary companion is effectively a separate star system, but close enough that civilizations on planets of distant binary companions could make contact with each other using only sublight spaceships.

STAR TYPES

Astronomers classify stars by two characteristics: spectrum (color) and size.

STAR SPECTRUM

Stars were first classified by spectrum, or the mix of colors in the star's light. The color of a star corresponds to its surface temperature. There are seven main types: O, B, A, F, G, K, and M. They are organized in order from hottest to coolest:

- **Type O:** intensely hot blue stars
- **Type B:** slightly cooler blue-white stars
- **Type A:** cooler still but also white
- **Type F:** yellow-white stars
- **Type G:** yellow stars like Earth's Sun
- **Type K:** orange and cooler than the Sun
- **Type M:** cool red stars

These basic types are further subdivided by numbers from 0 to 9, with the lower number indicating a hotter star. Thus, a B5 star is hotter than a B7 star.

Astronomers also recognize type D (white dwarf), N and R (“carbon stars” with some molecules containing carbon), S (containing some heavy metal oxides), and Wolf-Rayet (O-like stars with very hot, exposed cores because a companion has “stolen” their outer material) stars. All of these are rare.

STAR SIZE

The second important thing about a star is its size, given by a Roman numeral. The size scale runs from I to V:

- **I:** supergiant (with two subtypes: type Ia is brighter than type Ib)
- **II:** bright giant
- **III:** giant
- **IV:** subgiant
- **V:** dwarf star (the majority of all stars)

Earth's Sun, for example, is a G2V star — type G2, size V, or a hot yellow dwarf. The “dwarf” types far outnumber the giants. For game purposes, you can simplify matters by lumping all the giant types into simply “Giants” and “Supergiants.”

Some classification systems also have size VI (subdwarf) and VII (white dwarf).

See the Near Stars and Distant Stars Tables (pages 140-41) for the classifications of various well-known stars.

THE LIFE OF A STAR

In general, small and cool stars are numerous, large and bright ones are rare. This is because the big bright stars only last a few million years before exhausting their fuel and blowing themselves to bits in a supernova explosion, while dwarf stars can keep simmering for billions of years. About two-thirds of all stars are Type M dwarfs, and most of the rest are relatively sedate Type K, G, and F stars. Less than one percent of stars are bright supergiants like Rigel, or

red supergiants like Betelgeuse. Those few giants are the most famous stars, simply because they can be seen across vast distances while a dim star like Earth's Sun is known only in the immediate neighborhood.

Big, bright stars seldom have planets because they don't live long enough for the small bodies orbiting them to accrete into planets of any size. In a few cases, giant stars may have captured planets, or possibly worlds or artificial structures placed in orbit by ancient civilizations. It's up to the GM to decide if a giant star has captured or artificial planets; such worlds should be extremely rare in a Hard Science Fiction setting.

Red giants and white dwarfs are both stages in the death of a star. After spending its lifetime as a star on the main sequence, a star that's used up most of its hydrogen fuel turns into a red giant, swelling up until its radius extends out to 1 or 2 AU. The star's density drops to almost nothing — starships can fly *within* a red giant for short periods until heat buildup becomes a problem. The red giant stage lasts a few tens of millions of years, but during that time frozen worlds in the outer system can suddenly find themselves in the habitable zone. While life seldom has the chance to evolve during a star's life as a red giant, such worlds could be terraformed and inhabited by spacefaring civilizations for thousands or millions of years.

After a star goes through the red giant phase it either explodes or collapses. Stars with a mass greater than 1.4 times that of Earth's Sun go up in a *supernova* explosion, leaving behind a supernova remnant — a planetary nebula with a neutron star or a black hole at the center (see page 102). Smaller stars collapse into white dwarfs, which are tiny dense stars burning hot with the energy of the collapse and gradually cooling over billions of years. Unfortunately, any planets of a white dwarf have already been cooked or absorbed during its red giant phase. When determining the composition of a white dwarf's planets, use the "Red Giant" line on the accompanying table. Only a rogue planet captured after the collapse could have enough volatiles to develop life. Civilizations might build artificial structures near a white dwarf, or possibly move planets to a suitable distance; with proper tending a white dwarf can serve as a useful source of energy for billions of years.

To determine what type of stars are in a given system, roll or select from the accompanying Star Types Table. (If you want to adjust the hotness of the stars, you can roll randomly to determine the 0-9 hotness rating rather than using just 0 or 5.) In a multiple star system, place the most massive or brightest star in the center, and make any dimmer stars its companions. If you're generating only populated star systems, then roll 2d6+6 instead of 3d6.

STAR TYPES TABLE

Roll 3d6*	Star Type & Size
3-8	M5V
9-11	M0V
12	K5V
13	K0V
14	G5V
15	G0V
16	F5V
17	F0V
18	Bright or Giant Star (roll on the Bright or Giant Star Table below)

*: Roll 2d6+6 if you're generating only populated star systems.

BRIGHT OR GIANT STAR TABLE

Roll 3d6	Giant Star Type
3-7	A5V
8-9	A0V
10	White Dwarf
11	Type F Giant
12	Type A Giant
13	Type B Giant
14	Type O Giant
15	Supergiant
16-17	Red Giant
18	Exotic Object (roll on the Exotic Objects Table below)

EXOTIC OBJECTS TABLE

Roll 2d6	Exotic Object
2	Black Hole
3-5	Protostar
6-8	Flare Star
9-10	Supernova Remnant
11	Pulsar
12	Anomaly (wormhole, sentient star, anti-matter star, or the like)



Exotic Objects

Astronomers think regular stars are kind of boring. What they really enjoy looking at are exotic objects, which have all kinds of weird properties.

BLACK HOLES

A black hole is an object so dense its escape velocity exceeds the speed of light. They form when a star with a mass greater than three times that of Earth's Sun exhausts its nuclear fuel and collapses. As it shrinks its surface gravity increases until the force of the star's gravity is greater than any matter can withstand, and it collapses into a singularity of infinite density. No matter or energy can leave a black hole, and its enormous gravity warps the fabric of space-time. The limit at which the escape velocity for a black hole exceeds the speed of light is called the *event horizon*, and within that limit normal physics breaks down. Not even a faster-than-light starship can escape a black hole's gravity if it ventures within the event horizon, as the distorted fabric of space makes it impossible for the engines to work. A ship that enters the event horizon and gets sucked into/through a black hole should be considered destroyed, unless the GM mercifully decides the hole sends the ship somewhere (a parallel universe, perhaps).

Even outside the event horizon, the region around a black hole is very dangerous. The tidal forces created by the black star's immense gravity can tear a ship apart (this is RKA, AVAD Does BODY, Constant damage; the defense is a force-field constructed specifically to preserve a ship's structural integrity; see page 219 regarding *Protection From G Forces*). The black hole's "accretion disk" is like a dense planetary nebula full of meteoroids. Objects falling into the hole's event horizon reach the speed of light, and give off energetic particles as they fall, flooding the area with deadly X-rays and gamma radiation.

Time actually *moves more slowly* around a black hole; the crew of a ship orbiting close to the event horizon will find that weeks have passed elsewhere while only hours have gone by for them. In fiction (and perhaps real life!), artifacts of fantastic age can sometimes be found in the vicinity of black holes. Rotating black holes have even weirder effects on spacetime. It's possible to plot a course around a spinning black hole which emerges *earlier in time!* (See Chapter Nine for more on time travel.)

PROTOSTARS

A protostar is a star system that's still forming. If the GM gets a Protostar result when determining the star type, the system is an interstellar nebula, a cloud of gas and dust in the process of collapsing into a star and planets. Interstellar nebulae are fairly thin, so ships can move through them at sublight speeds normally, but any FTL drive which operates in normal space (like warp drive) is limited to only the speed of light because of friction with the gas and dust. See page 96 for more information.

Close to the developing star the nebula becomes much denser, and ships cannot travel at more than 10 percent of the speed of light because the dense gas can literally melt the hull at high speeds. The swirls of energetic gas also interfere with sensors, so any Systems Operation rolls to use sensors are at -4 near a protostar (sometimes more). In addition, showers of meteoroids are common.

FLARE STARS

In certain stars the nuclear fusion reactions at the core are unstable. This phenomenon seems to happen in stars of all types, but is most common (or at least most noticeable) in dim Type M dwarf stars. These flare stars can suddenly increase in brightness at irregular intervals, in some cases becoming more than six times brighter than usual. Radiation levels also jump in proportion.

While most starships can handle the increased radiation, the danger is that flare stars don't follow a predictable pattern — they can go off without warning. Ships in the vicinity of a flare star must remain on alert with defenses active at all times.

Planets orbiting a flare star have no way to avoid the occasional increases in brightness. The flares make it hard for life to evolve on any planet of a flare star, but some especially hardy life forms might develop natural defenses enabling them to survive being baked every few weeks. Note that astronomers currently don't know exactly what causes flare stars. A galactic villain might develop a way to make ordinary stars flare catastrophically, enabling him to hold entire star systems for ransom!

The GM should treat the energy from a flare star as an RKA with MegaScaled Area Of Effect (Explosion) so that it loses about half its dice of damage for each AU of distance out from the star (full damage within 1 AU, half at 1.01 to 2 AU, and so on).

SUPERNOVA REMNANT

A supernova remnant is the tomb of a giant star. When massive stars use up their fuel they explode in a supernova detonation, scattering much of their matter through space in the form of a planetary nebula. Planetary nebulae seldom extend more than a light-year from the remnant of the exploding stars which formed them. They are hot and highly ionized, making them beautiful

objects to look at through a telescope, but terrible to fly through. As in the vicinity of a protostar, ships cannot travel at more than 10 percent of the speed of light in a planetary nebula, and any sensor task is at -4 to the Systems Operation roll due to the ionization. At the center of the nebula is the remains of the star's core, now a neutron star.

NEUTRON STARS AND PULSARS

The neutron star was in the center, of course, though I couldn't see it and hadn't expected to. It was only eleven miles across, and cool. A billion years had passed since BVS-1 burned by fusion fire. Millions of years, at least, since the cataclysmic two weeks during which BVS-1 was an X-ray star, burning at a temperature of five billion degrees Kelvin. Now it showed only by its mass.

—our heroes investigate a neutron star in the aptly-named short story "Neutron Star," by Larry Niven

A neutron star is the last remnant of a massive star blown apart in a supernova. Neutron stars are the densest things in the universe other than black holes — essentially they're atoms the size of planets. Their surface gravity is so intense that normal matter collapses into a mass of tightly-packed neutrons. This gravity poses great danger to spacecraft. Like a black hole, a neutron star can damage ships passing nearby with tidal forces. Unlike a black hole, neutron stars cannot capture ships capable of reaching lightspeed.

A rapidly-rotating neutron star can emit a pulse of intense radiation along its magnetic poles in a narrow beam, like a lighthouse beacon. The beam flicks around and around several times a second. These are known as *pulsars*, and they can be quite dangerous (but also make useful navigation beacons for starfaring civilizations). The radiation beam is intense enough to damage ships at up to a light-year away — anything caught by the beam suffers an RKA 10d6, Penetrating attack. Advanced civilizations might be able to turn pulsar radiation beams on and off, using them as gigantic gun emplacements for system defense.

ANOMALIES

Anomalies are any objects unknown to conventional science, or which conventional science only theorizes. In a pulpish campaign anomalies can include wormholes (stable or unstable) connecting two distant locations in space, sentient stars, cosmic strings, time distortions, living nebulae, fields of unknown energy, and negative-entropy zones. There's no way to randomly roll for anomalies; the GM gets to choose.

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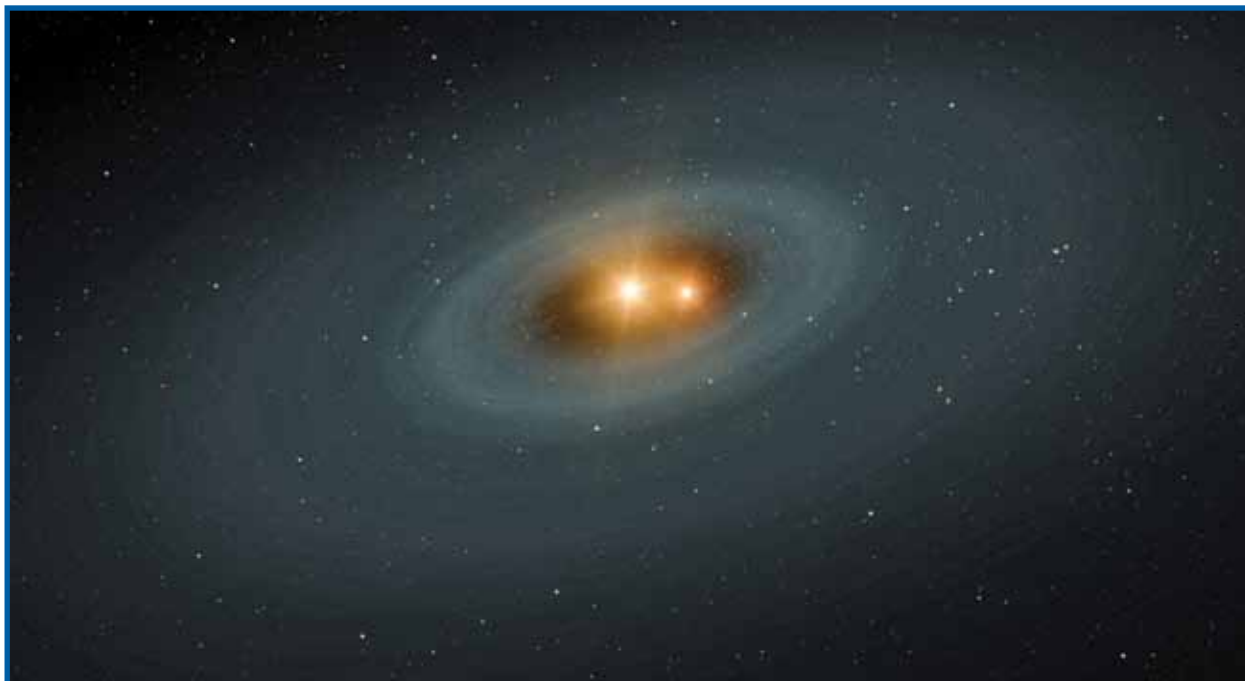
BROWN DWARFS

A "Brown Dwarf" is an object which is either a very small star or a very large planet. If they exist, they would have masses less than a tenth that of the Sun. They're called "Brown" because a body of that size would give off infrared radiation but little or no visible light.

Brown dwarfs may be one explanation for the problem of "dark matter" (see page 94). The idea is simple: dim, low-mass stars are more common than bright massive ones. Then presumably *really* dim, *really* low-mass objects should be more common still. It's possible that a significant part of the galaxy's mass consists of brown dwarfs.

In a Star Hero campaign, brown dwarfs can serve a variety of purposes. They can be vital links along the jump-drive routes between more visible stars. They can be "hidden islands" with moons suitable for rebel bases, pirate hideouts, and secret enemy listening posts. They can have life of their own — either creatures living in the dwarf's upper atmosphere, or on a close-orbiting moon warmed by the dwarf's infrared radiation.

The star system mapping and generation system is biased toward visible stars. To add brown dwarfs to the mix, increase the density of star systems by a factor of 10 in a given volume of space, and for each system roll 2d6: on a result of 10 or less the system is a brown dwarf.



STAR SYSTEM DATA TABLE

In this table, brightness and mass are given relative to the Sun, which Earth astronomers use as their “standard star.” These numbers represent “average” or “typical” stars; individual stars within a classification may vary from these figures. The distance listed for each zone is the inner radius — Yellow, Green, Blue, and Black — in AU; each

zone extends out to the next. So for a G0V star the Yellow zone extends from .25 to .77 AU, and the Green zone from .78 to 1.2 AU. Note that the Yellow zone of brown dwarf objects begins effectively at the surface. (This information is important for the random generation methods in Chapter Four, *Planets*.)

Type	Brightness	Mass	Y	G	B	Bl	Age (years)
Type A Giant	100-1500	3-6	(these stars do not have planets)#				Less than 10 million
A0V	50	2.7	1.8	5.5	9.3	140	2d6 x 100 million
A5V	10	1.8	.8	2.5	4.2	60	1/2d6 billion
Type B Giant	200-8000	4-10	(these stars do not have planets)#				Less than 5 million
Type F Giant	10-500	2-5	(these stars do not have planets)#				Less than 100 million
F0V	7	1.6	.66	2.1	3.5	50	1d6 billion
F5V	2.5	1.3	.4	1.2	2.1	32	1d6 billion
G0V	1	1	.25	.78	1.3	20	2d6 billion
G5V	0.6	.9	.2	.6	1	15	2d6 billion
K0V	0.4	.8	.16	.49	.83	13	3d6 billion
K5V	0.1	.6	.08	.25	.42	6	2d6 x 2 billion
M0V	0.01	.3	.03	.08	.13	2	2d6 x 2 billion
M5V	0.001	.2	0	.025	.042	.63	2d6 x 2 billion
Type O Giant	10,000-20,000	10-12	(these stars do not have planets)#				Less than 2 million
Brown Dwarf	.000005	.1	0	.002	.003	.04	2d6 x 2 billion
White Dwarf	0.1	1	.08	.25	.42	6	2d6 billion*
Supergiant	7000-100,000	9-18	(these stars do not have planets)#				Less than 2 million
Red Giant	4000	.2-10	5	60	67	1200	2d6 x 10 million*

*: White Dwarf and Red Giant stars are the end stages of other types and may have planets formed during the earlier history of the system.

#: Realistically, these types of stars cannot have planets. In a Space Opera game, you can put a planet around bright giants, giving them the same zones equal to red giants. After all, what fun is it when there aren't any Rigellians?

SAMPLE SECTOR

Susan is planning a sector for her new Star Hero campaign. She's a Hard Science Fiction fan, so she wants it to be fairly realistic. She decides to use a three-dimensional map, and chooses a sector size of 20 light-years on a side. That gives her a total of 8,000 cubic light-years of space, so she rolls 6d6 to determine the number of stars. She gets a result of 23 stars, about average density.

Next she rolls coordinates (using some handy 10-sided dice) and gets the following results (for now she's just using letters to name her star systems):

A: 9,-2,8	I: 9,-10,2	Q: -3,3,1
B: 9,4,9	J: -2,2,-3	R: 8,7,1
C: 5,-4,2	K: 10,4,2	S: -4,-6,9
D: 2,2,-10	L: -8,-7,-10	T: -6,1,-3
E: -10,-2,6	M: -9,-2,5	U: 6,7,-1
F: -2,2,-6	N: 4,-1,7	V: 1,7,2
G: 10,3,1	O: 4,8,-4	W: -5,-10,-2
H: 2,-8,-10	P: -7,-10,-1	

Susan notices some patterns. There are some close pairs (G and K, F and J, E and M, P and W); these could be likely political units. Systems G, K, R, and U form a nice compact group, suitable for a small empire or trade cluster. System H is fairly isolated, making it a good place for a lost colony or secret base.

Now she determines the system types. B and H are triple star systems; E, F, L, O, P, Q, R, and W are double stars; the rest are singles. She determines that F, Q, R, and W are close companions while E, L, O, and P are distant binaries.

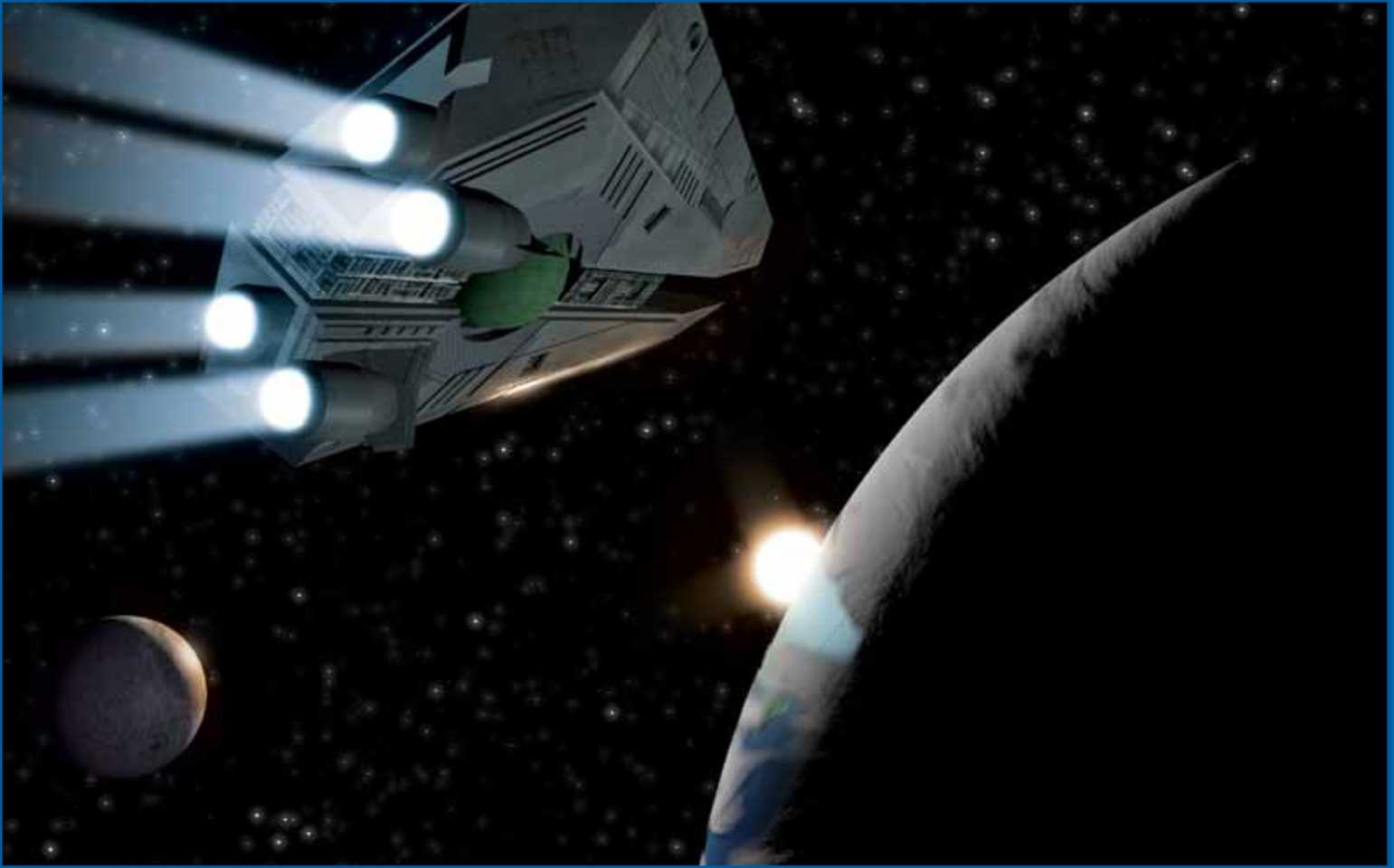
Next she determines star types:

A: M0V
B: Close M5V-M5V pair with distant M5V companion
C: M0V
D: G0V
E: M0V with distant M5V companion
F: Close K0V-M0V pair
G: G5V
H: G0V with close M0V companion and distant M5V
I: M5V
J: K0V
K: G5V
L: G0V with distant M0V companion
M: M5V
N: M5V
O: G5V with distant K0V companion
P: F5V with distant G0V companion
Q: Close M5V-M5V pair
R: Close G5V-K0V pair
S: G0V
T: M0V
U: M5V
V: M5V
W: F0V with close K0V companion

Now she focuses on star system H, determining the distances between the three stars in the system and how many planets they have. The main star is a G0V with an M0V companion orbiting at a distance of 50 AU. The distant M5V star is 5,000 AU away. For the system age she rolls for the main star and gets an age of 8 billion years. The next chapter develops the planets of the system.

“System H” is a kind of boring name, so Susan gives it the provisional Galactic Survey number “GS 5553-781-H,” using the digits of a phone number and the letter H to remind her which one it is on her map. If the system turns out to have a colony or native life, it may get a better name.

CHAPTER FOUR



THE UNIVERSE, PART 2: PLANETS



PLANETARY SYSTEMS

Stars are pretty and shiny, but planets are where most people in a galaxy live. It seems likely that most stars have at least a few planets. Gamemasters can come up with the number of planets in a system by rolling 3d6, or just picking a number out of thin air.

ORBITAL DISTANCE

At present, scientists are still working out how planetary systems form. In the Solar System, planets tend to have orbits closely spaced near the central star, getting progressively further apart as one moves outward. But other star systems seem to follow different rules, or no rules at all.

In other words, generating distances randomly is apparently scientifically accurate! The simplest way is to figure out the innermost planet's orbital distance and work out from there. Roll 1d6 and divide the result by 10, giving you a result of 0.1 to 0.6. That gives the innermost planet's orbital distance in AU. To get the second planet's distance, roll 2d6, divide by 10, and add 1, for a result between 1.2 and 2.2. Multiply the first planet's orbital distance by that to get the second world's orbit. Each subsequent planet's orbit is $1 + (2d6/10)$ times the next innermost planet's distance.

If you want to put a boundary on a star system, multiply the star's mass by 40 AU to get the system diameter. If your random orbit generation gets beyond that limit, just stop.

SYSTEM ZONES

Once the planetary distances are set, check the Star System Data Table (page 103) to determine which zone the orbits lie in. There are five zones in all, color-coded Red, Yellow, Green, Blue and Black.

Closest to the central star is the *Red zone*, the region within the distance listed for the start of the Yellow zone. Planets don't form in the Red zone as it's too hot and the tidal forces from the star are too strong. However, planets can form in the outer parts of the system and migrate inward; see System Anomalies for more information.

The *Yellow zone* is the belt in which solid planets can exist but the temperature is too high for water-based life forms. Some unusual worlds in the Yellow zone can have water — tidally-locked planets or bodies with extreme axial tilt may have the proper temperatures over a portion of their surfaces. Planets in the Yellow zone may be home to silicon-based life or energy beings in Pulp or Space Opera settings.

The *Green zone* is the belt in which the temperature permits liquid water. Worlds in the Green zone have the best chance of developing DNA-based life, so the Green zone is also known as the Biozone or life zone. Not all planets in the Green zone are suitable for life, of course — they may still be too small, too big, or otherwise wrong.

Planets in the *Blue zone* are too cold for liquid water, but exceptions are possible. Tidal heating or volcanic activity may make some worlds in the Blue zone capable of supporting DNA-based life. Other Blue zone worlds may have life based on ammonia or methane.

In the outer fringes of the system is the *Black zone*, where the central sun is just a bright star in the sky. Water is a rock in the Black zone, and even light gases like hydrogen and helium exist as slushy liquids. Tidal heating can create a few islands of warmth on moons of large planets, but life based on water and organic molecules is very rare in the Black zone. Exotic life forms using liquid hydrogen or superfluid liquid helium might exist on Black zone worlds.

ORBITAL RESTRICTIONS

With a binary star, certain orbits within the system are unusable for planets. As a simple principle, the companion star makes planets impossible in a band between $\frac{1}{3}$ and 3 times its own orbital distance. So in the Alpha Centauri system, Alpha Centauri B orbits at a distance of 24 AU, making planets impossible between 8 and 72 AU. Planets may wander into this forbidden zone, but they won't be stable for long.

Companion stars can have planets of their own, subject to the same limits, so Alpha Centauri B can only have planets out to 8 AU itself. Any planets orbiting beyond 3 times the companion star's distance are actually orbiting both stars.



SYSTEM ANOMALIES

Some star systems contain very atypical objects, ones which cannot be created using the standard planet generation tables. These include migrating or captured planets, “counterworlds,” and rosettes.

ROGUE PLANETS

As a result of gravitational interactions with other objects in the system, planets can shift their orbits. Earth’s solar system appears to be unusually stable in this respect; the Kepler orbital telescope has detected worlds in other star systems which appear to have radically changed orbits. It’s also possible for planets to wander into a star system from the depths of interstellar space. These two types are collectively known as *rogue planets*.

Rogue planets typically have eccentric orbits, often sharply inclined to the plane of the system in which the other planets orbit. The GM can place a captured planet in any orbit at all, including one normally restricted by the presence of a companion star.

If the GM creates the system randomly, roll 2d6-10 to determine the number of rogue planets. To generate the orbital distance for a rogue planet, roll 1d6. On a 1-2 the distance in AU is 1d6 divided by 10 (0.1 to 0.6 AU); on a 3-4 the distance is 1d6 AU; and on a 5-6 it is 1d6 times 10 AU.

When determining density and composition, all rogue planets are generated as if they are Blue zone worlds, even if they’re orbiting close to the central star.

COUNTERWORLDS

Counterworlds are planets which share the same orbit but are separated by 180 degrees, so they orbit on opposite sides of the sun. Such worlds are extremely rare, and almost always occur in the inner system, close to the star. These bodies never form naturally — over time orbital perturbations would either shift the counterworlds into different orbits or else smash them together. If they exist, they must be the work of some extremely advanced civilization. They’re not listed in the random creation tables, but GMs can place them wherever they wish.

ROSETTES

Rosettes are the extreme case of counterworlds. Instead of two planets, a circle of three or more worlds share the same orbit. These are almost always artificial arrangements, and consequently are most often found in the Green zone of a long-lived Type M star or white dwarf. As with counterworlds they’re too rare (*i.e.*, too impossible under current theories) to show up in random generation.

LAGRANGE PLANETS

It’s possible that a large gas giant world could accumulate enough material in the “Lagrange points” sixty degrees ahead and behind in its orbit to form entire planets. While there wouldn’t be enough mass to form a gas giant, a small rocky body could exist. Lagrange worlds are probably very rare, but where they exist they’d attract a great deal of scientific study, especially since astronomers would suspect that they’re artificial.

4

QUICK PLANETARY SYSTEM CREATION

Step 1: Determine the number of planets, either by rolling 3d6 or by figuring the system boundary size.

Step 2: Determine orbital distances for the planets by rolling 1d6 divided by 10, then multiplying by $1 + (2d6/10)$ for each subsequent planet.

Step 3: Remove any planets in the Red zone or in orbits made untenable by the presence of a companion star.

Step 4: Place rogue planets or other system anomalies.



PLANETS

[A Human from Earth] grows up in an environment peculiarly suited to him. Instinctively he sees the whole universe the same way.

We know better, we who were born on other worlds. On We Made it there are the hellish winds of summer and winter. On Jinx, the gravity. On Plateau, the all-encircling cliff edge, and a drop of forty miles into unbearable heat and pressure. On Down, the red sunlight, and plants that will not grow without help from ultraviolet lamps.

—Beowulf Schaeffer considers the range of planets Humans live on in “The Borderland Of Sol,” by Larry Niven

ORBITAL ECCENTRICITY

Garron: *Ribos orbits its sun elliptically, so its climate is one of extremes. For the natives the seasons are called Ice Time and Sun Time.*

Graff Vynda-K: *How long are the seasons?*

Garron: *Approximately 32 of your years, Highness.*

—Garron tries to con the Graff Vynda-K into buying a planet in the *Doctor Who* episode “The Ribos Operation”

This section describes the physical characteristics of planets, with random-generation rules where appropriate. The social details of worlds with intelligent inhabitants are covered in Chapter Six.

ORBITAL EFFECTS

Where a planet orbits determines a lot about its composition and conditions. The Planetary Systems section above describes the zones in a star system and how to place planets. Now you can see what they're like.

YEAR LENGTH

To figure the length of a planet's year, do a little quick calculating using a formula first discovered by the astronomer Kepler. The year length (in Earth years) equals the square root of (orbital distance cubed divided by star mass). In other words, cube the distance, divide by the star's mass, then take the square root. This means planets of very bright massive stars can have enormously long orbital periods — over a century in some cases. Multiply by 365 days to get the year in standard days. The GM may also want to calculate how many local days there are in a year after the planet's rotation has been determined below.

No planet orbits its sun in a perfect circle. All orbits are ellipses, and some are more eccentric than others. A planet in an eccentric orbit can sometimes veer between zones, spending part of the year at a habitable distance from the star, swinging far out for a very cold winter, or zooming in close for a brief but scorching summer. However, highly eccentric orbits tend to be unstable — interactions with other planets tend to pull eccentric orbits into more circular paths, or else sling the planet out of the system entirely.

When creating a star system randomly, roll 2d6 for each planet. A result of 12 or higher indicates a planet with a very eccentric orbit. Planets in the star's Black zone get a +1 bonus, and rogue planets get a +2. If a world has an eccentric orbit, use the base orbital distance as its closest approach to the star. Roll 1d6, multiply by 10 percent, and add that much to the orbital distance to get the maximum radius of the orbit. If the eccentric orbit intersects the orbit of a smaller planet, then remove the smaller world. If it crosses the path of a bigger planet, then the eccentric world either gets kicked off into interstellar space, swallowed up in a giant impact, or captured as a moon (GM's option).

Example: *Fimbul orbits its G5V star in an eccentric orbit. The inner distance is .8 AU, safely within the Green zone. The maximum distance is 1d6 times 10 percent greater — a roll of 4 indicates 40 percent, so the maximum radius is 1.12 AU, which puts Fimbul into the Blue zone during part of the year.*



INCLINATION

Most planets form in the plane of their central star’s equator, as the collapsing protostar swirls about in its nursery nebula. Planetary orbits seldom vary by more than a few degrees. However sometimes the passage of another star or the arrival of a rogue planet can disrupt this tidy arrangement. To determine the inclination of a planet’s orbit, roll 3d6. On a roll of 18 or higher, the planet has a highly-inclined orbit. Rogue worlds get a +1 on this roll. Roll 2d6 times 5 degrees to determine the orbital inclination.

Orbital inclination has little effect on a planet itself, but it can pose problems for explorers or space travelers. Interstellar explorers surveying a system for the first time are more likely to miss planets with cockeyed orbits. Apply a Skill Roll penalty of -2 to find worlds in highly-inclined orbits during the initial survey of a system. It’s more difficult to reach other worlds from a planet with a tilted orbit, so civilizations on planets like that may be slow to develop space travel.

MASS

The two most important parameters for a planet are its orbital distance (page 106) and mass. The combination of the two determines if a world is a gas giant, a ball of rock, or a green and habitable planet. The yardstick for planetary mass is the mass of the Earth (5.974×10^{24} kilograms); all planetary masses are expressed in fractions or multiples of the Earth’s mass.

Gamemasters can pick the mass for each planet or roll randomly. The planets of the Solar System are a good yardstick: small airless worlds like Mercury have a mass of .05 or less; marginal worlds like Mars have masses of .1 to .3 or so; larger solid planets have a mass of .5 to 5. Small gas giants like Uranus and Neptune have a mass of 5 to 20, while bigger ones like Jupiter and Saturn weigh in at 100 to 300 times the mass of the Earth.

Really gigantic planets are possible, verging on brown dwarf stars, with masses of 1000 or more.

To randomly determine planetary mass, roll 2d6 and consult the Planetary Mass Table, cross-indexed by orbital zone. The result is the planet’s mass in Earth masses. A result of 0 means no planet formed in that orbit — it’s occupied by an asteroid belt (see page 125). Remember that rogue planets always use the Blue zone column.

PLANETARY MASS TABLE

Roll 2d6	Yellow	Green	Blue	Black
2	0	0	0	0
3	.1	.1	.1	0
4	.1	.2	.2	.1
5	.2	.5	.5	.2
6	.3	.8	.8	.3
7	.5	1	1d6x5	.4
8	.8	1.2	1d6x5	.5
9	1	1.5	1d6x10	1d6x5
10	1.5	2	1d6x50	1d6x10
11	1d6	1d6x50	1d6x50	1d6x50
12	1d6x50	1d6x100	1d6x100	1d6x100

Hard Science: The GM can make these numbers a bit more variable by rolling 2d6 and reducing the mass by that percentage. So a result of 4 for a blue zone planet would be .2; rolling an additional 2d6 and get 10; subtracting 10 percent from .2 gives a final mass of .18 earths.

Also, it seems that a large gas giant (anything with a mass over 50 earths) tends to “cannibalize” nearby worlds. Divide the mass of any smaller planet within 3 AU of a giant by 10; if the result is less than .05 there is an asteroid belt in that orbit instead.

Since 2000 astronomers have discovered supergiant extrasolar planets with masses up to almost 14 times that of Jupiter! To simulate this with the table, any time you get a result of 300 or more, roll another d6. On a 1-3, multiply the planet’s mass by 2d6.



PLANET NAMES

If a planet's inhabited, or in a system with native intelligent life, it probably has a local name, which Humans may or may not be able to pronounce. In Science Fiction books and films, the standard practice is to give each planet a Roman numeral indicating its orbital position. The innermost planet of Alpha Hydri is Alpha Hydri I. The planet four orbits out is Alpha Hydri IV. Planets with eccentric orbits (such as captured worlds) have their number based on their average distance from the star. Counterworlds, rosettes, and double planets get a letter following the Roman numeral — VIIa and VIIb, or IIa-IIf.

Colonized star systems may keep the numerals, or give the planets names based on some scheme chosen by the colonists. They may choose names from mythology, like “Thor” or “Huitzipochtli”; or recycle names from home like “New Australia” or “Dar-al-Islam.” Worlds can be named for the colony founders (“Hansonia” or “Chang’s World”), notable local features (“Dune” or “Islandia”), ideologies (“Liberty” or “New Jerusalem”), or whatever strikes the settlers’ fancy.

Hard Science: The International Astronomical Union has a set of guidelines for naming features on other planets in the Solar System. The two most important rules are that discoverers cannot use names from living religions or the names of living persons. (A living religion is one which still has active believers; Islam, Hinduism and Christianity are living religions, the Aztec, Greek, and Babylonian religions are not.) It seems likely that future space explorers would follow a similar scheme.

Planets of other stars have so far been given the name of the star followed by a letter, in order of discovery. So the first planet found orbiting Tau Ceti would be Tau Ceti a, then b, and so on. Of course, planets are seldom discovered in neat order out from their parent stars, so a system could well have planet c orbiting close in, with e next out, then b, then a, then f, then d, and so on. This is convenient for astronomers, but colonists and interstellar navigators may well find it confusing.

DENSITY AND COMPOSITION

A planet's density depends upon its composition, which depends in turn on the planet's mass and orbital zone. Consult the Planetary Composition Table and compare the mass with the zone to get the composition, which in turn determines density. Recall that rogue planets use the Blue zone table regardless of their orbital position; this allows for the creation of “hot Jupiters” orbiting close to the parent star.

Gas: The planet has a solid core but the bulk of it is composed of liquid or gaseous methane, ammonia, helium, and hydrogen. Density is low, about .2 to .3.

Hydrogen: The planet is composed almost entirely of hydrogen and helium, with traces of other gases in roughly the same proportions they are found in interstellar space. The core is highly-compressed metallic hydrogen. Density is .2.

Ice: The planet is composed almost entirely of ices, with a density of .1 to .2.

Rock: The world is composed of rock and is too cold or not massive enough to form an active core. Density is .6 or .7 but seldom higher.

Rock-ice: The body is composed of rock and ice; smaller bodies are an undifferentiated “pudding,” but larger ones may have a rocky core covered by an ice crust. Typical densities for a rock-ice world are .3 to .5 depending on the ratio of rock to ice. (GMs may roll randomly 1d6/20 plus .2 to determine density.)

Rock-iron: The body has a core of liquid iron and a crust of rock. Density is typically very close to 1, but for extremely massive bodies can approach 2. (To determine randomly, for bodies less than 1 Earth mass the density is .5 plus 1d6/10; for those between 1 and 2 Earth masses it's 1 plus 1d6/10, and for bodies over 2 Earth masses it's 1 plus 2d6/10.)

PLANETARY COMPOSITION TABLE

Mass	Zone			
	Yellow	Green	Blue	Black
Less than .1	rock-iron	rock	rock-ice	ice
.1 to .3	rock-iron	rock-iron	rock	rock-ice
.4 to .5	rock-iron	rock-iron	rock-iron	rock-ice
.6 to 1	rock-iron	rock-iron	rock-iron	gas
1.1 to 10	rock-iron	rock-iron	gas	gas
10.1 to 50	gas	gas	gas	gas
50.1 to 100	gas	gas	hydrogen	hydrogen
100.1+	hydrogen	hydrogen	hydrogen	hydrogen

DIAMETER

Density is mass divided by volume, and volume is proportional to the cube of the diameter, so once you know the mass and density you can figure out the size of the planet. Use the following formula to get the diameter from the mass and density:

$$\text{Diameter} = \text{cube root of (mass/density)}$$

(If you don't have a calculator that can determine cube roots, you can use various cube root calculators available online or consult the accompanying sidebar.) The result is the planet's diameter relative to the Earth. To convert that to kilometers, multiply by the Earth's diameter of 12,800 km.

Example: *Kalumar has a density of .8 and a mass of .5, so its diameter will be the cube root of (.5/.8), or .625. The cube roots sidebar shows that the closest approximation is .75, which has a cube root of .9, so Kalumar has a diameter of .9 times that of the Earth. Multiplying .9 by 12,800 kilometers gives us a diameter of 11,500 kilometers.*

GAS GIANTS

A *gas giant* is a planet with a diameter of 48,000 to 130,000 km (sometimes more) and a thick atmosphere of gas or hydrogen. (Neptune and Uranus are on the small end of this scale; Jupiter and Saturn on the upper end.) They have masses of 50 or higher. They usually exist in the Blue or Black zones, although recent observations by astronomers have found large gas giants orbiting close to their stars. Large gas giants actually generate heat on their own, which may warm their moons (gas giants always have moons) enough to make them habitable (see *Tidal Heating*, below). In Science Fiction, gas giants frequently provide fuel for starships, which “skim off” part of their atmospheres. (However, a ship that gets trapped in a gas giant's atmosphere could sink too far down and get crushed by the intense pressure.)

GRAVITY

The relative diameter times the relative density gives the planet's surface gravity as a fraction of Earth's gravity. The value for Earth's surface gravity is 10 meters per second squared.

Example: *Kalumar (in the example of diameter computation above) has a diameter of .9 and a density of .8, which gives it a surface gravity of .9 x .8, or .72 standard gravities.*

The strange crimson sun of this lonely world would not rise for many hours, and although five of the little moons were in the sky, they could barely be seen by the unaided eye.

—from “A Walk In The Dark,” by Arthur C. Clarke

Most life forms cannot live long in a gravity field more than about 50 percent greater than that of their native environment. This applies to individuals more than species: a Human raised on a high-gravity planet has no trouble there, but a person whose bones developed on a low-gravity world would be in danger. One important exception to this is that creatures which live in the water are largely immune to gravitation effects because the fluid that surrounds them supports them as well. So as long as all the other conditions are the same, swimmers can live anywhere regardless of gravity. (See page 305 for more on the effects of gravity.)

MOONS

Most planets are accompanied by one or more moons. As a rule, the bigger a planet, the more moons it has and the bigger those moons can be. Solid “terrestrial” planets have no more than a couple, usually no bigger than asteroids. All gas giants have moons, and some of them can be the size of planets in their own right.

To determine randomly how many moons a solid planet has, and how far out they orbit, roll on the Moons Table below. Planets in the Yellow zone suffer a -1 to the roll. All gas giant planets have moons — small gas giants (mass up to 50) have 2d6 moons, and large ones have 3d6 (sometimes more; for worlds bigger than Jupiter, GMs may choose to roll 1d6 times 1d6 to get the number of moons).

MOONS TABLE

Roll 1d6	Number Of Moons
1-2	No moons
3-4	One moon
5	Two moons
6	1d6 moons

MOON ORBITS

There doesn't seem to be any simple rule governing moon orbits, in part because they affect each other much more than planets do. The standard “yardstick” for moon orbits is the planetary radius (half the planet's diameter). The GM can either keep the distances in radii or convert them to kilometers by multiplying by the parent planet's radius. For each moon choose an orbital distance of between 3 and 100 planetary radii, or else roll on the Moon Distance Table to determine orbital distance.

There are a couple of things to consider: moons within 2.44 planetary radii (the distance known as the *Roche limit*) break up if they're bigger than asteroidal in size, often forming a ring system. Replace any moon more than 100 kilometers across at that distance with a ring. Moons usually can't occupy the same orbit (exceptions are noted in the Moon Anomalies Table), so reroll if a moon's orbit is already taken.

CUBE ROOTS

Number	Cube Root
.001	.1
.005	.18
.01	.2
.05	.37
.1	.46
.5	.8
.75	.9
1	1
1.25	1.08
1.5	1.14
1.75	1.2
2	1.26
2.5	1.36
3	1.44
4	1.6
5	1.7
10	2.15
15	2.5
20	2.7
30	3.1
40	3.4
50	3.7
75	4.2
100	4.6
150	5.3
200	5.8
300	6.7
400	7.4
500	7.9
750	9
1000	10
1500	11.4
2000	12.6



MOON DISTANCE TABLE

Roll 1d6	Orbital Distance
1-2	Close orbit (1d6 planetary radii)
3-4	Medium orbit (3d6 planetary radii)
5-6	Distant orbit (1d6x10 planetary radii)

MOON SIZE TABLE

Roll	Moon Size
1	Asteroidal; 1d6 km diameter
2	Asteroidal; 1d6 km diameter
3	Asteroidal; 1d6 x 5 km diameter
4	Asteroidal; 1d6 x 10 km diameter
5	Asteroidal; 1d6 x 100 km diameter
6	Planetary; mass of .01 times 1d6
7	Planetary; mass of .1 times 1d6

MOON ANOMALIES TABLE

Roll 1d6	Moon Anomalies
1	Co-Orbital Moons
2	Giant Moon
3	Retrograde Moon
4	Inclined Orbit
5	Subsatellite
6	Synchronous Moon

Co-Orbital Moons: The planet has two or more moons sharing the same orbit. This is most common in very low orbits near the Roche limit, indicating a moon that's fragmented due to tidal stress. More rarely a planet may have a rosette of moons, spaced at 60 degree intervals along the same orbit. Rosettes are usually artificial, and the moons themselves may have underground habitats or be old space stations.

Giant Moon: The planet has a moon which is really big, a full-fledged planet with a mass of 2d6 times .1 Earth. The moon may not have a mass greater than its primary planet. Giant moons of solid planets are likely to have the same composition as well.

Retrograde Moon: The moon orbits in a direction opposite the planet's rotation and the orbits of the other moons. Often the orbit is highly eccentric as well, indicating a captured moon. Jupiter and Saturn both have a couple of retrograde moons.

Inclined Orbit: The moon's orbit is tilted with respect to the planet's equator, as much as 90 degrees. (To determine the amount of tilt randomly, roll 2d6 times 10 degrees; results greater than 90 indicate a retrograde tilted orbit.) Moons with highly tilted orbits often have very eccentric orbits as well, and may be captured bodies.

Subsatellite: One of the planet's moons has a small moon of its own. The smaller moon is a captured body, asteroidal in size. If the planet has multiple moons a subsatellite can't last very long before gravitational interference either flings it out to become a moon itself, or else sends it crashing into something.

Synchronous Moon: One of the planet's moons orbits with exactly the same period as the planet's rotation, so that it's forever hidden from half the planet. (This isn't possible for a planet that's tidally locked to its sun.) Synchronous moons usually orbit in a medium orbit unless the primary planet rotates very quickly or very slowly.

MOON SIZE

Moons range from tiny asteroidal chunks of rock to small worlds. In general, the inner moons of gas giant planets tend to be large, with masses on the order of .01 Earth; outer moons of gas giants and moons of solid planets are more like asteroids. Exceptions are possible, of which the most famous is Earth's Moon. To determine moon size randomly, roll on the Moon Size Table, with a +1 for close and medium moons of gas giant planets. For small asteroid-type moons the result is its size in kilometers; surface gravity and atmosphere are minimal. For bigger moons the result is the body's mass. Determine the density, gravity, atmosphere, and other details for a large moon exactly as if it were a planet.

STRANGE MOONS

Not all worlds have ordinary moons. Even within the Solar System Saturn has a pair of moons sharing the same orbit, and Pluto's moon Charon is almost as big as Pluto itself. The Moon Anomalies Table lists some of the more common kinds of weird moons. Gamemasters can pick what they find interesting (but no more than two or three per star system), or can roll randomly. Roll 2d6; on a roll of 12, a planet has some anomalies about its moon system (which you can determine randomly with the Moon Anomalies Table).

TIDAL HEATING

If a gas giant has multiple moons, the conflicting gravitational pull (of the planet and the other moons) can cause tremendous heat and pressure in a moon. This can also occur with a single moon that has an elliptical orbit. Sometimes there's enough heat to make an otherwise uninhabitable body warm enough for life to evolve. Tidal heating depends on the distance from the primary planet to the moon. Check the Tidal Heating Table to determine how much the tidal effects raise the moon's temperature. If the tidal heating raises the temperature into the range of liquid water, then the moon may be capable of supporting life. (Use the rules under *Climate*, below, to determine the base temperature of a moon.) A moon with a trace atmosphere or none at all may still have a subsurface ocean if it is rock-ice or ice in composition. Close moons may be heated to the point of being semi-molten, with constant volcanic eruptions and a very active surface.

TIDAL HEATING TABLE

Distance (radii)	Heating (degrees Centigrade)
5	+600
6	+150
7	+50
8	+20
9	+10

PLANETARY ROTATION

Planetary rotation indicates how fast the planet turns on its axis, which in turn dictates the length of the planet's day. Rotation seems to depend loosely on a planet's mass, but moons and nearness to the primary star can affect it, too. The Planetary Rotation Table gives some rough guidelines for random determination.

Tidal effects can slow a planet's rotation tremendously, and some worlds appear to just have very unusual rotation rates. Solid planets with a large moon (mass of .01 or more) add 1d6 hours to day length if the moon is in a distant orbit, 2d6 if it is in a medium orbit, and 3d6 hours if the moon orbits close in. Double planets and worlds with giant moons are always *tidally locked* to their companions, presenting the same face to one another and rotating in the time it takes the two bodies to revolve around each other.

Moons are almost always tidally locked to their primary worlds. The only exception is distant moons which may have a "resonant" rotation — turning twice every three orbits, or something similar.

Tidal effects from the primary star can also slow a planet's rotation. Worlds with an orbital distance of less than .5 AU multiply the day length by 1d6, while worlds within .4 multiply the day length by (1d6 x 10). All solid worlds within .3 AU are automatically tidally locked, turning one face always toward the sun. (Gas giants are immune to this effect.)

ROTATION ANOMALIES

Some worlds have peculiar rotation rates. Gamemasters may select one or two worlds per system to have unusual rotation, or roll 2d6 for each planet — on a result of 11 or 12 the world has a rotation anomaly. Choose or roll on the Rotation Anomalies Table.

AXIAL TILT

The majority of planets have axial tilts in the 0 to 30 degree range (Earth's is about 24°), but a few have radical tilts of up to 90 degrees. Roll 1d6 on the Tilt Table.

A planet's axial tilt can have profound effects on its climate, as it is the main cause of yearly seasons. Worlds with minimal tilt have a nearly uniform climate year-round. Ironically, this has the effect of reducing a planet's habitable area, as dry regions never get any seasonal rains and cold areas have no summer at all. When computing population based on the planet's habitable area, apply a -1 to the die roll for worlds with minimal axial tilt.



PLANETARY ROTATION TABLE

Mass	Day Length
up to .5	20 to 30 hours (6d6)
.6 to 5	15 to 20 hours (5d6)
5.1 to 50	10 to 15 hours (4d6)
50.1 or more	5 to 10 hours (3d6)

ROTATION ANOMALIES TABLE

Roll 2d6	Anomaly
2-5	Fast Rotation
6-7	Slow Rotation
8-9	Retrograde Rotation
10	Slow <i>and</i> Retrograde Rotation
11-12	Fast <i>and</i> Retrograde Rotation

Fast Rotation: The planet spins extremely fast, with a day length of only 2d6 hours. In extreme cases, where a very big planet has a very fast spin, the gravity at the equator may be perceptibly less than at the poles due to centrifugal effects. The formula is $(500 \times \text{diameter}) / (3600 \times \text{rotation})$ squared. So the Earth's rotation reduces its gravity at the equator by only .0009 meters per second squared, or .009 percent.

Slow Rotation: The planet spins extremely slowly. Its day length is 3d6 times 20 days. If the length of a day is greater than the year length, then the planet is tidally locked and spins once a year.

Retrograde Rotation: The planet spins backwards. Most planets rotate in the same direction that they orbit; this is defined as "counterclockwise" or west to east. A retrograde planet spins the opposite way from its orbit. Retrograde rotation may indicate a captured planet, or may be the result of some massive impact which flipped the planet's axis in the distant past.

TILT TABLE

Roll 1d6	Tilt
1	Minimal tilt: 1d6 degrees
2-3	Moderate tilt: 10 plus 2d6 degrees
4-5	High axial tilt: 20 plus 2d6 degrees
6	Extreme axial tilt: 2d6 times 10 degrees (if the result is greater than 90 degrees, subtract 90 and give the planet retrograde rotation)

COMMON PLANET TYPES

In Science Fiction stories, certain types of planets tend to crop up repeatedly because of the dramatic possibilities they offer, or simply because they're fun to imagine. Some of them include:

City Worlds: Worlds that are totally (or almost totally) urbanized, so that the entire surface of the planet's covered by one planetary megalopolis. Examples include Trantor in Isaac Asimov's *Foundation Trilogy* and Coruscant in the Star Wars films.

Ecologically Unified Worlds: Some planets in Science Fiction are depicted as featuring (or at least being dominated by) a single climatic or ecological zone. For example, in Frank Herbert's *Dune*, the entire planet is a desert; in Brian Aldiss's *Hothouse*, the sunward half of a tidally-locked Earth supports a single vast jungle; Athshe in Ursula K. LeGuin's *The Word For World Is Forest* is totally covered by trees.

Pleasure Worlds: "Resort worlds" dedicated entirely to vacationing, leisure, and entertainment pursuits. See page 13.

Ribbon Worlds: A world in which climatic extremes make most of the northern and southern hemispheres uninhabitable, leaving only a narrow band centered on the equator that's suitable for Human life. Examples include Radole in Isaac Asimov's *Foundation Trilogy* and Jinx from Larry Niven's "Known Space" stories.



ATMOSPHERE

ATMOSPHERIC COMPONENTS

Here are a few notes on the gases that frequently compose atmospheres. See the rules on page 311 regarding “Poisonous” or corrosive atmospheres.

Ammonia: Ammonia (NH₃) is extremely poisonous as a vapor. Fortunately, it’s also very soluble in water; if a world has liquid water, you’ll find the ammonia in its seas, not its atmosphere.

Carbon Oxides: Carbon monoxide (CO) and carbon dioxide (CO₂) often exist on terrestrial worlds that haven’t evolved plant life yet. Plants break these down, freeing the oxygen so other forms of life can breathe it.

Chlorine, Fluorine: These two gases both react with many other elements, so they probably won’t exist in an atmosphere unless they’re somehow being produced or freed (either by the natural life processes of weird aliens, or artificially). Both are extremely poisonous to Humans and other terrestrial life.

Helium: The second-most abundant element in the universe after hydrogen, helium is chemically inert but unbreathable by terrestrial life. The intrepid space explorers will get to shout for help in funny squeaky voices before they die.

Hydrogen: Because it’s flammable, hydrogen can be extremely dangerous to oxygen-breathing organisms if it’s present in large quantities. Even worse, its tiny atoms can sometimes get inside sealed protective garments, potentially leading to fires *inside* a spacesuit if they encounter an errant spark or too much friction. Hydrogen can also bond with oxygen to form water vapor, which is itself corrosive to machinery.

Methane: Like hydrogen (with which it’s usually found), methane is also dangerously flammable.

Nitrogen: Although necessary for life on terrestrial worlds (Earth’s atmosphere is about three-fourths nitrogen), nitrogen is unbreathable by itself.

Nitrogen Oxides: Various compounds of nitrogen and oxygen are highly corrosive.

Oxygen: Oxygen, obviously, is necessary for terrestrial life. However, a world can have too much of a good thing; oxygen is both flammable and corrosive if it composes more than 30% of a world’s atmosphere.

Sulfur: Sulfur exists in various compounds with other elements, all of them corrosive or toxic.

The composition of a planet’s atmosphere determines whether it can develop life. Atmospheric density and composition are the result of numerous factors: what zone the planet orbits in; its mass and composition; and its age. There’s also a strong element of chance — some worlds wind up with a very thick atmosphere simply because they happened to pick up a lot of lighter elements during formation.

All planets start out with an atmosphere of hydrogen, the most common element in the universe. Most smaller planets lose this within a few million years as the heat of the sun boils the hydrogen away into space. Big planets are able to keep their primordial atmospheres, and some bulk up until they become gas giants.

Solid worlds then generate a new atmosphere from volcanic outgassing, which is rich in water vapor, carbon dioxide, nitrogen, and sulfur compounds. On small planets or worlds close to the sun, this second atmosphere is also temporary, as the planet’s gravity can’t hold on to the gas molecules. But larger and cooler worlds retain this second atmosphere. If it’s too dense and has too much carbon dioxide, the planet can suffer a runaway greenhouse effect, winding up like Venus, with a surface temperature hot enough to melt lead.

If the atmosphere isn’t too dense and the temperature is suitable for liquid water, the planet may develop life. Life can have an amazing effect on a planet, transforming the very atmosphere itself. Free oxygen reacts with other elements on the planet; in a few thousand years none would be left. Planets can only have an oxygen atmosphere when photosynthetic organisms continually renew the air.

If the system is young — less than 1 billion years old — all planets have essentially the same atmosphere, a mix of hydrogen, methane, and ammonia. This is called a Primordial atmosphere. For older systems, 2 billion years old or more, consult the Atmospheric Composition Table to get the atmosphere composition based on the planetary composition and zone. All planets with a Gas composition have Primordial atmospheres, and all Hydrogen composition planets have atmospheres of hydrogen and helium.

Gamemasters may be puzzled to find that oxygen isn’t one of the gases listed on the Atmospheric Composition table. That’s because planets can’t have free oxygen without life to generate it. At this stage you’re creating the planet’s “prebiotic” atmosphere; you’ll take the effects of living things into account later on.

“The atmosphere contains high concentrations of methane, carbon monoxide, and fluorine.”

—Lieutenant Commander Data scans the atmosphere of a Borg-altered Earth in *Star Trek: First Contact*

To determine the atmospheric density, consult the Atmospheric Density Table, then go on to the Pressure step to get surface pressure. Note that since pressure and atmospheric density both depend on gravity, higher-gravity worlds have *much* thicker atmospheres than small planets do.

There are five classes of atmosphere densities:

None: The planet has no atmosphere, or at least none detectable without instruments, and thus no atmospheric pressure. Any visitors must wear vacuum suits and full life-support gear. The Moon has no atmosphere.

Trace: Trace atmospheres are very thin, typically 5 to 10 percent of the density of Earth's. Again, visitors must wear vacuum suits and full life-support gear. Roll 1d6 times 1 percent to get the atmosphere's density relative to Earth's. Mars has a Trace atmosphere.

Thin: Thin atmospheres are typically about a third as dense as Earth's; some worlds with thin atmospheres can support life. Thin atmospheres have an air density of 2d6 x 3% that of Earth.

Standard: Standard atmospheres are about as massive as Earth's, with a density of 3d6 x 10% of Earth's. They often support life, and can also create a significant greenhouse effect, helping planets retain heat.

Dense: Dense atmospheres are many times more massive than Earth's — the atmosphere density is (2d6 x 10) times that of Earth's. In the inner parts of a system, worlds with dense atmospheres retain too much heat, leading to a runaway greenhouse effect that makes the world into a virtual oven. Venus has a Dense atmosphere.

The result is the atmosphere for a lifeless planet. For most worlds, this is the final result. But planets which develop native life may have their atmospheres changed further. So the next step is to determine if life has evolved on the world. Check the Life step to see if life has evolved on the planet.

If the planet has life and is 3 billion years or more in age, modify its atmosphere to reflect the action of living things. Photosynthesizers convert all atmospheric carbon dioxide to oxygen, but that's only the first step. The free oxygen in turn combines with any methane to make water and more carbon dioxide. The result is an atmosphere considerably less massive and a surface covered with water and biomass. The atmosphere becomes 1d6 times 5 percent oxygen, with the remainder made up of whatever components were not eliminated by the plants (nitrogen and argon are the only elements that don't readily form oxygen compounds). Halve the atmospheric density.

For more on the effects of atmospheres, see page 310.

ATMOSPHERIC DENSITY TABLE

Planet Mass	Zone	
	Yellow or Green	Blue or Black
.1 or less	None	Trace
.11 to .3	None	Trace
.31 to .5	Trace	Thin
.51 to .7	Thin	Thin
.71 to .9	Standard	Standard
.91 to 1.3	Dense	Standard
1.31+	Dense	Dense

For more variety, roll 1d6 for each world: 1 indicates an atmosphere one step thinner, 6 indicates an atmosphere one step thicker, and 2-5 indicates the result shown on the table.

ATMOSPHERIC COMPOSITION TABLE

Roll 1d6 x 10 percent for boldface components, 2d6 x 1 percent for plaintext items.

ROCK OR ROCK-IRON WORLDS

Yellow zone: Carbon Dioxide, Nitrogen, Sulfur Dioxide, Argon, Chlorine, Fluorine

Green or Blue zones: Carbon Dioxide, Nitrogen, Methane, Argon, Ammonia, Sulfur Dioxide, Chlorine, Fluorine

Black zone: Hydrogen, Helium

ICE OR ROCK-ICE WORLDS

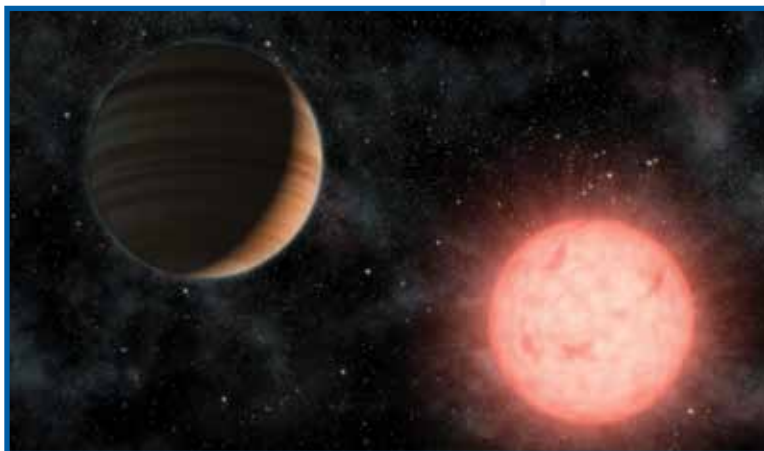
Blue zone: Carbon Dioxide, Methane, Argon, Nitrogen, Ammonia

Black zone: Hydrogen, Helium

Boldface items are major constituents (1d6 times 10 percent of the atmosphere); the others are minor components (2d6 percent). Start with the first item listed and roll the abundance of each gas until you reach 100 percent. If you get to the end before reaching 100 percent, add the remainder to the first item on the list.

LIFEBEARING WORLDS

Eliminate all carbon dioxide and methane, add 1d6 times 5 percent oxygen, and halve the atmospheric density.



PRESSURE TABLE

Here's a quick-reference table for determining pressure at the planetary surface (measured in atmospheres, where 1 atmosphere is the Earth average pressure at sea level). Atmospheric density is expressed as a multiple of the mass of Earth's atmosphere.

Atmospheric Density (Trace Atmospheres)											
Gravity	.02x	.03x	.04x	.05x	.06x	.07x	.08x	.09x	.10x	.11x	.12x
.5	.01	.015	.02	.025	.03	.035	.04	.045	.05	.055	.06
.75	.015	.0225	.03	.0375	.045	.0525	.06	.0675	.075	.0825	.09
1.0	.02	.03	.04	.05	.06	.07	.08	.09	.10	.11	.12
1.5	.03	.045	.06	.075	.09	.105	.120	.135	.15	.165	.18
2.0	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24
2.5	.05	.075	.10	.125	.15	.175	.20	.225	.25	.275	.3
3.0	.06	.09	.12	.15	.18	.21	.24	.27	.30	.33	.36
3.5	.07	.105	.14	.175	.21	.245	.28	.315	.35	.385	.42
4.0	.08	.12	.16	.20	.24	.28	.32	.36	.40	.44	.48
4.5	.09	.135	.18	.225	.27	.315	.36	.405	.45	.495	.54
5.0	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60

Atmospheric Density (Thin Atmospheres)											
Gravity	.10x	.15x	.20x	.25x	.30x	.35x	.40x	.45x	.50x	.55x	.60x
.5	.05	.075	.10	.125	.15	.175	.20	.225	.25	.275	.30
.75	.075	.1125	.15	.1875	.225	.2625	.30	.3375	.375	.4125	.45
1.0	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60
1.5	.15	.225	.30	.375	.45	.525	.60	.675	.75	.825	.90
2.0	.20	.30	.40	.50	.60	.70	.80	.90	1	1.1	1.2
2.5	.25	.375	.50	.625	.75	.875	1	1.125	1.25	1.375	1.5
3.0	.30	.45	.60	.75	.90	1.05	1.2	1.35	1.5	1.65	1.8
3.5	.35	.525	.70	.875	1.05	1.225	1.4	1.575	1.75	1.925	2.1
4.0	.40	.60	.80	1	1.2	1.4	1.6	1.8	2	2.2	2.4
4.5	.45	.675	.90	1.125	1.35	1.575	1.8	2.025	2.25	2.475	2.7
5.0	.50	.75	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3

Atmospheric Density (Standard Atmospheres)											
Gravity	.30x	.45x	.60x	.75x	.90x	1.05x	1.2x	1.35x	1.5x	1.65x	1.8x
.5	.15	.20	.30	.375	.45	.525	.60	.675	.75	.825	.9
.75	.225	.3375	.45	.5625	.675	.7875	.9	1.0125	1.125	1.2375	1.35
1.0	.30	.45	.60	.75	.90	1.05	1.2	1.35	1.5	1.65	1.8
1.5	.45	.675	.9	1.125	1.35	1.575	1.8	2.025	2.25	2.475	2.7
2.0	.60	.90	1.2	1.5	1.8	2.1	2.4	2.7	3	3.3	3.6
2.5	.75	1.125	1.5	1.875	2.25	2.625	3	3.375	3.75	4.125	4.5
3.0	.90	1.35	1.8	2.25	2.7	3.15	3.6	4.05	4.5	4.95	5.4
3.5	1.05	1.575	2.1	2.625	3.15	3.675	4.2	4.725	5.25	5.775	6.3
4.0	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6	6.6	7.2
4.5	1.35	2.025	2.7	3.375	4.05	4.725	5.4	6.075	6.75	7.425	8.1
5.0	1.5	2.25	3	3.75	4.5	5.25	6	6.75	7.5	8.25	9

Atmospheric Density (Dense Atmospheres)											
Gravity	20x	30x	40x	50x	60x	70x	80x	90x	100x	110x	120x
.5	10	15	20	25	30	35	40	45	50	55	60
.75	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90
1.0	20	30	40	50	60	70	80	90	100	110	120
1.5	30	45	60	75	90	105	120	135	150	165	180
2.0	40	60	80	100	120	140	160	180	200	220	240
2.5	50	75	100	125	150	175	200	225	250	275	300
3.0	60	90	120	150	180	210	240	270	300	330	360
3.5	70	105	140	175	210	245	280	315	350	385	420
4.0	80	120	160	200	240	280	320	360	400	440	480
4.5	90	135	180	225	270	315	360	405	450	495	540
5.0	100	150	200	250	300	350	400	450	500	550	600



ALIEN LIFE AND ATMOSPHERES

The Life step (page 119) allows for a variety of exotic life chemistries which might flourish on very hot or very cold worlds. It seems reasonable that those forms of life might have as much of an effect on a planet's environment as carbon-water organisms have had on Earth. (This is all extreme rubber science — early twenty-first century Humans have no way of knowing if these types of life even exist or have the effects described.)

Ammonia-based life does much the same as water-based life, sucking carbon dioxide out of the atmosphere and releasing oxygen. The oxygen removes methane and hydrogen, but on cold ammonia worlds, the water freezes solid, becoming essentially another mineral. As on water planets, this makes the remaining atmosphere much thinner.

Fluorine-silicon life removes carbon from the atmosphere, combining it with silicon to create complex silicone compounds. The free oxygen released by this gets taken up by silicon, so the net result is to remove all the carbon dioxide from the planetary atmosphere. On some worlds this reduces the temperature to the point where fluorocarbon-sulfur life takes over from the silicon types.

Fluorocarbon-sulfur life converts carbon dioxide and sulfur dioxide to oxygen. This may create a world which has a breathable atmosphere for Humans even though the temperatures are those of molten sulfur.

Energy-based life has no effect on atmospheres, nor do hydrogen or helium-based life. They simply don't conduct enough large-scale chemical reactions to have any major effect.

PRESSURE

Atmospheric pressure depends on the composition of the planet's atmosphere and its surface gravity. After determining what the planet's atmosphere is like, multiply the atmospheric density by the surface gravity, then multiply that result by 1000 millibars (approximately 1 atmosphere) to get air pressure at sea level. Any result less than 10 millibars indicates a world which is effectively airless.

Humans from Earth require 20 percent oxygen at 1000 millibars pressure; this is called a *partial pressure* of 200 millibars of oxygen. If the partial pressure of oxygen (percentage times air pressure) is less than 100, Humans cannot survive unaided over the long term. Similarly, a partial pressure greater than 400 is also harmful. Other species may have different limits, of course.

Altitude affects pressure. On Earth the air pressure drops by approximately 10 percent per kilometer of altitude. The gradient on other worlds would depend on the local gravity. Divide 1000 meters by the local gravity to find the equivalent for other planets. When pressure reaches 0, the atmosphere ends and space begins. Oddly, this means big planets actually have a thinner atmospheric envelope than small ones, because the big

planets' heavy gravity keeps all the air close to the surface. While some planets have surface pressure too high for Humans to survive, there may be altitudes at which the partial pressure is appropriate for Humans to breathe without assistance.

CLIMATE

The climate of a world depends on its temperature, which in turn depends on what zone the planet's orbit lies in. The basic temperature is 350 Centigrade in the Yellow zone, 10 Centigrade in the Green zone, -100 Centigrade in the Blue zone and -200 Centigrade in the Black zone.

Gamemasters who want to figure a planet's temperature more precisely can use the following formula: temperature is 280 degrees Kelvin times the fourth root of the star's luminosity, divided by the square root of the distance in AU from the star. To convert from degrees Kelvin to Centigrade, simply subtract 273.

Once the base temperature is determined, apply various modifiers based on the planet's atmosphere and other characteristics.

ALBEDO

Albedo refers to the fraction of light or electromagnetic radiation an object reflects. The more it reflects — the higher its albedo — the brighter it appears. Planets may reflect back a significant amount of incoming energy, especially if their atmospheres contain large amounts of dust or water vapor, or if the surface is covered by ice and snow. For any planet with an atmosphere more dense than Trace but less than Dense, reduce the temperature by 5 degrees Centigrade; Dense atmospheres reduce it by 20 degrees.

See page 305 for more information on, and rules for, albedo.

GREENHOUSE EFFECT

Certain gases can act to trap heat, raising the temperature of a world. There are a variety of greenhouse gases, including carbon dioxide and water vapor. Use the following rules of thumb: on worlds with Trace or Thin atmospheres there's no appreciable greenhouse effect. Standard atmospheres increase the temperature by a number of degrees Centigrade equal to the twice the percentage of carbon dioxide in the atmosphere, and Dense atmospheres increase the temperature by 10 degrees for each 1 percent of carbon dioxide.

If this raises the planetary temperature above 50 degrees Centigrade, the planet experiences a *runaway* greenhouse effect. Its oceans boil, pumping the atmosphere full of water vapor and vastly increasing its ability to hold heat. Add another 1d6 times 100 degrees to the planet's temperature.

TIDAL HEATING

Moons of gas giant planets can also get additional heat from tidal energy. This can sometimes provide enough energy to make a world warm enough for life. See the discussion on page 112.

TERRAFORMING

Terraforming is the process of making a hostile world suitable for life. Since the word was invented by Humans, it literally means “making like Earth,” but aliens could use the same methods to make planets more like their homeworlds as well (“xenofarming,” so to speak).

Humans can only change certain aspects of a planet easily. Mass and orbit are effectively fixed — by the time you can move planetary masses around (like the Puppeteers of Niven’s *Ringworld*) you don’t need to live on planets any more. Composition and density are similarly immutable. Atmosphere can be altered, by either large-scale brute-force methods (slamming comets into a planet to increase the supply of volatiles) or the application of genetically tailored microorganisms (to change gases like carbon dioxide and ammonia into nitrogen, oxygen, and water). Changing atmosphere can indirectly affect climate, as thickening and altering the composition changes the greenhouse effect.

A species can also alter a planet’s climate by brute force. Using orbital mirrors to warm a cold world or “sunshades” to cool a hot one is surprisingly possible. There are practical limits — it’s unlikely that engineers can alter a world’s temperature by more than 50 degrees Centigrade in either direction.

In *HERO System* terms, these are all applications of the *Change Environment Power*:

Dropping a comet on a planet to thicken the atmosphere:

Change Environment (increase atmospheric pressure by +1 atmosphere [see page 310]), Area of Effect (4m Radius; +¼), MegaScale (1m = 10,000 km; +2), 1 Continuing Charge lasting for 1 Century which Never Recovers (+2) (16 Active Points); Requires A PS: Planetology Roll (-¼), Side Effect (Blast 14d6, Area Of Effect (10km Radius Explosion) centered on target point, always occurs; -2). Total cost: 5 points.

Mirrors or sunshades to change the temperature:

Change Environment, +/-1 Temperature Levels, Area Of Effect (4m Radius; +¼), MegaScale (1m = 10,000 km; +2), Reduced Endurance (0 END; +½) (11 Active Points); OIF Fragile Immobile (orbital mirror/sunshade; -1¾), Damage Over Time (+/-1 Temperature Level per 2.5 years for 25 years, defenses only apply once, cannot be used again on same planet until all increments accrue; -6), Requires A PS: Planetology Roll (-¼). Total cost: 1 point.

Altering atmospheric composition using microorganisms:

Change Environment (alter atmospheric composition in one specific way), Area Of Effect (4m Radius; +¼), MegaScale (1m = 10,000 km; +2), Reduced Endurance (0 END; +½) (19 Active Points); Damage Over Time (apply one-fifth of the effect per year for 5 years, or until something causes microorganisms to expire, defenses only apply once, cannot be used again on same planet until all increments accrue; -7), Requires a PS: Planetology Roll (-¼). Total cost: 2 points.

Because these forms of terraforming use *Change Environment*, they have to be maintained — remove the orbital mirrors, or let the microorganisms die out, and the transformation of the planet quickly wears off. Permanent changes require MegaScaled Area Of Effect Major Transforms.

ROTATION

Tidally-locked planets or worlds with days longer than 10 standard days can get extremely hot on the day side. The temperature on the dayside in degrees Kelvin is doubled; on the night-side it’s halved. (To convert from degrees Kelvin to Centigrade, subtract 273.) This can mean the oceans on the dayside literally reach boiling. The planet won’t have a runaway greenhouse effect because the moisture all freezes out on the night side. On tidally locked worlds, all the water winds up as a permanent icecap on the dark side of the planet.

ECCENTRIC ORBITS

Planets in eccentric orbits may have two climate ratings, based on the innermost and outermost distance from the star. Compute the temperature separately for each extreme.

CLIMATE CLASS

The final climate class is based on the planet’s average temperature. By way of comparison, the Earth’s average temperature is about 12 degrees Centigrade (53° Fahrenheit) for the entire planet, making it Temperate. Obviously various regions are warmer or colder than this. Assume a planet’s equatorial regions are about 20 degrees Centigrade warmer than the base temperature, the mid-latitudes are close to that temperature and the polar regions are 20 degrees colder. As a result, planets which are Cold or Hot are uninhabitable by Humans over most of their surface, but may have livable temperatures in the equatorial or polar regions. Very Cold or Hot and Extremely Cold or Hot planets are uninhabitable, period. Humans visiting them must wear life-support gear.

CLIMATE TYPES TABLE

Temperature	Climate Type
-101° C or colder	Extremely Cold
-100° to -51° C	Very Cold
-50° to -21° C	Cold
-20° to -1° C	Cool
0° to 19° C	Temperate
20° to 49° C	Warm
50° to 99° C	Hot
100° to 149° C	Very Hot
150° C or more	Extremely Hot

LIFE



Life as early twenty-first century Humans know it is made up of complex carbon molecules (nucleic acids, proteins, and carbohydrates) existing in a solution of water. *Star Hero* assumes that life of this type is by far the most common type of life in the Milky Way Galaxy, and that it will evolve wherever liquid water and simple carbon compounds are available. Any planet with an average temperature between -20 and 50 degrees Centigrade is likely to develop life. This includes colder planets that reach the liquid water range as a result of eccentric orbits or tidal heating. Planets which get hotter than 50° C have boiling oceans too warm for complex molecules.

This section deals only with the possibility that life exists, and its general type. Chapter Six discusses the nature of sentient alien life and alien societies.

EXOTIC LIFE

Interstellar explorers in Space Opera or Pulp SF settings may encounter life forms based on chemicals very different from those found in terrestrial life. Most of these kinds of life require a fairly narrow range of conditions, and so are much less common than life based on carbon molecules in water. Gamemasters who want to throw in some exotic forms of life can choose from the following possibilities.

CARBON-AMMONIA

On Very Cold planets with substantial amounts of liquid ammonia, life forms similar to carbon-water organisms can evolve using ammonia as a solvent instead. Carbon-ammonia beings require a temperature range of -80 to -30 degrees Centigrade and a methane-ammonia atmosphere.

CARBON-HYDROGEN

Hydrogen can act as a solvent for carbon compounds at temperatures between -250 and -260 Centigrade (higher in the immense pressures of a gas giant world). Hydrogen-based life doesn't alter its environment because it can only form in places with no sunlight or other sources of external energy.

CARBON-METHANE

On still colder worlds where methane exists in liquid form, it is possible to have life forms made of carbon molecules in a methane medium. Methane-based life requires Extremely Cold temperatures between -180 and -160 degrees Centigrade, and a planetary atmosphere rich in methane and hydrogen.

ENERGY BEINGS

How beings of "pure energy" could exist and remain stable is unknown. If such a thing is possible, energy beings would probably evolve in a very high-temperature environment with strong magnetic fields. Rock-Iron worlds with Very Hot or Extremely Hot climates and Thin or Trace atmospheres rich in argon seem to be the best candidates. Energy-based beings do not have a direct effect on a planet's atmosphere or environment.

FLUORINE-SILICON

Organisms with a complex body chemistry based on fluorosilicone compounds can evolve on Extremely Hot planets with fluorine and carbon dioxide atmospheres. They require a temperature range of 400 to 500 degrees Centigrade.

FLUOROCARBON-SULFUR

Where liquid sulfur is present, on planets with a temperature range of 150 to 400 degrees Centigrade and atmospheres poor in oxygen but rich in fluorine, life forms based on fluorocarbons and sulfur can evolve. Such organisms can create atmospheres which Humans can actually breathe, as they release oxygen from carbon dioxide to make complex fluorocarbon molecules.

LIQUID HELIUM

Far out from any star, in the reaches where planets move through space warmed only by the residual heat of the Big Bang, helium can exist as a liquid, at temperatures approaching absolute zero (-270 Centigrade). The organisms based on liquid helium are very alien, and do not make use of chemical reactions at all. Helium-based life does not alter the planetary environment.

"Life," said Marvin, "don't talk to me about life."

—Marvin the robot philosophizes in *The Hitchhiker's Guide To The Galaxy*, by Douglas Adams

4

"But boiling water!" protested Coleman. "Nothing could live in that!"

"There are algae that manage it on Earth. And if we've learned one thing since we started exploring the planets, it's this: wherever life has the slightest chance of surviving, you'll find it."

—Coleman and Hutchins discuss the possibility of life on Venus in "Before Eden," by Arthur C. Clarke

COMPLEXITY

Having determined the type of life, next figure how complex it is. Use the planet's age in billions of years (from the Star System Data Table on page 103) and consult the Life Complexity Table. For a little variation, roll 1d6 — on a 1 the planet's life is one level more primitive, on a 6 it's one level more advanced.

LIFE COMPLEXITY TABLE

Planetary Age In Years	Types Of Life
1 billion or less	Prebiotic (complex molecules but no organisms)
2 billion	Single-Celled organisms
3 billion	Plants
4 billion or more	Multicellular organisms

INTELLIGENT LIFE

This is the big question. Does the planet have intelligent life? Worlds without sentient inhabitants may nevertheless be interesting places to visit, but to cause real problems you usually need sentient beings. The wisest course is for GMs to design and place intelligent alien species to suit the needs of the campaign. But sometimes it's fun to work with whatever random chance throws out.

Hard Science: All evidence available to Human science at the start of the twenty-first century indicates intelligent life is very rare. For any world with multicellular life roll 4d6; on a result of 24 exactly, there's an intelligent species. This translates to a 1 in 1,300 chance of intelligence, which is about in line with Earth's history (multicellular life for the past billion or so years, Humans for the past million).

Space Opera: In Science Fiction stories, intelligent life turns out to be much more common than real science predicts. Roll 2d6 and give the planet intelligent life on a 12. Note also that many worlds in SF turn out to be ancient colonies.

COLONIES

Even if they lack indigenous sentient life, potentially life-supporting planets may house colonies of species from other worlds. To determine if a planet is home to a colony, roll 2d6 and apply the modifiers in the Colonies Table, then subtract 11. The result is the number of colonies. Some colonies may be quite old, on the order of centuries or millennia, making the inhabitants effectively native to the world. The age of a colony is up to the GM.

Note that it's possible for a planet to have both indigenous intelligent life *and* one or more colonies.

COLONIES TABLE

Modifier	Condition
+1	Green Zone
+1	Temperature between 0 and 50 degrees Centigrade
-4	Gas Giant
+1	Lifebearing World
+1	Spacefaring civilization on another planet in the system
+1	Valuable Resources

MULTIPLE SPECIES

In classic Pulp Science Fiction there are many examples of planets with two or more native sentient species. This is not as odd as it sounds; in the distant past multiple hominid species may have co-existed on Earth. When rolling randomly, GMs can roll a second time for intelligence (using either the Hard Science or Space Opera options) — if the dice come up all sixes again, there are two sentient species. Conceivably the process can go on as long as the GM keeps getting boxcars. Throwing colonies into the mix just adds to the fun. (A planet with three or more native sentient races could be a very interesting place.)

The relationship of two species on a single world depends a great deal on how much they compete with one another. Two sentient species with the same diet and the same climate preferences are likely to fight fiercely with one another, and may wind up living on separate continents. But a pair of species who don't compete — say, a land-dwelling race of vegetarians and a coastal fish-eating race — may have perfectly amicable relations and even develop into a single biracial civilization.



SURFACE

Two planets can have identical atmospheres and climates and still be vastly different. The amount and arrangement of land on the surface makes some worlds rich and prosperous while others are nearly uninhabitable.

HYDROSPHERE

The *hydrosphere* of a planet is how much of its surface is covered by water. This is influenced by several factors. Since a planet's oceans are formed of water released by volcanic activity, big planets (which are more active) tend to have more water than small ones.

Climate also plays a big role. Worlds which are Hot have only half as much ocean because a large amount of water is in vapor form. Very Hot or Extremely Hot worlds have no oceans at all.

Very Cold or Extremely Cold worlds have no oceans of water, but might have seas of ammonia or liquid methane. If those chemicals exist and the planet has a Dense atmosphere, the GM may roll for the coverage of other liquids. Otherwise they have a Hydrographic percentage of zero.

Finally, there's a random element depending on how rough the surface is. A planet with deep ocean basins could have a lot of water but still have plenty of dry land; a smooth planet with little relief might be completely covered by a shallow ocean.

To compute hydrosphere randomly, roll 2d6 and multiply by 10 percent. (Apply the modifiers in the accompanying table.) The result is the amount of surface covered by ocean. If the result is 10 exactly, then the planet has large islands; an 11 indicates a few small islands; and 12 means a true "waterworld" with absolutely no land at all. Rogue planets with Ice or Rock-Ice composition automatically get a planetwide deep ocean if they've moved into the Green, Yellow, or Red Zone of the system.

HYDROSPHERE MODIFIERS TABLE

Modifier	Condition
+1	Planetary mass greater than 1.25
-1	Planetary mass less than .75
+1	Warm climate
-1	Cool climate
-2	Cold climate

PLANET CLASSIFICATIONS

At present, scientists only have the planets of the Solar System and a few bodies detected around other stars to study. They've only been able to recognize some very general types — gas giants, solid planets, and icy bodies like Pluto. An interstellar society with data on hundreds of star systems and thousands of planets might come up with a set of standard "planet classes" as a shorthand for scientists and explorers. For example, in the *Star Trek* series, planets get a letter classification — habitable Earth-like worlds are "Class M," gas giants like Jupiter are Class J, and so forth.

The exact criteria for a planetary classification scheme depend on who's doing the classifying, and why. Space travelers and merchants might simply group them into "inhabited" and "uninhabited," while planetologists could have a highly detailed system based on internal structure and chemical composition.

Here's a system of loose types geared mostly toward determining a planet's suitability for colonization or economic exploitation. The types are denoted by numbers, on a scale indicating the planet's usefulness:

Type	Description
1	Earthlike planets with compatible native life
2	Lifebearing worlds requiring life support for Humans
3	Planets suitable for terraforming (Mars)
4	Icy dense-atmosphere worlds (Titan)
5	Airless rocky worlds (Moon, Mercury)
6	Airless icy worlds (Pluto, Europa)
7	Asteroids (Phobos, Ceres)
8	Greenhouse planets (Venus)
9	Small gas giant planets (Uranus, Neptune)
10	Large gas giant planets (Jupiter, Saturn)



DOMINANT TERRAIN

The terrain of a planet varies widely, of course — just think of all the different landscapes on Earth. The most important factors in figuring landscapes are hydrosphere, climate, and tectonic activity (which is a function of mass). Hydrosphere indicates how much of the surface is desert, climate tells how much tundra or icecap there is, and mass gives an idea of how mountainous the world is. But because so much depends on random accidents of the planet's history, there's no convenient formula. The GM simply has to decide on his own.

Earth's land surface has approximately 25 percent desert, 10 percent ice cap, 10 percent tundra, and 5 percent mountainous terrain. The rest is a mix of tropical forest, temperate forest, grassland, and wetland.

Since Earth is 70 percent ocean and still has deserts, any world with less water is likely to have very extensive deserts. A good rule of thumb is that the non-desert portions make up a percentage of the planet's land area roughly equal to the percentage of the planet as a whole that is covered by land. So a world with 50 percent ocean area would have land that is 50 percent desert, and a planet with 30 percent ocean would have desert covering 70 percent of its land surface.

Icecaps depend on climate and hydrography. The ice surface varies between 0 percent (on Warm or hotter worlds) and 100 percent (on Very Cold planets). For every 2 degree of temperature below 50 degrees Centigrade, increase the ice cap and tundra coverage by 1 percent each. Ice caps can never cover more of the surface than the oceans.

Mountains depend on how active the planet's crust is. Small planets like Mars have few mountains (but the few volcanic peaks it does have are really big because they stay in one place and keep growing). Multiply the planet's mass by 5 percent to get the amount of the surface covered by mountains. Obviously, the result cannot be greater than the total land surface.

The other terrain types depend heavily on the local life forms and the way the continents are. One can assume that drier worlds are likely to have more grassland, wetter ones to have more wetlands, hotter ones to have more tropical forest, and cooler ones to have more temperate forest. But a cold planet might have all its continents in the relatively warm equatorial regions, and so have a high proportion of tropical landforms.

Sholakh: *Highness, this is interesting.*

Graff Vynda-K: *What is it?*

Sholakh: *The Conglomerate's mineralogical survey.*

Vynda-K: *... Bismuth, cadmium, i... jethrik!001% of mass. That's not possible, Sholakh! ... Jethrik, the rarest and most valuable element in the Galaxy!*

—the Graff Vynda-K discovers that the planet he wants to buy contains significant deposits of a valuable mineral (or so he thinks...) in the *Doctor Who* episode "The Ribos Operation"

RESOURCES

There are ten types of resources found on planets:

- Heavy Metals
- Metals
- Nonmetals
- Volatiles
- Organics
- Plants
- Animals
- Crafts
- Manufactures
- Specialties

Of course, this is a highly simplified list. The first five are found on nearly every world, though quantities may vary and it may be easier to extract certain minerals on certain planets. Animals and plants are found on just about any lifebearing world, but certain species with valuable properties may exist in only a single environment on one planet. The products of intelligent species obviously come only from planets that have inhabitants capable of making them.

Gamemasters creating a world randomly can roll for each resource type using 1d6. On a roll of 1 or less, the planet is poor in that material, on a 6 or higher it's rich, on a number in between it's that close to rich or poor. The description of each category, below, includes modifiers based on the planet conditions. Worlds rich in a given resource are likely to be exporters, while worlds poor in something must import it or do without. Planets in the middle range have enough to supply local demand, and perhaps a little left over. Gamemasters building a world should only bother listing the rich and poor resources on the template unless more detail is desired or necessary.

HEAVY METALS

Heavy metals are radioactive substances like uranium and thorium, or precious metals like gold and silver. They have many applications — at lower technology levels they're valued as money (the non-radioactive ones, anyway), and at higher ones they become useful as sources of nuclear power or in construction of electronic devices. Heavy metals, like other metals, are most common on rock-iron planets, and can be found on rock and rock-ice worlds as well. The more dense a planet is, the more likely it is to have heavy metals in quantity. Rock-iron planets get a +1 on the abundance roll, rock-ice planets get a -1, and ice planets get a -4. The roll gets an additional +1 if the planet's density is greater than 1.

METALS

Metals are substances like iron, aluminum, copper, and titanium. They're most often used for tools and structural purposes, particularly in civilizations with industrial-era or higher technology. Metals are common on rock-iron worlds, available on rock worlds and rock-ice worlds, and

rare on ice worlds. More massive planets tend to have more metals. The die roll is +1 for rock-iron planets, unmodified for rock and rock-ice, and -4 on ice planets. There's a +1 modifier for planets with a mass greater than 1 Earth.

NONMETALS

Nonmetals are solid substances like sulfur, silica, crystals, potassium nitrate, and the like. They have a variety of uses, both as materials for ceramics and as feedstocks for chemical industries. Crystals are nonmetals, and in fiction often have remarkable properties (dilithium in the Star Trek universe being one prominent example). Nonmetals are most common on rock worlds, and are available on all others except gas and hydrogen planets. Rock worlds get a +1 for nonmetals, others are unmodified.

VOLATILES

Volatiles are liquids and gases, especially water, ammonia, hydrogen, and helium. They're hard to find on Yellow zone planets, but are available in the Green zone and are common in the Blue and Black zones. Rock-ice and ice planets have good supplies of volatiles. Volatiles have three main uses: as fuel for rocket-powered spacecraft; as the raw materials for life support for ships and space stations; and as the basis for a great many chemicals. Planets in the Yellow zone get a -4 modifier on the roll for volatiles, worlds in the Blue and Black zones get a +1. Ice and rock-ice planets get a +3 modifier.

ORGANICS

Organics are chemicals made from the amazingly versatile element carbon. They range from simple substances like methane and cyanide to complex lipids, alcohols, and petrochemicals. Organics are very rare on Yellow zone worlds as the high temperatures break them down. On Green zone worlds with life, organics are found in the biomass. In the Blue and Black zones primordial organics are found in the atmosphere and surface ice. Organics are an important energy source at industrial-era technology, and are also vital for making plastics, pharmaceuticals, or chemicals. Yellow and Red zone worlds get a -4 on the roll for organics, rock-ice and ice planets get a +1, and any world with life that is water-based, ammonia-based, or methane-based get a +3.

PLANTS

Plants and plant products are only available on planets where plant life has evolved, or on terraformed worlds. Plants in general are common on such worlds, but particular species with special properties can be exceedingly rare. They're most commonly used for food, but plant extracts can also be a source of pharmaceuticals or spices. Trees and similar big plants provide materials for building, and other plants supply fibers for cloth. When rolling for the resource, one can assume there are plants growing all over any lifebearing world; the die roll indicates how useful or valuable the world's plants are.

ANIMALS

As with plants, animals exist only on life-bearing worlds. Not all lifebearing planets have animal life — the GM should decide if a given planet does. Animals are used for food by many races, and their skins are a traditional material for clothing. Some animal species produce toxins or other substances that can have importance as medicines. The roll for animal resources requires that the planet have native multicellular life, but is otherwise unmodified.

CRAFTS

Crafts are the products of preindustrial cultures, chiefly from societies at Stone Age through preindustrial technology. Pottery, cloth, woodwork, and items made of bone and leather are typical crafts. Their importance in interstellar trade derives mostly from aesthetic value, and they're treated as artworks. When rolling randomly, treat a die result of 1-5 as neutral — the planet's people make crafts for their own use but don't export anything. A result of 6 means the culture's crafts are interesting or beautiful enough to have value elsewhere. The roll for crafts has no modifiers, but obviously the planet must have intelligent inhabitants with manipulatory limbs to make them. (For an example of an intelligent species without manipulatory limbs, and the problems this causes, see Arthur C. Clarke's short story "Second Dawn.")

MANUFACTURES

Manufactures are those products made in factories at industrial or later technology. Manufactured goods are seldom as lovingly made or beautiful as handcrafts, but they're vastly cheaper and available in enormous quantities. This means factories are built only when there's a sufficiently large market for their wares. Many planets import manufactured goods, either because the local technology cannot produce them or because the local population is too small to support a factory. The range of manufactured goods is vast — from plastic trinkets to starships. When rolling randomly, all worlds with preindustrial technology get a -1; a spacefaring or higher technology get a +1. A planetary population below 1000 gives a modifier of -2, and population less than 1 million gives a modifier of -1.

SPECIALTIES

Many worlds have some resources which are the result of particular local conditions and do not occur elsewhere. They may be natural products or items made only by one culture on that world, or luxury items like a unique mineral water. For example, the plot of Frank Herbert's epic novel *Dune* revolves partly around the fact that the planet Arrakis is the only place in the universe where the life-extending, awareness-enhancing spice melange is produced. On a roll of 6, a planet has some special resource; the GM gets to decide what it is.

4

QUICK PLANET CREATION

Step 1: Check orbital eccentricity and inclination, and determine year length.

Step 2: Determine mass by rolling on the Planetary Mass Table.

Step 3: Determine composition on the Planetary Composition Table, then compute density based on composition.

Step 4: Compute diameter, equal to the cube root of (mass divided by density) in Earth diameters. Multiply by 12,800 to get kilometers.

Step 5: Determine gravity by multiplying density by relative diameter.

Step 6: Roll on the Moons Table to determine how many moons the planet has; figure orbital distance by rolling on the Moon Distance Table; determine size by rolling on the Moon Size Table; check the Moon Anomalies Table.

Step 7: Roll on the Planetary Rotation Table to determine day length; check the Rotation Anomalies Table; roll for axial tilt on the Axial Tilt Table.

Step 8: Determine atmosphere composition by rolling on the Atmospheric Composition Table.

Step 9: Determine atmosphere density by rolling on the Atmospheric Density Table, then calculate pressure by multiplying atmosphere density by surface gravity.

Step 10: Determine climate, either by calculating temperature based on distance or by using the base temperature for the planet's orbital zone. Modify for albedo, tidal heating, and greenhouse effect.

Step 11: Determine if the planet has any native life. If so, modify the atmosphere accordingly.

Step 12: Roll on the Life Complexity Table to see what kind of creatures exist.

Step 13: Roll to see if any intelligent life exists (a 2d6 result of 12, or a 24 on 4d6 for Hard Science); check to see if the planet has any colonies on it.

Step 14: Determine ocean coverage by rolling 2d6 times 10 percent, with modifiers for mass and climate.

Step 15: Determine the dominant terrain based on climate, hydrography, and mass.

Step 16: Roll 1d6 for each resource category; on a 6 the world is rich in those resources, on a 1 it is poor (use modifiers based on other planetary characteristics).



OTHER OBJECTS

Planets aren't the only things one can find circling a star. There are asteroids and comets, space rubble which may turn out to be more useful in some ways than planets themselves. Intelligent beings can construct space stations and habitats. And extremely advanced civilizations may construct really huge structures bigger than worlds.

ASTEROIDS

Asteroids are small bodies orbiting a star. They range in size from boulder-sized to 1,000 kilometers in diameter. All asteroids are airless, and have a surface gravity of 0.01 G or less. They have no surface water, but may contain deposits of ice.

In the Solar System, asteroids are most common in the Asteroid Belt, a loose collection of bodies orbiting between Jupiter and Mars. Any planetary mass result of 0 during planet generation indicates an asteroid belt. Some star systems may have multiple asteroid belts, and young stars won't have anything else.

The density of an asteroid belt is normally very sparse, with millions of miles between objects. In Space Opera Science Fiction the situation is very different: asteroids can come in dense swarms and clusters as crowded as freeway traffic. To generate that kind of asteroid belt, roll 1d6 for density. A 1 means Very Light density, 2 is Light, 3 is Average, 4 is Tight, 5 is Very Tight, and 6 is Extremely Tight.

The exact composition of asteroids varies. Some are stony-iron bodies, composed of rock and metal with little in the way of volatiles. These are most common in the inner system (the Red, Yellow, and Green zones), although they can be found anywhere. Carbonaceous asteroids are rich in carbon and volatiles, though rock and metal still makes up the bulk of their mass. Carbon asteroids are most common in the Green and Blue zones. In the outer system (the Black zone), most small objects are comets. Comets are big balls of ice containing chunks of metal and rock; one astronomer called them "dirty snowballs."

The structure of asteroids also varies. Some are simply huge single chunks of rock or iron, possibly with a coating of dust pulverized by eons of

meteoroid impacts. Others have been shattered by large impacts, or formed by low-energy collisions, and so are really just a collection of fragments loosely packed together. Comets apparently have a very thick outer layer of powdery "snow" and dust, which makes landing on them problematic.

Humans operating on an asteroid face several hazards. The surface of an asteroid is essentially "outer space," with no protection from cosmic rays or solar heat. (See page 309 for conditions in space.) The low gravity means staying on an asteroid's surface can be difficult. On small bodies (up to 20 kilometers or so) a vigorous leap can send one into a long ballistic path, sometimes circling the entire asteroid. Explorers and workers need tethers to keep from "falling off" into space.

The surface of an asteroid or comet is likely to be a mass of powdery dust and ice. In the minuscule gravity, any motion quickly raises a cloud of obscuring particles. Each Phase characters must make a PS: Zero-G Operations roll, or a DEX Roll at -3, to avoid kicking up dust. On a failed roll, the character is surrounded by a cloud dust 1 meter in radius, which functions as Change Environment, -3to Sight Group PER Rolls (and, depending on composition, possibly the Radio Sense Group and senses like Sonar). The dust settles in 6 Segments unless the character fails another roll. In a battle situation, characters may choose to kick up a lot of dust deliberately, to block laser weapons and sensors. (See also page 305.)

Their low gravity makes asteroids attractive for space mining and manufacturing because there's no need to waste much energy hauling mass out of a deep gravity well. Asteroids with ice deposits could draw colonists to tunnel into the rock and set up farms under domes or bright lights.

To determine if a system has asteroid colonies or bases, the system must either have a planet with spacefaring technology, or the system must be claimed by a spacefaring civilization. If either of those is the case, roll 2d6-11 and add 1 for each inhabited planet in the system. The result is the number of asteroid bases. To determine population, roll 1d6 and consult the Asteroid Population Table.

C-3PO: *Sir, the possibility of successfully navigating an asteroid field is approximately 3,720 to 1.*

Han Solo: *Never tell me the odds!*

—Han pulls a dangerous stunt to avoid Imperial pursuers in *The Empire Strikes Back*



ASTEROID POPULATION TABLE

Roll 1d6	Population
1-2	Small base (1d6 x 5 people)
3	Medium base (1d6 x 10 people)
4	Large Base (1d6 x 100 people)
5	Colony (1d6 x 1,000 people)
6	Large Colony (2d6 x 10,000 people)

TARGET: ASTEROID!

If a starship has to shoot at an asteroid, comet, or the like for some reason, the GM needs to determine how much damage the target can withstand.

DEFENSE

A rock asteroid has PD 5, ED 10; a rock-metal asteroid has PD 7, ED 10; an ice asteroid or comet has PD 5, ED 4. Bases and other structures have their own protection (though they may simply tunnel into the asteroid).

BODY

To determine an asteroid's BODY, assume the object is a sphere.

Determine its radius

in meters (there are 1,000 meters in a kilometer).

To find out the volume of the object, cube its radius (multiply it by itself, and then multiply that product by the radius), then multiply that product by pi (3.14), and then multiply that product by 1.33. (In short, use the formula $4/3\pi r^3$.) The end result is the volume of cubic meters in the object.

A rock or rock-metal asteroid has 19 BODY per cubic meter. An ice asteroid or comet has 8 BODY per cubic meter.

Unless an attack has sufficient Area Of Effect (and often MegaScale) to affect the entire asteroid at once, destroying it cubic meter by cubic meter will probably take a long time. See *Target: Earth!*, page 230, for more information and ideas.

Asteroids can have resources just like planets. It's safe to assume nobody would settle on a given asteroid unless it was rich in something. Stony-iron asteroids are rich in either metals, heavy metals, or nonmetals. Carbonaceous asteroids have metals, nonmetals, and organics. Comets have volatiles, organics, and nonmetals. Any asteroid with a Colony or Large Colony is assumed to produce Manufactures as well. Asteroid colonies never produce Plants, Animals, or Crafts.

FLYING IN ASTEROID BELTS

A staple of Science Fiction movies is for a hero being pursued by a numerically- or technologically-superior enemy to duck into an asteroid field, using his superior reflexes to avoid a collision. Not only does this offer him visual and physical cover from his pursuers, but since they don't have the same degree of piloting skill he does, they end up smashing into the big, floating rocks.

To pull this trick, a PC pilot has to make a Combat Piloting roll *every Phase* to avoid colliding with an asteroid. The difficulty of the roll depends on how densely packed the asteroids are:

Belt Density	Modifier
Very light	+2
Light	+1
Average	+0
Tight	-3
Very Tight	-6
Extremely Tight	-9

Even "Very Light" assumes the asteroids are close enough together that the character's ship passes a few each Turn. If they're extremely diffuse — as in real asteroid belts, where there's an average of a million kilometers between asteroids — characters don't have to roll at all, but they gain no cover, either. A planetary ring like Saturn's would qualify as an Average asteroid belt.

Failing a roll indicates a collision. If the roll fails by 1-3, the character merely swipes (or is swiped by) an asteroid; his ship takes its velocity divided by 5 in dice of Normal Damage. If the roll fails by 4 or more, there's been a collision and the character's starship takes its velocity divided by 3 in dice of Normal Damage (or more, at the GM's discretion).

If the character can succeed with the rolls, in some cases his ship becomes harder to hit with attacks, thanks to the cover of the intervening rocks:

Belt Density	OCV Penalty
Tight	-2
Very Tight	-4
Extremely Tight	-6

Of course, ships may still be able to obtain cover behind individual asteroids, in the GM's discretion; if so, normal Behind Cover rules apply.

COMETS

Comets are similar to asteroids, but are composed mostly of ice, with chunks of rock embedded in them. They're found in the Black zone of all star systems. Like asteroids, comets represent valuable resources due to their accessibility. Because they're so far out from the central star, they're less suitable for colonization. As with asteroids, they're only colonized if the system contains a spacefaring planet or is owned by a starfaring civilization. Roll 2d6-12 and add 1 for each inhabited planet; the result is the number of comet bases in a system. Roll on the Asteroid Population Table with a -1 penalty to get the population of a comet base. Because they're so remote and hard to find, comet bases are more likely to be the home of rebels, pirates, or outcasts.

See page 96 for more information about, and ideas for, comets.

SPACE HABITATS

Tier was a stepped habitat; its nine levels all revolved at the same speed, but that meant that the outer tiers possessed greater apparent gravity than those nearer the center. The levels themselves were sectioned into compartments up to hundreds of kilometers long and filled with atmospheres of different types and held at different temperatures, while a stunningly complicated and dazzlingly beautiful array of mirrors and mirrorfields situated within the staggered cone of the world's axis provided amounts of sunlight precisely timed, attenuated and where necessary altered in wavelength to mimic the conditions on a hundred different worlds for a hundred different intelligent species.

—a description of just one of the many gargantuan artificial habitats maintained by the Culture from Iain M. Banks's novel *Excession*

Sometimes there isn't a convenient planet or asteroid where people want to live and work. In that case they need an artificial habitat, like a space station or star base. These can be anything from a trailer-sized orbital laboratory (like Skylab or Mir), to a large permanent station (like Deep Space 9 in the *Star Trek* universe) to a giant self-sufficient space city (like Babylon 5 in the television series of the same name). See page 244 for more on Bases in space.

As with asteroid or comet colonies, a system must hold or be controlled by a spacefaring civilization. If that is the case, roll 2d6-12 and apply the following modifiers: +1 if there are one or more asteroid colonies; +1 if there is more than one inhabited planet; and +1 if the system is on an important trade route. The result is the number of major stations. Roll 2d6 on the Space Station Table to determine the size of each station.

Space habitats typically orbit in the Green or Blue Zone of the star system. Small stations often orbit uninhabited planets, while large ones can be in solar orbit themselves. A particularly attractive location for a space station is at one of the *Lagrange points* of a planet — the spots sixty degrees ahead of or behind a planet in its orbit, where gravity interactions create stable positions.

Artificial colonies serve various purposes: scientific research, military bases, trading centers, or industrial facilities. An industrial colony produces Manufactures (probably using resources from asteroid mines); the others have no exports of their own (but in the case of a trading station may still be immensely valuable economic and diplomatic resources).

SPACE STATION TABLE

Roll 2d6	Station Type and Size
2-7	Small Station (1d6 x 5 people)
8	Medium Station (2d6 x 10 people)
9	Large Station/Star Base (1d6 x 100 people)
10	Large Star Base (2d6 x 100 people)
11	Small Colony (2d6 x 1,000 people)
12	Large Colony (2d6 x 10,000 people)

Megastructures

Highly advanced civilizations can build really big structures, bigger than planets. A society at the “stellar engineering” stage may well build things on the scale of stars.

Megastructures are impossible to place randomly; the GM must decide which systems have them. Exploring even a small megastructure would be an entire campaign in itself. Given their potentially huge populations, a single megastructure could easily dominate all the nearby systems. In the case of a Dyson sphere or ringworld, the inhabitants may simply disregard planets as too tiny to be worth conquering.

ORBITALS

A common type of habitat in Iain M. Banks’s “Culture” series is the *orbital*. An orbital is nothing but a *really really big* space colony — a ring some 400,000 kilometers across and hundreds of kilometers wide, turning once a day and producing gravity by spin. In Banks’s novels most orbitals are made up of smaller segments called *plates*, strung along superstrong cables so that the whole thing can be built incrementally over time. An orbital 4,000 kilometers thick would have a surface area of about a trillion square kilometers — two thousand times the area of Earth itself — not to mention any usable interior volume.

Making an orbital that size would take only a fraction of the Earth’s mass, so dismantling one Terrestrial-sized planet would create thousands of times the living space of that planet’s surface. A star system could hold dozens or hundreds of orbitals, each with tens of billions of inhabitants.

TOPOPOLIS

Larry Niven’s essay “Bigger Than Worlds” noted another interesting type of megastructure called a *Topopolis*. The idea is simple — a tube one or two kilometers across, looped around the central star in a big circle the size of a planet’s orbit. The result is a long, thin doughnut. Since it’s orbiting, the topopolis would be in zero gravity, but its designers can rotate the tube for spin gravity. This is possible because the diameter of the tube is so tiny compared with the enormous scale of the ring around the central star that it behaves locally like a straight cylinder. In effect, it’s a cylindrical space station which happens to go all the way around its star.

A single-loop topopolis would have an area of about 2 billion square kilometers, or four Earths. But as Niven pointed out, the civilization can go on adding loops almost indefinitely, with fractionally smaller or larger diameters, inclined so as not to block one another’s sunlight. A planet like Earth could furnish material for 5,000 topopolis loops, enough room for 100 trillion people!

RINGWORLDS

Niven also devised the idea of a *ringworld* — a huge ribbon like an orbital, but as wide as the Earth’s orbit around the Sun. A ringworld requires super-scientific building materials (in other words, stuff with impossible properties by modern standards) and a mass equal to ten Earths. However, it would provide living space equal to three *million* Earth-sized planets, allowing a population in the hundreds of *trillions* with no crowding. Smaller ringworlds around dimmer stars would have less area.

The chief problem with a ringworld is that it isn’t in orbit. It’s spinning to create gravity, but it’s just parked around the central star. Such a situation is unstable over the long term. Niven suggested the use of large Bussard ramjets as attitude thrusters, or the builders might use the solar wind to keep the ringworld centered. His novels *Ringworld*, *The Ringworld Engineers*, and *The Ringworld Throne* turn in large part on Hard Science Fiction facts about how such a structure would be built and maintained, and contain many fascinating ideas for GMs looking to include ringworlds in their Star Hero settings.

Dreve would be an ideal system to do this in; it had been a Culture system for four thousand years, comprising nine more or less wilderness worlds and three Orbitals — hoops, giant bracelets of living space only a few thousand kilometers across but ten million kilometers in diameter — calmly gyrating in their own carefully aligned orbits and housing nearly seventy billion souls.

—a description of an Orbital of the Culture from *Excession*, by Iain M. Banks

MEGA-BASES

Characters with serious claustrophobia may want a planet or megastructure as a private base. Point costs are pretty high, and include no resources whatsoever beyond the space itself. Gamemasters should consider just assigning a flat cost for each of these mega-Bases (1,000 to 2,000 points, depending on location and resources). See page 244 and *The Ultimate Base* for expanded rules for Bases (including a Size Comparisons table that lists the Size category for a variety of planets and Big Dumb Objects).

Planet: An Earth-sized planet has an area of 514 trillion square meters, for a cost of 88 points. While the overall bulk of a planet is quite tough (see page 230), the *surface* is protected only by a thin layer of air, so it only gets the basic 2 BODY for structures with PD and ED of 2. Planets get no location modifiers because they contain all the listed environments, and are not in Space because of the difficulty in reaching orbit from a planet surface. Planets provide Life Support (self-contained breathing and protection from vacuum and radiation; 14 points). Total cost: 102 points.

Orbital: An orbital 400,000 km in diameter and 4,000 km wide would have a surface area of approximately 5 *quadrillion* square meters, for a cost of 124 points. It has BODY 20 (18 points), PD and ED 10 (24 points). It's a location in Space (25 points). The orbital provides Life Support for its inhabitants (self-contained breathing and protection from vacuum and radiation; 14 points). Total cost: 205 points.

Topopolis: A single-loop topopolis at Earth's orbit with an internal diameter of 2 kilometers would have a volume of 3 billion billion cubic meters, costing 106 points. It has BODY 15 (13 points), PD and ED 10 (24 points). It's a location in Space (25 points). The topopolis provides Life Support for its inhabitants (self-contained breathing and protection from vacuum and radiation; 14 points). Total cost: 182 points.

Ringworld: A ringworld has a surface area of 600 trillion square miles (1.5 billion trillion square meters), costing 136 points. It's very tough, with BODY 30 (28 points), PD and ED 30 (80 points). It's a location in Space (25 points). The ringworld provides Life Support for its inhabitants (self-contained breathing and protection from vacuum and radiation; 14 points). It has the Physical Complication *Unstable* (requires constant effort/maintenance to keep it functioning properly; All The Time, Slightly Impairing; 25 points). Total cost: 283 points.

Dyson Sphere: A solid Dyson sphere has a surface area of 1034 square meters, at a cost of 148 points. The sphere itself isn't especially strong, with BODY 20 (18 points), PD and ED 10 (24 points). It's a location in Space (25 points). The sphere provides Life Support for its inhabitants (self-contained breathing and protection from vacuum and radiation; 14 points). Total cost: 229 points.

DYSON SPHERES

The ultimate megastructure is to enclose an entire star in a sphere. This would capture all of the star's energy output, and would allow a population in the billions of billions!

There are two ways to go about this. Freeman Dyson's original idea envisioned simply surrounding the Sun with a swarm of orbiting habitats and solar collectors; essentially a whole bunch of Orbitals and maybe a topopolis or two. But later visionaries and SF writers liked the notion of a single huge structure, a sphere as big as the Earth's orbit. Such a sphere would need artificial gravity, because it couldn't spin (the poles would still be in zero-G), or else the inhabitants would simply have to learn to live in freefall. The sphere wouldn't be in orbit, and it wouldn't need to be — the net gravity over a hollow sphere is zero, so it could exist in a stable arrangement for millennia.

CHAPTER FIVE



THE UNIVERSE, PART 3: THE SOLAR SYSTEM



EARTH'S SOLAR SYSTEM

All the habitable worlds of the solar system were occupied. Three planets and eight satellites and eleven million million people swarmed in one of the most exciting ages ever known, yet minds still yearned for other times, as always. The solar system seethed with activity... fighting, feeding, and breeding, learning the new technologies that spewed forth almost before the old had been mastered, girding itself for the first exploration of the far stars in deep space[.]

—from the prologue to
The Stars My Destination, by Alfred Bester

Many Science Fiction stories take place right in Earth's backyard — in its solar system, in other words. The eight planets, numerous moons, dwarf planets, asteroids, and comets orbiting Sol are the cosmic real estate Humans know best, so it's only natural for Science Fiction authors to use them as the settings for stories. Since Star Hero GMs and players often have similar motivations, this chapter provides a brief look at the solar system from a gaming perspective. Additionally, Earth's solar system can serve as an example of what solar systems are like, providing guidance to GMs who want to create their own. The chapter concludes with some information about other nearby stars and galactic features of interest.

Earth's solar system has eight planets. From closest to the Sun to furthest, they are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. The former planet Pluto got reclassified as a "dwarf planet" along with Ceres, Eris, Makemake, and Haumea. Additionally, there's an extensive asteroid belt between Mars and Jupiter, and a cloud of comets out beyond Neptune.

VISITING THE SUN

While it may seem insane to think of landing on the Sun or even approaching within a few million miles of it, Science Fiction stories have imagined it. The key is to carry along enough insulation or enough matter to absorb the incredible heat before the characters roast.

In *HERO System* terms, visiting the Sun's "surface" (the *photosphere*, the edge of the opaque plasma of the Sun's atmosphere, where it's a mere 5,000° C) requires Life Support (Safe Environments: Intense Heat, High Pressure, High Radiation). More realistically, it should also include a large amount of ablative armor to boil away. Immersion in the solar surface plasma inflicts 10d6 Normal Damage, Constant, Armor Piercing, per Segment (*i.e.*, as if the Sun has SPD 12). Using the optional rules for Ablative that remove Active Points instead of imposing an Activation Roll (since a single failed Activation Roll could kill everyone aboard the ship!), for a five minute visit a Solar Exploration Module needs ED 500 just to absorb the damage from the visit (it loses 10 ED per Turn, at the rate of 5 Active Points' worth per Segment).

Descending deeper into the Sun (which has a diameter of 1.4 million km), is even more dangerous. The next layer down, the *convective zone*, contains superhot gases; it's about two million degrees Celsius. It does 350d6 Killing Damage, Constant, Armor Piercing (x2), Penetrating (x4), per Segment.

The next zone, the *radiative zone*, contains streams of photons coming from the core. It's about 5 million degrees Celsius, and does 560d6 Killing Damage, Constant, Armor Piercing (x4), Penetrating (x8), per Segment.

Assuming a ship makes it all the way to the Sun's core — the region where the nuclear reactions occur — it encounters temperatures of 15 million degrees Celsius. The core inflicts 975d6 Killing Damage, Constant, Armor Piercing (x8), Penetrating (x16), per Segment.

That certainly ought to be enough for the PCs to get a good suntan....

THE SUN

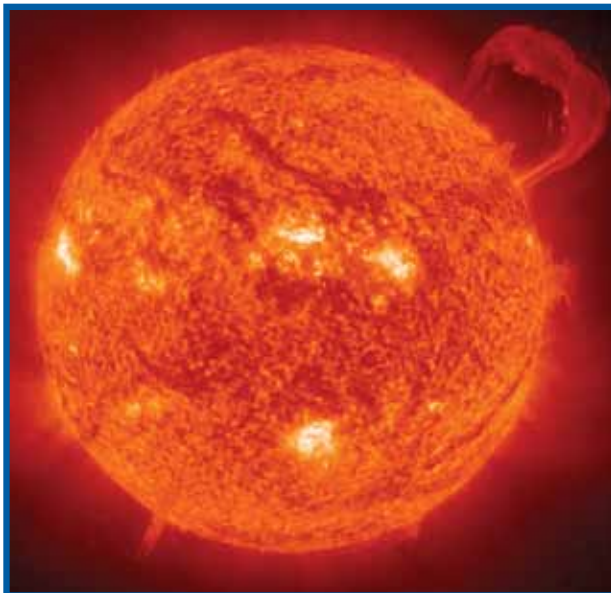
Earth's Sun is a type G2V star, a bright "yellow dwarf." As stars go, it's relatively large — the majority are type M dwarfs a tenth the Sun's mass. However the Sun is tiny compared to giants like Rigel or Betelgeuse. Composed almost entirely of hydrogen and helium, the Sun has a mass 330,000 times Earth's, and is 1.4 million kilometers in diameter. Ninety-nine point nine percent of the mass of the Solar System is in the Sun itself; the planets are, essentially, debris. It rotates once every 27 days, which reveals the interesting fact that the planets contain most of the Solar System's angular momentum, even though the Sun has most of the mass.

About 4.6 billion years ago the Sun condensed from a cloud of dust and gas in some now-distant part of the galaxy. As that cloud contracted, it heated up as gravitational potential energy turned to kinetic energy. That heat eventually made it possible for the Sun's core to begin fusion reactions. Over time, the Sun has gradually brightened — a billion years ago it was only about 90 percent as bright as it is today. This brightening will continue into the future, so that in another billion years Earth may well be uninhabitable.

The Sun is, as one might expect, hot. Its surface temperature is about 5,000 degrees Centigrade, and at the core it can reach an unimaginable 15 million degrees.

SOLAR FLARES

Solar flares are eruptions on the surface of the Sun that release large amounts of energy. Often the flare is contained in a loop of the Sun's magnetic field, creating a huge "prominence" extending up to 100,000 kilometers above the surface of the Sun. Flares can release showers of charged particles and radiation, damaging electronics and posing a threat to character health and safety.



THE PLANETS

The eight planets of the Solar System have all been extensively observed through telescopes, and all have been visited by space probes. Long before NASA got to any of them, Science Fiction writers were exploring the planets in stories and films.

Mercury

Diameter:	4,900 kilometers
Distance From Sun:	.39 AU
Gravity:	.37 G
Year:	88 Earth days/ 1.5 Mercury days
Moons:	None
Orbital Velocity:	47.6 kilometers/sec
Atmosphere:	None

Mercury is the innermost planet, an airless, cratered body half again as large as Earth's Moon. It's notable for its high density — almost that of the Earth, which is twenty times larger. Apparently, because it formed so close to the Sun, solar heat cooked all the lighter elements out of Mercury. That suggests, in turn, that it may be very rich in heavy metals, a mineral treasure trove. Because Mercury moves so quickly about the Sun, it's hard for spacecraft launched from other planets to reach it.

Observing Mercury by telescope is difficult because of glare from the Sun. Consequently, astronomers goofed in determining Mercury's rotation period. The mistake was easy to make because Mercury's rotation (58 days) and orbital period (88 days) are "resonant" — it turns around three times for every two orbits. When astronomers got rare glimpses of the surface of Mercury, it appeared to keep the same face to the Sun. For decades in classic and Pulp Science Fiction, Mercury was the one-face world, its bright side eternally baking under the harsh light of the Sun, its night side one of the coldest places in the Solar System, forever in shadow. Sadly, in the 1960s, radar observations determined Mercury's true rotation period, and the one-face world was no more.

The surface of Mercury is heavily cratered, like Earth's Moon, and boasts many steep ridges and areas of fractured terrain. There are a few large impact basins like the "seas" of the Moon, but most of Mercury is very rugged and rough. A space probe named MESSENGER reached orbit around Mercury in 2011 and began mapping the surface in detail.

Adventures on Mercury often involve the monstrous heat of the Sun, either as something the heroes must survive, or as a lurking menace everyone must constantly worry about. When a member of the Mercury base crew goes mad and sabotages the cooling machinery, it's a race against time before the deadly dawn.

Venus

Diameter:	12,200 kilometers
Distance From Sun:	.72 AU
Gravity:	.88 G
Year:	223 Earth days/ 0.9 Venus days
Moons:	None
Orbital Velocity:	34.9 kilometers/sec
Atmosphere:	Dense (100 times the mass of Earth's)

Venus is a pretty close approximation of Hell. Its thick carbon dioxide atmosphere traps solar heat, raising the surface temperature to 450 degrees Centigrade (850 Fahrenheit) — hot enough to melt lead. Sulfuric acid rain blown by gale-force winds lashes the barren landscape, and intense lightning discharges occasionally zap the rocks. The surface pressure is 90 times that of Earth's atmosphere — equivalent to the pressure of the ocean a kilometer down. Explorers on the surface of Venus need armored diving suits with heavy refrigeration. The planet's day is 243 Earth days long, and Venus turns counterclockwise, so the Sun rises in the west on Venus and sets in the east.

This is all in sharp contrast to how Venus was long depicted in Science Fiction. Until the 1960s, all that was known about Venus was that it was wrapped in clouds. Scientists (and SF writers) naturally assumed they were clouds of water vapor, as on Earth. It seemed logical that a planet covered by clouds must be a rainy, wet place. In fiction it was either a planetary ocean with no solid land at all, or else a vast steaming swamp, lush with plant life — maybe even dinosaurs!

TERRAFORMING VENUS

When the true nature of Venus was discovered, some planetary scientists wondered if it was a world just waiting for life. Carl Sagan suggested shooting a few rockets full of fast-breeding single-celled plants into the upper atmosphere of Venus. The plants would convert the carbon dioxide of Venus's atmosphere to oxygen, reducing the greenhouse effect and eventually creating a habitable world.

Later discoveries indicate that it wouldn't be so easy — Venus is short on water and nitrogen, and there's that pesky sulfuric acid to worry about. Still, the notion of "bioterraforming" by letting the plants do their thing remains very attractive. The investment is low and the payoff is a whole planet to live on. Perhaps advanced genetic engineering could create plants to convert Venus's atmosphere to a more breathable mix.

I could feel the heat hovering outside. In the cabin it was bright and dry and cool, almost too cool, like a modern office building in the dead of summer. Beyond the two small windows it was as black as it ever gets in the solar system, and hot enough to melt lead, at a pressure equivalent to three hundred feet beneath the ocean.

—explorers visit Venus in "Becalmed In Hell," by Larry Niven



The Moon

Diameter:	3,480 kilometers
Distance From Earth:	384,400 kilometers
Gravity:	0.16 G
Month:	28 days
Atmosphere:	None

Earth's Moon is big — it would be perfectly at home among the planet-sized moons of the outer gas giants. What a relatively small planet like Earth is doing with such a big moon has kept scientists puzzled for decades. The current theory holds that the Moon formed from material blasted into space by a collision between Earth and a Mars-sized body early in the history of the Solar System. The result is that the Moon is similar in composition to the rocks of the Earth's crust.

The Moon's tiny gravity means it cannot hold onto any air or liquid water (although there are deposits of ice in perpetually-shadowed craters at the poles). However, it also makes it easy for lunar explorers to carry heavy equipment with ease.

In fiction, the Moon is often portrayed as an industrial outpost, supplying raw materials for orbital colonies and factories. Earth's proximity means plenty of opportunity for economic rivalry and political conflict, ranging from wars of Lunar independence to a tense Cold War over interplanetary trade. A Moon colony equipped with an electromagnetic catapult to launch cargoes into space could use it to bombard Earth with artificial meteorites.

THE LAGRANGE POINTS

The “Lagrange Points” are hot real estate in Earth orbit because the combined gravity of the Earth and Moon make them very stable locations. Satellites or space colonies at the Lagrange Points can remain in place without using up a lot of fuel. There are five Lagrange points, but the two important ones are L4 and L5, located 60 degrees ahead and behind the Moon in its orbit. They are also called “Trojan points” because there are clusters of asteroids named after heroes of the Trojan War clumped at the Lagrange Points on Jupiter’s orbit around the Sun.

Gerard K. O’Neill suggested that the Moon’s Lagrange Points would be ideal locations for space colonies, as they could have easy access to Lunar materials for construction. A leading space colonization group was named the L5 Society in support of that notion.

In fiction, the Lagrange Points are often depicted as a cluster of habitats, ranging from big government-run space colonies to tiny stations inhabited by crackpots and criminals. A wealthy and prosperous Lagrange society might try to break away from Earth and become independent — no easy task when the space cities are all very delicate and vulnerable. Earth and the Lagrangians might be rivals for influence on the Moon and in the rest of the Solar System. A less powerful Lagrange culture might serve as a spacegoing version of Cold War Macao or WWII Casablanca — a lawless place where anything can be had for the right price.

Another important Lagrange point is the L1 point, located between Earth and the Moon where their gravity fields balance out. The most efficient trajectories between the Moon and the home planet pass through L1, making it a good place for pirates and hijackers to lurk.

TERRAFORMING MARS

Mars is too small and too cold to support Earthly life, but in both cases the margin is very slim. Making it warmer and giving it a thicker atmosphere could make Mars habitable over a scale of tens of thousands of years. Current plans envision doubling the planet’s solar heat input by means of giant mirrors in space, and adding volatiles to thicken the atmosphere by sending comets smashing down onto the Martian surface.

Mars

Diameter:	6,800 kilometers
Distance From Sun:	1.5 AU
Gravity:	.38 G
Year:	686.6 Earth days/ 672.6 Mars days
Moons:	2
Orbital Velocity:	24 kilometers/sec
Atmosphere:	Trace

Mars is a fascinating world, worth a whole book to itself. Its atmosphere is very thin (surface pressure is about 0.5 percent of Earth’s) and is composed of carbon dioxide — there’s no oxygen to breathe. Water is apparently common in the form of underground ice deposits, and the canyons and channels on the Martian surface indicate it once flowed abundantly in liquid form.

As a colony, Mars could be quite valuable — Humans could use its ice and atmosphere to manufacture rocket fuel, and its low escape velocity makes it easier to ship payloads from Mars to the asteroids and outer system than hauling them up from Earth’s surface. Scientists and space enthusiasts have also done a lot of planning for how to terraform Mars (see sidebar).

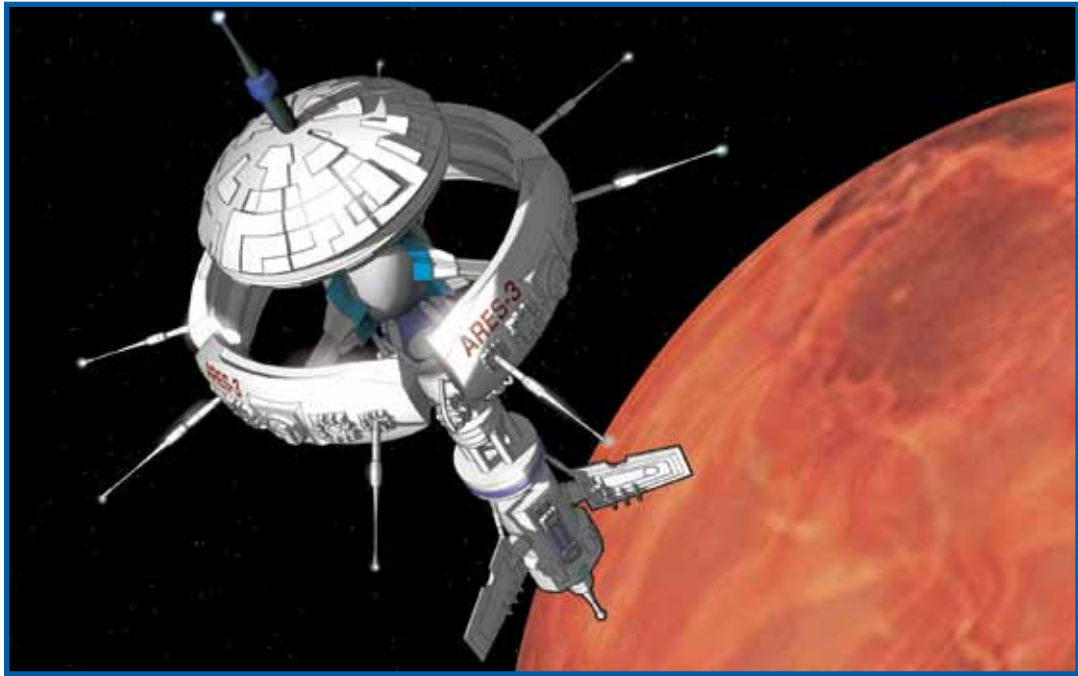
Mars is *the* planet of Science Fiction. Ever since H.G. Wells writers have been sending explorers there, dealing with invaders from there, exploring the ruins of ancient civilizations there, setting up colonies there, and terraforming the place. To many people, the term “Martian” is synonymous with “alien from outer space.” Near-future adventures could take place against the backdrop of a growing colony, while later ones set on a terraformed Mars could use it as a rival planet to Earth.

I’d been thinking in terms of Earth, forgetting that every city on Mars is a closed little world of its own beneath the force-field that protects it from the freezing near-vacuum. Beyond those electronic shields is the utterly hostile emptiness of the Martian Outback, where a man will die in seconds without protection.

—from “Trouble With Time,” by Arthur C. Clarke

“Mars is a sublime, exotic, and dangerous place,” said John — meaning a frozen ball of oxidized rock on which they were exposed to about fifteen rem a year; “And with our work,” John continued, “we are carving out a new social order and the next step in the human story”[.]

—John Boone, the first man on Mars, speaks about plans to colonize and terraform the planet in *Red Mars*, by Kim Stanley Robinson



AREOGRAPHY

Mars is divided into two geographical regions: the southern highlands, occupying roughly two-thirds of the planet; and the northern lowlands. A boundary zone, often containing prominent features such as buttes and mesas, marks the line between the two regions in most places. The northern zone is relatively smooth, whereas the south has enough craters to make it look like the Moon; the exact reasons for this remain unclear.

Because Mars has no oceans, it has no “sea level.” Areographers refer to the *datum*, an average elevation defined by atmospheric pressure and the radius of the planet, as a baseline to measure elevation. Mars has almost no magnetic field, so compasses are virtually useless. Instead, explorers rely on satellite tracking devices, celestial navigation, and inertial trackers.

Some prominent Martian features include:

Polar Caps: The north and south poles of Mars are covered by icecaps which grow and shrink with the seasons. During the summer the polar caps are water ice, but in winter a layer of frozen carbon dioxide “snow” more than doubles the size of each cap.

Chryse Planitia: This relatively flat, uncratered region, located almost in the center of the planet on most maps, has been a primary site of Human exploration of Mars. Both Viking 1 and the Mars Pathfinder landed in the “Plains of Gold.” The Chryse Planitia region also includes the so-called Cydonian Face (a rock formation which, when viewed from certain angles, resembles a face) and the star-shaped “City Square” of outcroppings and massifs. In a Space Opera campaign these sites might be real alien ruins; in a Hard Science Fiction game they’re a magnet for crackpots.

Utopia Planitia: Another fairly flat and easily-traversed region of Mars, Utopia Planitia was where Viking 2 landed. It’s likely that initial Human settlements of Mars would be located either here or on Chryse.

Tharsis Province: An 8,000 by 4,000 kilometer long uplifted region straddling the Martian equator, Tharsis is well-known for its volcanic features. Chief among this is *Olympus Mons*, the largest volcano in the Solar System. Twenty-seven kilometers high, and with a diameter of 624 kilometers and a caldera 100 kilometers wide, it’s three times as tall as Mt. Everest and covers about as much land as the state of Missouri. Three other large volcanoes, the Tharsis Montes, dot the Province. One of them, Pavonis Mons, sits right on the planet’s equator and would be a good anchor point for an orbital elevator.

Elysium Planitia: South of the Utopia Planitia lies another volcanic region, the Elysium Planitia. Among its many unusual geographic features are the Giant Polygons, a plain filled with enormous, deep cracks forming various roughly geometrical shapes up to 20 kilometers wide.

Valles Marineris: This series of chasms and valleys up to 200 kilometers wide stretches over 4,000 kilometers — roughly the distance from New York City to Los Angeles. The Valles has some canyons up to 10 kilometers deep that are big enough to hold the entire Rocky Mountains! It merges with the Tharsis Province in a region called *Noctis Labyrinthus* (the Labyrinth of Night), the largest network of intersecting valleys in the Solar System.

Hellas: A giant impact basin 2,000 kilometers across, the floor of Hellas is one of the deepest places on the Martian surface, which makes it a possible colonization site. On a future terraformed Mars, Hellas would likely be a vast sea.

PULP MARS

In the 1890s, the astronomer Percival Lowell announced he had discovered a network of canals spanning the surface of the planet Mars. Obviously, Mars had intelligent inhabitants, fighting to keep their planet habitable by titanic engineering works. Though Lowell was actually just imagining the canals, his vision inspired generations of Science Fiction writers.

In the days of classic Pulp Science Fiction, Mars was the original “sword and planet” world, with decadent canal-side kingdoms of humanoid Martians, crystal towers, desert barbarians, and a surprising number of sword-swinging Earthmen. Later on, writers like Leigh Brackett and Ray Bradbury imagined the delicate crystal cities and ancient decadent Martians coming face to face with commercial, pistol-packing adventurers from Earth, in a kind of British Raj in space.

Meanwhile, a rival vision of Mars stemmed from H.G. Wells’s super-advanced invaders — Martians as a coldly hostile Elder Race, pitting their superior technology against Earthlings armed only with courage, numbers, and infectious diseases. Martians invaded Earth with regularity from 1900 right up to the days of the first Mariner probes.

Star Hero GMs can toss scientific accuracy to the winds and pair the decadent, canal-crossed Mars with the swampy, dinosaur-infested Venus for a retro-pulp campaign. In his “Lords of Creation” series, author S.M. Stirling envisioned an alternate timeline in which Soviet-American Cold War rivalry spilled over onto a pulpish Mars and Venus.

PHOBOS AND DEIMOS

Diameter:	27 x 19 kilometers (Phobos); 15 x 11 km (Deimos)
Distance From Mars:	9,380 kilometers (Phobos); 23,500 kilometers (Deimos)
Gravity:	Negligible (see text)
Month:	0.32 days (Phobos)/ 1.26 days (Deimos)
Atmosphere:	None

Mars has two moons, Phobos (“Fear”) and Deimos (“Terror”). Both are small and potato-shaped. Their gravity is so weak that a person standing on them could throw objects with enough force to achieve escape velocity (or accidentally make a strong enough leap to hurl himself into space). Their origin is unclear; they may be captured asteroids, or coalesced out of material left over after Mars itself formed.

Phobos, the larger and closer of the two moons, is covered with impact craters, including Stickney crater, which is 10 kilometers in diameter. The enormous impact that created Stickney also created kilometers-long grooves that streak the surface of Phobos. The orbit of Phobos is slowly decaying, and it will break up or crash into Mars in about 7 million years.

In 1959, Soviet astronomer Iosif Scholovskii, upon discovering how light Phobos is, suggested that it was hollow — perhaps even a space station built by some long-lost Martian civilization. Sadly, he was incorrect, but it could easily be true in a Star Hero game.

Deimos, although much smoother than Phobos, also has numerous small craters. Its orbit is higher, almost at synchronous orbit level. That means it takes nearly three days to cross the sky as seen from the Martian surface. If a future Martian civilization wants to build an orbital elevator, Deimos would make a natural upper terminal. And Phobos would have to go.

The Asteroids

Diameter:	10 to 1,000 kilometers
Distance From Sun:	average of 2.8 AU
Gravity:	Minimal
Year:	average 4.7 Earth years
Orbital Velocity:	17.7 kilometers/sec
Atmosphere:	None

The asteroids — rubble left over from the formation of the Solar System — are most common in a belt between the orbits of Mars and Jupiter. Although there are thousands of asteroids in the belt, there’s a lot of empty space there, too; the average separation between asteroids is a million kilometers.

Individual asteroids are irregular chunks of rock, ranging from a few kilometers across to moon-sized giants. Their surfaces are probably powdered regolith, shattered by frequent impacts. The composition of individual asteroids varies quite a bit, with some rich in metals, some in carbon, some in ice, and some in nothing but rock.

In fiction, the Belt has often been depicted as a futuristic version of the Gold Rush, with lone asteroid prospectors steering their jury-rigged ships from rock to rock, searching for asteroids rich in valuable radioactives or Helium-3. Often the independent-minded Belters come into conflict with Earth’s stuffy bureaucrats and greedy corporations. Life in permanent zero gravity sometimes makes the Belters physically different from Earthlings, unable to walk upright even in Mars’s light gravity.

The asteroids also present a potential threat to Humans, since their orbits sometimes bring them uncomfortably near Earth. It’s likely that an impact with one millions of years ago led to the extinction of the dinosaurs, and an impact today could easily wipe out Humanity. Many stories center around threats by megalomaniacal villains to draw an asteroid down to Earth, or the efforts of a bold team of adventurers to stop an asteroid from hitting the planet.

CERES

When it was discovered in 1801, Ceres was considered the eighth planet. That lasted for about fifty years, when it was reclassified as the largest of the asteroids. That changed in 2006 when the International Astronomical Union changed its designation to “dwarf planet.”

Ceres is just under 1,000 kilometers in diameter, composed of rock and ice, and about twice as dense as water. It contains a third of the entire mass of the main asteroid belt. Its surface gravity is about two percent of Earth’s, and it has no atmosphere. Astronomers believe Ceres is massive enough to have a differentiated interior, with a metal core surrounded by rock, and a “mantle” of ice just below the surface. It could be a valuable source of rocket fuel and other volatiles for settlements in the Asteroid Belt.

THE TROJAN CLUSTERS

There are two significant clusters of asteroids outside the main belt, located at the leading and trailing Lagrange points on Jupiter’s orbital path. They’re called the “Trojan” asteroids because many of them are named after heroes of the Trojan War. The two Trojan clusters are one of the few places where asteroid prospectors can actually find several asteroids in a small area. With Jupiter nearby to act as a gravitational “sling” for payloads, the Trojan asteroids would be ideal candidates for mining and manufacturing colonies in a Star Hero campaign.

Powell interviewed Graham in the foyer of the auction room, before a crystal port overlooking the arctic tundra of Ganymede with the belted red-brown bulk of Jupiter filling the black sky.

—from *The Demolished Man*, by Alfred Bester

Jupiter

Diameter:	140,800 kilometers
Distance From Sun:	5.2 AU
Gravity:	2.6 G (at cloud tops)
Year:	11.9 Earth years
Moons:	63 known (4 major)
Orbital Velocity:	13 kilometers/sec
Atmosphere:	Dense

Jupiter is the biggest of the planets, with a mass 300 times that of Earth. It’s about twice as big as all the other objects in the Solar System (other than the Sun) combined. Jupiter itself is no place for Humans — the gravity at the cloud tops is almost 3 G, and there’s no identifiable solid surface. The atmosphere is mostly hydrogen and helium, though clouds of ammonia and methane give the planet its swirling yellow and scarlet appearance.

The most notable feature of Jupiter is the Great Red Spot, a storm covering an area about twice the size of Earth. Its origins are unknown, though it’s apparently been in existence for at least 300 years (probably much longer), and becomes redder during periods of heightened solar activity.

INSIDE JUPITER

Astronauts venturing into the atmosphere of Jupiter are in for an exciting time. The winds

are fierce: 360 kilometers per hour in the upper atmosphere, and 500 kph or more deeper down. Storms like the Great Red Spot can last for centuries. The pressure increases with depth, starting at about 1 atmosphere at the very top of the clouds and doubling for every 25 kilometers down. Temperature is -100 Centigrade at the cloud tops, going up by 2 degrees per kilometer of depth. This means explorers could fly through the upper 100 kilometers with reasonable life support systems, but below that the heat and pressure begin to damage, and will eventually destroy, spacecraft. Even high in the cloud tops, Jupiter’s gravity is a crushing three times Earth normal.



Carl Sagan once speculated about the possibility of life in Jupiter's titanic atmosphere, envisioning huge balloon creatures drifting among the clouds. While current theories suggest Jovian life is unlikely, nobody has actually gone there to check. However, at least one of Jupiter's moons, Europa, is currently on the hot list of places where Humans might find alien life.

EUROPA

Diameter:	3,120 kilometers
Distance From Jupiter:	671,000 kilometers
Gravity:	0.13 G
Month:	3.55 days (82 hours)
Orbital Velocity:	13.74 kilometers/sec
Atmosphere:	Trace

Europa is a large moon, comparable in size to Earth's Moon, composed largely of ices with a solid core. It has no atmosphere to speak of, and its surface is dirty water ice. What makes Europa interesting is that it has almost no craters, which suggests some process constantly resurfaces the crust. Current theories suggest that beneath the icy surface lies a deep ocean of liquid water kept warm by tidal heating from Jupiter. If that's the case, then Europa's ocean may be home to some form of life. The European ocean may well be quite salty, as the moon has a faint magnetic field. Adventures on Europa can be exploration missions in search of native life, who's-hunting-who battles with dangerous European predators under the ice, or covert operations to find hidden pirate or rebel bases in the black ocean. Surprisingly, Europa's trace atmosphere appears to be pure oxygen; scientists believe this is created by particles from Jupiter's intense radiation belts splitting water ice molecules. The hydrogen escapes into space leaving oxygen behind.

GANYMEDE

Diameter:	5,280 kilometers
Distance From Jupiter:	1,070,000 kilometers
Gravity:	0.14 G
Month:	7.16 days
Orbital Velocity:	10.88 kilometers/sec
Atmosphere:	Trace

Ganymede is the biggest moon in the Solar System — bigger than the planet Mercury, in fact. It has a metallic core with a crust and mantle of ice, and appears to have active geology driven by tidal forces from Jupiter and the other moons. It was once considered a possible site for terraforming, but now that its composition is known, raising the temperature to habitable levels would create an ocean miles deep. Ganymede has its own magnetic field, shielding it somewhat from Jupiter's radiation belts.

IO

Diameter:	3630 kilometers
Distance From Jupiter:	422,000 kilometers
Gravity:	0.18 G
Month:	1.8 days (42 hours)
Orbital Velocity:	17.3 kilometers/sec
Atmosphere:	Trace

Io is the innermost large moon of Jupiter, and the tidal heating from the giant planet keeps Io a churning, seething, molten mass. The surface is covered with volcanoes spouting flows of lava and plumes of sulfur shooting up hundreds of kilometers, and findings in mid-2011 indicated that there's an "ocean" of magma 30-50 kilometers below Io's crust. There are also rugged mountains and lakes of molten sulfur, but almost no craters. The combination of low gravity and powerful volcanoes means that Io orbits within a very tenuous ring of ionized sulfur particles belched out of the moon's interior. Its volcanic surface and its position within Jupiter's deadly radiation belts make Io a dangerous place for explorers to visit.

Saturn

Diameter:	120,300 kilometers
Distance From Sun:	9.5 AU
Gravity:	1.2 G (at cloud tops)
Year:	29.5 Earth years
Moons:	53 known (probably more)
Orbital Velocity:	9.6 kilometers/sec
Atmosphere:	Dense

Saturn is much like Jupiter, but is less than a third as massive (only 95 times the mass of the Earth), less dense, and less active. Like Jupiter, it has an atmosphere of hydrogen and helium, with clouds of methane and ammonia giving it a pale yellow color from space. It's best known for its spectacular ring system, a belt of ice and rock particles extending from a few thousand kilometers above the surface to about 70,000 kilometers up. Saturn has a large family of moons, ranging from tiny asteroidal chunks like Pan or Atlas, to good-sized objects like Tethys and Iapetus, to the aptly-named Titan.

The astounding beauty of Saturn and its rings make it a natural tourist attraction for a spacefaring future society (as in Arthur C. Clarke's short story "Saturn Rising"). There might be orbiting resorts or hotels on the moons. Tycoons could build luxurious private stations just to admire the view. The rings could also hide fugitives or space pirates.

Saturn itself may become a major source of volatiles and Helium-3 for fusion powerplants. While it's much more distant from the Sun than Jupiter, Saturn's gravity is a lot less powerful, so it's easier to launch payloads from Saturn than its bigger neighbor. Saturn's radiation belts are less dangerous, as well.

JUPITER'S RADIATION BELTS

Like everything else about Jupiter, its magnetic field and radiation belts are huge and powerful. The belts extend out from the planet to a distance of half a million to a million kilometers, and are at least ten times as intense as Earth's Van Allen belts. The inner moons — Io, Europa, and Ganymede — are in the thick of the radiation. Explorers visiting the inner moons of Jupiter need Life Support (Safe Environment: High Radiation) or considerable amounts of armor. The icy crust of Europa would offer adequate protection, so radiation suits aren't necessary in the subsurface ocean.

5

The ring system is very thin, you know — only about twenty miles in thickness. We descended into it slowly and cautiously, after having matched its spin so that we were moving at exactly the same speed. It was like stepping onto a carousel a hundred and seventy thousand miles across....

But a ghostly kind of carousel, because the rings aren't solid and you can look right through them. Close up, in fact, they're almost invisible; the billions of separate particles that make them up are so widely spaced that all you see in your immediate neighborhood are occasional small chunks, drifting very slowly past. It's only when you look into the distance that the countless fragments merge into a continuous sheet, like a hailstorm that sweeps around Saturn forever.

—from "Saturn Rising,"
by Arthur C. Clarke

TITAN

Diameter:	5,150 kilometers
Distance From Saturn:	1.2 million kilometers
Gravity:	0.14 G
Month:	16 days.
Orbital Velocity:	5.58 kilometers/sec
Atmosphere:	Standard (atmospheric pressure approximately 1.5)

The biggest moon of Saturn, Titan is a remarkable place. Its surface is hidden by a dense atmosphere of nitrogen and methane, with a surface pressure half again as great as Earth's. The temperature on Titan is a chilly 94 degrees Kelvin (-194 Centigrade). It's thought that Titan is very rich in organic chemicals, making it potentially very valuable to future space colonists.

The Huygens probe returned images from Titan's surface under the cloud layer. The surface appears to be a mix of rock and ice, with signs of erosion — presumably by liquid hydrocarbons since water only exists as ice.

Titan could possibly be home to some form of exotic life, based on ammonia or methane (see page 119). As a colony world it might be the Persian Gulf of the outer system, with valuable carbon for sale.

Uranus

Diameter:	56,300 kilometers
Distance From Sun:	19 AU
Gravity:	0.8 G (at cloud tops)
Year:	84 Earth years
Moons:	27 (possibly more).
Orbital Velocity:	6.8 kilometers/sec
Atmosphere:	Dense

Uranus is very similar to Neptune, a small gas giant with an atmosphere of hydrogen, colored blue-green by methane clouds. It's notable because of its extreme axial tilt — 97 degrees. It rolls about

the outer Solar System on its side, surrounded by a dark ring of dust and pebbles. Uranus has a large family of moons, mostly small objects 100 kilometers across or smaller. The five biggest are Titania (1,578 kilometers), Oberon (1,522 kilometers), Umbriel (1,170 kilometers), Ariel (1,158 kilometers), and Miranda (see below). The moons of Uranus, unlike those of other planets in the Solar System, have names taken from the plays of Shakespeare instead of classical mythology.

Conditions within Uranus and Neptune are considerably less violent and dangerous than in Jupiter or Saturn. The gravity is bearable, and the winds aren't as fierce. Explorers in high-tech balloon-spaceships might venture beneath the clouds, and thus encounter airborne life.

MIRANDA

Diameter:	470 kilometers
Distance From Uranus:	129,780 kilometers
Gravity:	.008 G
Month:	1.41 days
Orbital Velocity:	6.68 kilometers/sec
Atmosphere:	None

Miranda isn't the biggest moon of Uranus (that's Titania), but it is a remarkable object. Photographs from the Voyager probes show Miranda's surface as a chaotic jigsaw-puzzle of different terrains. This is probably the result of upwellings from the semi-liquid interior, but another theory is that the moon was literally smashed apart by some immense impact long ago, and the jumbled fragments gradually fell together again. That suggests the interior of Miranda could be a maze of faults and crevices, possibly extending all the way to the core. Who knows what adventurers might find in such deep places?

Neptune

Diameter:	49,900 kilometers
Distance From Sun:	30 AU
Gravity:	1.2 G (at cloud tops)
Year:	164.8 Earth years
Moons:	13 known
Orbital Velocity:	5 kilometers/sec
Atmosphere:	Dense

Like Uranus, Neptune qualifies as a "bearable" gas giant. Its day is 16 hours long, which makes it slightly flattened at the poles. Like Jupiter and Saturn, it emits more heat than it receives from the Sun, suggesting that it has a warm core powered by gravitational energy. Its atmosphere is mostly hydrogen and helium, with clouds of methane. All of Neptune's moons except Triton (see below) are small objects, no more than 400 kilometers across. The planet also has faint dusty rings.

As the outermost major planet, Neptune might serve as the launching station for interstellar missions, especially for STL ships using huge nuclear rocket motors. Neptune's atmosphere would provide fuel.



TRITON

Diameter:	2,700 kilometers
Distance From Neptune:	354,800 kilometers
Gravity:	0.076 G
Month:	-5.88 days
Orbital Velocity:	-4.39 kilometers/sec
Atmosphere:	None

Triton is composed of rock and ice, with a fairly smooth icy surface, though there are patches of old cratered terrain. It has a very thin atmosphere of methane and nitrogen, probably the result of outgassing from Triton's ice volcanoes.

Triton's orbit is retrograde, going the opposite direction from most moons in the Solar System (hence the “negative” numbers for its month and orbital velocity). It's also highly tilted, 157 degrees from the plane of Neptune's equator. These suggest it was captured, rather than forming along with Neptune itself. Its most likely origin is the Kuiper Belt, but GMs can have Triton be an interstellar interloper, perhaps with artifacts or even survivors in stasis.

The Kuiper Belt

Extending out from the orbit of Neptune to about 130 AU is the Kuiper Belt, a collection of comets, icy asteroids, and similar objects orbiting in the plane of the Solar System. There are at least 70,000 Kuiper Belt objects in the 100-kilometer size range, with millions of smaller bodies. Scientists estimate that the total mass of the Belt is 5 to 10 times that of the Earth. This represents a vast resource for future space colonists — the Kuiper Belt could provide enough volatiles to give Mars and the Moon breathable atmospheres, fill millions of space habitats with air, and fuel a virtually infinite number of fusion reactors and rockets.

PLUTO

Diameter:	2,300 kilometers
Distance From Sun:	39 AU (average)
Gravity:	.06 G
Year:	247.7 Earth years
Moons:	3
Orbital Velocity:	4.7 kilometers/sec
Atmosphere:	None

Pluto was discovered in 1930 by Clyde Tombaugh at the Lowell Observatory. At that time it was classified as the ninth planet. It remained a planet until 2006, when the International Astronomical Union demoted it to “dwarf planet” status (making it one of four dwarf planets in the Kuiper Belt; see below).

Pluto's orbit is tilted and very eccentric, at times taking it within the orbit of Neptune (the two planets orbit in a resonant relationship so there is no danger of a collision). Pluto has a trace atmosphere of nitrogen with tiny amounts of methane. It's composed almost entirely of ices — mostly nitrogen, methane, carbon monoxide, and water in solid form.

Pluto has three moons. The biggest, Charon, is half as big as Pluto itself (and has the same composition), making the pair almost a double planet. It orbits at a distance of about 19,000 kilometers. Both Charon and Pluto are tidally locked, keeping the same face towards each other. Two smaller moons, Nyx and Hydra, orbit the Pluto-Charon pair.

OTHER DWARF PLANETS

Three other dwarf planets orbit in the Kuiper Belt beyond Pluto.

Eris swings between 38 and 98 AU and is actually about one-quarter more massive than Pluto. Eris is named for the Greek goddess of strife, and it lived up to its mythological name because its discovery caused the controversy that ultimately led to Pluto being downgraded from planet to dwarf planet. Eris has a small moon called Dysnomia, which orbits at a distance of about 37,000 kilometers.

The other two dwarfs in the Kuiper belt are Makemake, which is three-quarters the size of Pluto and orbits between 38 and 53 AU out; and Haumea, which has a mass of about a third that of Pluto and orbits between 34 and 51 AU in a complex resonant relationship with Neptune. Haumea is notably egg-shaped, and is accompanied by two tiny moons. Makemake's name comes from the creator god of the Polynesians of Easter Island; it was given the name because it was discovered at Easter time in 2005. Haumea is named for a Hawaiian goddess of childbirth.

The Oort Cloud

The Oort Cloud is a huge sphere of comets and icy asteroids containing trillions of objects. It extends out from the Sun 30,000 AU to about 2 light-years. Other stars have similar comet clouds around them. The Oort Cloud is the source of long-period comets, which are sent tumbling down into the inner Solar System by the gravity of passing stars. The total mass of the Oort is even larger than the Kuiper Belt, estimated at 20 to 40 times that of the Earth. The Oort represents a substantial “bank” of matter, but the distance to even the nearest Oort objects is so great it would be almost as hard as colonizing another star system.

QUAOAR

In October 2002, astronomers announced the discovery of an extremely large object in the Kuiper Belt: a frozen body about 1,300 kilometers in diameter, or over half the size of Pluto. Named Quaoar (KWAH-oh-wahr), a name taken from Southern California Indian myths, it orbits between 41 and 46 AU and has an orbital period of 288 years. Quaoar is right at the lower limit of mass for a dwarf planet, and the International Astronomical Union hasn't ruled on its status yet as of 2011.



BEYOND SOL

Past the Oort Cloud one is no longer in the Solar System. The nearby stars may have planets and even life forms of their own, and beyond is the whole Milky Way Galaxy to explore.

NEAR STARS TABLE

These are the 24 star systems nearest the Sun, listed by distance from Earth, type, and brightness relative to Sol. In a slower-than-light campaign, these probably represent the limit of human expansion in the near term. In a campaign with FTL travel, these will be home to the oldest colonies. Multiple star systems have the primary listed first; the exception is Proxima Centauri, a distant companion of Alpha Centauri, which is listed separately.

System	Distance	Star Types	Brightness
Proxima Centauri	4.5 ly	M5V	0.00006
Alpha Centauri A	4.5 ly	G2V	1.53
Alpha Centauri B		K1V	0.44
Barnard's Star	6 ly	M4V	0.00044
Wolf 359	7.5 ly	M8V	0.00002
Lalande 21185	8 ly	M2V	0.0052
Sirius A	8 ly	A1V	23.0
Sirius B		DA2 (white dwarf)	0.002
Luyten 726-8 A	8.75 ly	M5V	0.00006
Luyten 726-8 B		M6V	0.00004
Ross 154	9.5 ly	M4V	0.0004
Ross 248	10 ly	M6V	0.0001
Epsilon Eridani	10.75 ly	K2V	0.3
Luyten 789-6	10.75 ly	M5V	0.00012
Ross 128	10.75 ly	M4V	0.00033
61 Cygni A	11 ly	K5V	0.082
61 Cygni B		K7V	0.038
Epsilon Indi	11 ly	K5V	0.14
Procyon A	11.5 ly	F5IV-V	7.6
Procyon B		DA2 (white dwarf)	0.0005
Sigma 2398 A	11.5 ly	M3V	0.003
Sigma 2398 B		M4V	0.002
Groombridge 34 A	11.7 ly	M1V	0.006
Groombridge 34 B		M4V	0.0004
Lacaille 9352	11.7 ly	M2V	0.012
Tau Ceti	12 ly	G8V	0.47
BD +50 1668	12.3 ly	M5V	0.0015
Luyten 725-32	12.3 ly	M5V	0.0003
Lacaille 8760	12.3 ly	M2V	0.027
Kapteyn's Star	12.7 ly	M1V	0.004
Kruger 60 A	12.7 ly	M3V	0.0015
Kruger 60 B		M4V	0.0004

Nearby Stars

The stars near the Sun are a pretty ordinary lot, which is probably a good thing. There are no dangerous supernovas waiting to go off, no gamma-ray bursters, no black holes. That means Humans don't have to worry about their home planet being sterilized or destroyed any time soon, but it's frustrating for astronomers.

ALPHA CENTAURI

The nearest star to the Solar System, Alpha Centauri is in fact a trinary star system. The primary, Alpha Centauri A, is a G2V star very much like the Sun. Its close companion, Alpha Centauri B, is a dimmer K1V star, orbiting with a period 81.2 years at a distance of about 19 AU. Far from the two of them, the red dwarf Proxima Centauri circles at a distance of 0.17 light-years. For now, and for centuries to come, Proxima Centauri is closer to the Sun than its primary pair, and so is likely to be the target of the first interstellar missions.

The Alpha Centauri system could have planets, even habitable ones, but as of 2011 Humans have detected none. In fact, it's possible for both Alpha Centauri A and B to have lifebearing worlds, so GMs running a campaign without FTL travel can still have multiple exotic planets in just one star system.

BARNARD'S STAR

The second-closest star system to Sol is the red dwarf Barnard's Star. The star itself is relatively ordinary, but it moves remarkably quickly — its velocity is nearly 190 kilometers per second. It is a red subdwarf, type M4, with a luminosity 0.0004 times that of the Sun. It may have a companion body about 1.6 times as massive as Jupiter, though astronomers have not confirmed this as of 2011. Barnard's Star is unlikely to have habitable planets, but the system might be suitable for space colonies or asteroid miners.

SIRIUS

The closest bright star to the Sun, Sirius is a type A1V star 21 times brighter than Sol. Its companion Sirius B is a white dwarf, the last remnant of a bigger, brighter star that burned out millions of years ago. Sirius B is only four times the size of the Earth, even though it is as massive than the Sun, and its brightness is 0.0025 times that of the Sun. The two orbit at a distance of 7 AU, with a period of 7 years. Sirius may be a target for early interstellar missions, as scientists would love to study Sirius B up close. No planets have been discovered in the Sirius system as of 2011.

EPSILON ERIDANI

Located 10.7 light-years from Earth, Epsilon Eridani is a type K2 star with a luminosity 0.3 times that of the Sun. This makes it a good candidate for having lifebearing worlds nearby, as well as a star early Human FTL explorers could reach without too much difficulty. As of 2011 Epsilon Eridani is believed to have a Jupiter-class planet orbiting at about 3.5 AU, along with multiple asteroid belts, suggesting that the system is still in the early stages of planet formation.

61 CYGNI

61 Cygni is a binary pair of type K stars (K5 and K7) orbiting each other at a distance of 75 AU, so there's plenty of room for both to have lifebearing worlds. 61 Cygni A has a luminosity 0.08 times that of the Sun, and B's brightness is half that. They orbit with a period of 653 years. Some observations suggest 61 Cygni A has a Jupiter-sized planet with a period of 5 to 12 years, but this has not been confirmed as of 2011.

TAU CETI

Tau Ceti is 12 light-years from the Sun, and one of the best nearby candidates for lifebearing planets. It is a type G8 star, with a luminosity 0.47 time that of the Sun, so it could certainly have a decent-sized habitable zone. Astronomers have detected extensive belts of asteroids, comets, and dust around Tau Ceti, but no known planets as of 2011.

Further Afield

It's impossible to describe all of the as many as 400 billion stars in the Galaxy. Here's a quick rundown of some interesting objects.

WITHIN 50 LIGHT-YEARS

Altair: Also called Alpha Aquilae, Altair is a type A7 subgiant/dwarf, the closest giant star to the Sun. It is 16.8 light-years away. Altair is 10 times as bright as the Sun, and has an extremely rapid rotation — 6.5 hours — so it would appear noticeably disk-shaped. No planets of Altair have been found as of 2011. In the classic Science Fiction film *Forbidden Planet*, one of Altair's planets holds immense relics of a vanished super-scientific civilization.

Arcturus: Alpha Bootis, a type K2III red giant 37 light-years away. Arcturus is 100 times as bright as the Sun and is currently moving toward the Solar System at high speed. It will pass nearby in a few thousand years.

Capella: Also known as Alpha Aurigae, Capella is a binary type G8 and G1 giant pair orbiting only 0.7 AU apart, circled at a distance of 10,000 AU by a pair of red dwarf stars.

Fomalhaut: Twenty-five light-years distant, Fomalhaut is a type A3V star, 16 times as bright as the Sun. It has at least one giant planet, orbiting at a distance of 115 AU, and possibly others.

DISTANT STARS TABLE

Here are stellar types and distances from Earth to other well-known stars more than 12.7 light-years away.

Star	Spectrum And Type	Distance (LY)
Achernar	B3V	69
Aldebaran	K5III	60
Algol	B8V, K0IV, A5V	92
Altair	A7V	16
Antares	M1I, B4V	604
Arcturus	K2III	34
Bellatrix	B2III	1,400
Betelgeuse	M2Ib	427
Canopus	F0II	74
Capella	G8III, G1III	43
Deneb	A2Ia	3,230
Fomalhaut	A3V	22
Gliese 581	M3V	20.3
Polaris	F7I	316
Pollux	K0III	35
Regulus	B7V	69
Rigel	B8Ia	770
Ruchbah	A5III	99
Sigma Draconis	K0V	18.8
Spica	B1V, B2V	220
Van Maanen's Star	F5V	14.3
Vega	A0V	25

Fomalhaut also has an extensive belt of dust and asteroids, which may still be forming into planets.

Gliese 581: An M3V star 20.3 light-years from Earth, Gliese 581 attracted attention in recent years when astronomers discovered it had a planetary system. Initially Gliese 581g was considered the most likely candidate to support life, but this was later discounted. In May 2011, astronomers confirmed that Gliese 581d, a planet roughly twice the size of Earth (and with twice Earth's gravity), exists in the star's Green zone. It most likely has a stable atmosphere (probably a dense one of carbon dioxide) and liquid water at the surface, making it the first such exoplanet so identified.

Van Maanen's Star: Also known as Wolf 28, Van Maanen's Star is a cool white dwarf. It's 14.3 light-years from the Sun. Its luminosity is 0.00018 times that of the Sun, and it's thought to be about half the size of the Earth. Like Sirius B, it is likely to attract scientific interest. It may have a close brown dwarf companion.

Vega: Alias Alpha Lyrae, Vega is 25.3 light-years away, a type A0V star 40 to 50 times as bright as the Sun. It rotates very rapidly, giving it a prominent equatorial bulge. Astronomers believe it's surrounded by a protoplanetary system of asteroids and growing planets, so it might attract scientists interested in watching the process of planetary formation. It may also have a Jupiter-class planet orbiting at about 50 AU.

DISTANT OBJECTS

Antares: A huge red giant (type M1), 604 light-years away, with a luminosity 10,000 times that of the Sun.

Betelgeuse: Also called Alpha Orionis, Betelgeuse is a huge red giant thought to be 6 AU in diameter that's 427 light-years distant from Sol. It's type M2Ib, with a luminosity 14,000 times that of the Sun. Astronomers have discovered that Betelgeuse is notably “bulgy” and asymmetrical, and some expect it may explode in a supernova explosion some time in the next few thousand years. It's probably too far away for the blast wave of radiation to harm life on Earth, but the explosion will probably be visible even in the daytime.

Deneb: Known also as Alpha Cygni, Deneb is a very bright young star, a type A2Ia giant 3,230 light-years away. It's one of the brightest stars known, 250,000 times as bright as the Sun.

The Pleiades: A star cluster within the Milky Way, about 440 light-years from the Solar System in the constellation Taurus. There are nine young giant stars in the cluster, plus more than a thousand dimmer stars, brown dwarfs, gas clouds and protostars. The whole cluster is about 43 light-years across. The stars of the Pleiades are mostly too young to have planets, but older objects may have wandered in, and the cluster would be of interest to astrophysicists.

Rigel: Also known as Beta Orionis, Rigel is a huge bright type B8Ia star, 770 light-years distant. It is a dazzling 40,000 times as bright as the Sun, and has a faint binary companion orbiting at a distance of 0.03 light-years.

Sagittarius A*: A powerful radio source in the center of the Milky Way Galaxy, Sagittarius A* is quite possibly the central supermassive black hole of our galaxy. It's at least 26,000 light-years from the Solar System.

EXTRAGALACTIC OBJECTS

Bright Quasar 3C 273 is among the brightest and closest quasars to Earth. It's 3 billion light-years away (and thus that old), and its output equals 100 *trillion* times the Sun's. It varies in output with a cycle less than a year long, so it must be less than a light-year across. Astronomers believe it may be a black hole with a mass of 1 billion solar masses, the core of a developing supermassive galaxy.

S Doradus is the brightest known star. It's in the Large Magellanic Cloud and is a type A00 “hypergiant” with a mass estimated at 45 times that of the Sun and a luminosity a *million* times brighter. It's a variable, with a very long, slow cycle of brightening and dimming. It lies about 160,000 light-years away.

CHAPTER SIX



ALIEN AND FUTURE CIVILIZATIONS



FUTURE WORLDS

One of Science Fiction's great strengths is its ability to show us strange and imaginary worlds and civilizations — both future Human societies, and the societies of alien species. Unlike Fantasy, Science Fiction's worlds are possible, at least if certain assumptions are allowed. Some Science Fiction takes place in future Human societies, or colonies on distant worlds; other stories show alien cultures. But all civilizations have features in common. The GM needs to consider those features when inventing a society, and players need to consider them when deciding what their characters are like.

Over the years, Science Fiction has presented several views of how the world may develop in the future. Of course, the future has a way of turning out completely different from predictions, but when you're creating a future world these are some models to consider. They range from the wildly optimistic to the grim and depressing.

Utopia

The most optimistic view of the future is a utopia, in which Humans learn to solve every problem and create a world in which people can be happy and content. The exact nature of a utopian setting depends a lot on the author's political beliefs and opinions; a Green Socialist and a Libertarian would probably have vastly different views of what an ideal society would look like. *Star Trek*, by and large, depicts a utopian setting (at least for Humans and other Federation members) vaguely based on 1960s-era liberal/socialist theories.

When creating a utopian society as the GM, you have to watch out for several pitfalls. First of all, there's the problem of ramming your opinions down your players' throats. Your idea of a Utopia may not match theirs, and they may consider your jolly ideal future a nightmarish vision. Stacking the deck in favor of your utopia by making all its opponents evil or idiotic doesn't help — it just renders your "preaching" more blatant. The solution is to make your Utopia realistic. Recognize that no world is absolutely perfect, but try to depict a society in which the leaders and citizens know about their problems and struggle to resolve them.

Another problem is simply that utopias are kind of boring. If there are no problems then what is there for the characters to struggle against? Usually the solution is to send the heroes beyond Utopia to defend it against enemies or bring the advantages of Utopian civilization to less enlightened cultures. Iain M. Banks's series of novels about the Culture are an example of this: the Culture itself is a Utopian setting, but the novels mostly deal with the exploits of the "Special Circumstances" agency, as its operatives thwart Galactic aggressors and meddle in the affairs of primitive planets like Earth. This sort of story can be as simplistic as "we're right and they're wrong," or as complex as an examination of ends and means. Is it right to interfere with less advanced cultures? Is it right to stand by and watch them suffer?

FALSE AND FLAWED UTOPIAS

Not all Utopias are really as utopian as they seem. Both false and flawed Utopias exist.

A false Utopia is one in which the perfect society is a sham, maintained either by deception or tyranny. Real-world false Utopias include Stalin's Soviet Union, where the jolly unity and progress of the propaganda films was maintained by tens of millions of murders. Some false Utopias can use extremely advanced and insidious methods of social control: brainwashing, computer brain implants, drugs in the water supply, television hypnosis, the super-sophisticated propaganda and social engineering seen in the universe of *Dune*, or even genetic engineering to create a docile populace. Adventures in false Utopias usually involve becoming aware of the iron fist beneath the velvet glove, and attempts to escape or overthrow the regime.

Flawed Utopias are less malevolent, but instead address the basic question of whether a Utopia is possible or even desirable. One common feature of many Utopian visions is stability, and this often means stagnation and a lack of innovation. Adventures in a flawed Utopia of this sort are often attempts by nonconformist original thinkers to shake things up and inject a little life into the static society.



SCIENCE FICTION WITHOUT ALIENS

While the concept of sentient alien life is central to many Science Fiction stories, it's not a requirement. Many Science Fiction sagas — such as Frank Herbert's magnificent epic *Dune* — feature Humans, and Humans only (though sometimes those Humans are heavily altered by genetic engineering or other forces). Early Science Fiction was heavily influenced by John W. Campbell (editor of *Astounding Science-Fiction* and its successors from 1937-1971), who preferred stories with only Humans. Some subgenres, such as Post-Apocalyptic and Low Science Fiction, also tend to have only Human characters.

In these stories and settings, the author usually differentiates Humans by grouping them into organizations with identifiable traits, abilities, and agendas. In *Dune*, for example, Herbert presents various Houses (Atreides, Harkonnen, Corrino...), social, political, and quasi-religious organizations (the Bene Gesserit, the Spacing Guild), and cultures (the Fremen). In other settings, “pure” and genetically-engineered Humans are recognizably different, or Humans from different planets compete against each other.

In some ways, these groups and institutions take the place of the competing alien species common to Space Opera settings and other such Science Fiction tales.

Star Hero GMs can, if they wish, take a similar approach to their campaigns. Rather than presenting the players with a lengthy menu of Species Templates, instead require all characters to be Human. Then give them a series of Templates to choose from that represent organizations, cultures, institutions, and other groups within Human society. These, together with Professional Templates, can do just as much to define and differentiate characters as Species Templates do in other campaigns.

The benefit to this approach is that it allows the players and GM to focus on one species, developing its cultures, politics, and society to a much greater degree than might otherwise be possible. The drawback, of course, is no aliens... and many gamers enjoy aliens a lot. Ultimately, whether to include aliens largely comes down to personal preference, but don't assume you must have them to play Star Hero.

Bigger Tailfins

[T]hey put Ming the Merciless in charge of designing California gas stations. Favoring the architecture of his native Mongo, he cruised up and down the coast erecting raygun emplacements in white stucco. Lots of them featured superfluous central towers ringed with those strange radiator flanges that were a signature motif of the style, and made them look as though they might generate potent bursts of raw technological enthusiasm, if you could only find the switch that turned them on. ... "Think of it," Dialta Downes had said, "as a kind of alternate America: a 1980 that never happened. An architecture of broken dreams."

—from "The Gernsback Continuum,"
by William Gibson

Somewhat less idealistic than Utopian visions, other futures common in Science Fiction assume current trends continue, nothing seriously disrupts the world system, and the world of tomorrow is the world of today — with bigger tailfins.

This view is not as unrealistic as it sounds. Now that the year 2000 is past, one striking thing about some past visions of the twenty-first century is how overly "futuristic" they were. Sadly, Humans don't have flying cars or vacations on the Moon now; what they do have is a world which would be very recognizable to someone from 1950 who paid attention to social trends already in place then.

Big Tailfins futures are handy because they don't require a lot of explanation to give the players a feel for the setting. When the characters meet someone who works for the FBI, the GM doesn't need to stop to explain that in 2029 the Bureau was sold off to a Japanese conglomerate. Interstellar explorers who work for NASA know something about how astronauts are supposed to act, even if they're dozens of light-years from Earth.

That very familiarity is also Big Tailfins futures' chief problem. There's no sense of wonder or strangeness in that sort of future. If things are about the way they are now, then why set the campaign in the future at all? And sometimes things do change in dramatic and unexpected ways. A Bigger Tailfins view of the future in 1950 probably wouldn't have predicted the fall of Communism or the relatively rapid development of genetic engineering. This makes the Bigger Tailfins approach most suitable for near-future scenarios, in which trends are recognizable and surprises few.

Cultural Stereotypes

A close cousin of the Bigger Tailfins view, the Cultural Stereotypes vision of the future emphasizes how much people will retain their traditional culture and society even in a high-tech future world. Englishmen still have tea in midafternoon and get knighted, Italians are still bad drivers, American Indians retain their tribal and spiritual identities, and Arabs are pious Muslims. This view often turns up in depictions of colony planets or space habitats populated by a single nationality. New Scotlanders speak with an exaggerated brogue and often go into engineering, Arabs settle desert worlds and use star charts to pray toward Mecca, and samurai in powered armor rule New Nihon. In extreme versions, New Texas and Penn's World take regional stereotypes into space.

While in many cases Stereotype settings are, realistically speaking, ridiculous — why should there be a revival of, say, pagan Norse religion in the twenty-third century? — the idea isn't completely impossible. One thing which might motivate people to leave Earth and settle in space habitats or remote planets is the desire to preserve a traditional culture and way of life. Sometimes the GM can have fun if the transplanted culture and its new setting don't go together well — if the Arab planet New Medina is a world of glaciers and boreal forests, or the Russian colony St. Basil is a warm ocean planet dotted with lush islands.

Some authors have even applied the Stereotype idea to alien civilizations. The justification is that given similar conditions, a society will develop in similar ways to historical ones. While that's probably true to a degree, it doesn't mean all cultures with a medieval technology level will have knights in armor on horseback, feudal governments, and a powerful church.

Like the Bigger Tailfins future, Stereotype worlds do have their uses. It's very convenient if the players can tell in advance what the people on a given planet will be like, especially if the PCs are supposed to be citizens of an interstellar community. The GM describes an important NPC as "the *Capo di Tutti Capi* of Nova Sicilia" and the players immediately think of *The Godfather*. This works especially well in Pulp or Space Opera settings.

Adventures in Stereotype settings often make use of fictional tropes associated with the culture in question: High Noon gunfights with laser pistols in the New Texas colony; paranoid political intrigue on Novy Russia; and chrome cyberpunk samurai swordfights in New Tokyo. Sure, it's unrealistic and can go right off the edge into silliness, but it does let the GM crank the "flavor" knob up to 11.



Cultural Fusion

In some ways the antithesis of the previous view, a Cultural Fusion future assumes that current trends of cultural exchange continue, leading to a future society that mixes elements from all the world's peoples. Certainly the idea is supported by late twentieth/early twenty-first century social trends. Who would have predicted, even as recently as 1970, that sushi would become an American favorite, or that every shopping mall in suburbia would boast an espresso bar?

A Fusion future takes that notion and runs with it, postulating hybrid religions like Pentecostal Shi'ite or Zen Catholic, suburban teenagers going on vision quests, Artificial Intelligences living in cyberspace taking on the form of Voodoo loa or Japanese kami, heroes peppering their English conversation with jokes and curses in Chinese, government offices in America and Europe closing for Hindu holy days, advanced technological industries in Bali, and pop music based on Tibetan throat-singing rising to number one on the charts. One advantage to this view is that it only takes a few glimpses to give players the feel of a world radically different from our own. However, the same thing can be a disadvantage: too often a Fusion future is simply a Bigger Tailfins world with a side order of Thai food.

To make a Fusion world seem realistic, think about the reasons cultures borrow things from each other. Cuisine is easy — if people in one country like a certain food, people elsewhere probably will, too. Music and clothing are very fashion-driven, and can change from year to year.

WORLD REDUCTION

It's not uncommon for a world or species in Science Fiction to be reduced to, in effect, a single thing: a "desert planet" or "glacier planet" or "forest planet" where there are no other climatic zones; a species of aliens who all act and think the same way; a world wholly dominated by a single type of technology or aspect of science; a planet where every single inhabitant belongs to the same religion or speaks the same language. Literary critic Frederic Jameson terms this *world reduction*.

World reduction exists because it has some significant benefits. First and foremost, it communicates an idea or concept to the Science Fiction reader/viewer quickly and in a way that makes it stick in the memory. It's easy to remember that, for example, "the Klingons are the ones who always want to fight, and care about their honor." Trying to present every alien culture Our Heroes encounter as being just as detailed and diverse as Humanity would soon inhibit the reader's/viewer's ability to follow the story (and for that matter, could easily derail the story altogether). Second, it's a lot easier on the creator of the Science Fiction story; most authors just want to tell a good tale, not write an anthropology or planetology treatise.

On the other hand, world reduction could be seen as lazy, illogical, and "unrealistic." Is it possible to have a habitable planet dominated by a single climate zone? It seems unlikely, to say the least. Could a successful starfaring civilization base everything it does on fighting, aggression, macho posturing, and "honor"? Of course not; "realistically," such a society would tear itself apart. The odds are that any alien species advanced enough to encounter Humanity is going to be just as multifarious as Human civilization...

...but creating even one such alien species, much less the dozens called for by some settings, will strain the creativity and sanity of any GM. As "unrealistic" as world reduction may be, it's a useful and necessary tool for Science Fiction creators. Be aware of it and try not to take it too far — even a few tiny details here and there over the course of a campaign can really add depth to an otherwise one-dimensional planet or species — but don't feel that you have to try to compete with Humanity and Earth every time you create a new world or alien.

See also *Diversity*, on page 178.

Political and economic systems tend to follow the leading powers: when Great Britain and Imperial Germany were world powers, countries like Japan and Serbia adopted constitutional monarchies. In the Americas, newly-independent Latin American nations modeled their governments on that of the United States. When the Soviet Union was one of the world's two superpowers, new states in Africa called themselves "People's Republics." In a Fusion future, nations might try to emulate China's one-party regime or European-style bureaucracy.

People adopt foreign religions and philosophies when their own don't provide the answers they seek. Changes in the world might make some religions better suited for the new environment — in a setting with advanced nanotechnology and artificial intelligence, an animist faith that treats everything as alive would be a pretty accurate view of the world.

In adventures, a Fusion setting allows for exotic elements cheek by jowl with familiar ones. Characters don't have to venture to Africa to get involved in a tribal conflict; instead rival immigrant groups are fighting right downtown. A prosperous and stable Fusion society could be a near-Utopia worth defending against outside threats, while an impoverished and violence-ridden one is absolutely perfect for gritty Cyberpunk adventures.

Dystopia

The opposite of Utopia, a Dystopia is a setting in which everything is going wrong. In particular, dystopias are a staple of "dreadful warning" Science Fiction, showing how particular political ideas or social trends can lead to a world of oppression and despair. Probably the most famous dystopia is George Orwell's *1984*, with its haunting depiction of what a Soviet-style Great Britain would be like. Science Fiction dystopias set centuries in the future often include chilling applications of science, like the embryo manipulation and universal drugging in Aldous Huxley's *Brave New World*. Dystopias ruled by computers date back to E.M. Forster's *The Machine Stops*.

The chief difference between a Dystopia and a false Utopia is that nobody in the Dystopia has any illusions. Things are bad, everybody knows it, and the challenge is getting through the day. The Secret Police don't even bother to act friendly, and the cameras watching on every corner aren't disguised. Star-spanning Dystopian societies are usually oppressive Galactic Empires or creepy hive-minds.

The usual adventures in a Dystopia are escape or revolution (although the roleplaying game *Paranoia* demonstrates that there's plenty of potential for excitement and humor in just accomplishing routine missions). Escape requires someplace to escape to — if the dystopia is a worldwide tyranny, dissenters may try to flee to the stars.

If escape is impossible, the only alternative is revolt. Of course, the Secret Police aren't going to take that lying down. Almost every dystopia is lavishly furnished with surveillance devices, spies, goons in black armor, and high-tech torture chambers. Potential rebels have to plan in secret, develop a robust organization and ways to ferret out police informers, gather weapons and followers, and then strike — a perfect framework for a Star Hero campaign.

Characters from an outside society (or another planet) can enter a dystopia in secret, perhaps to rescue someone important, or identify ways to overthrow the tyranny. Especially daring agents could even lead the revolt themselves.

In a blackly humorous vein, the characters can be agents of the dystopian government — why should NPCs have all the fun of summary executions, black leather trenchcoats, and planet-busting weapons? This can be as silly as the GM will tolerate, or a fairly serious examination of how people can serve an evil regime.

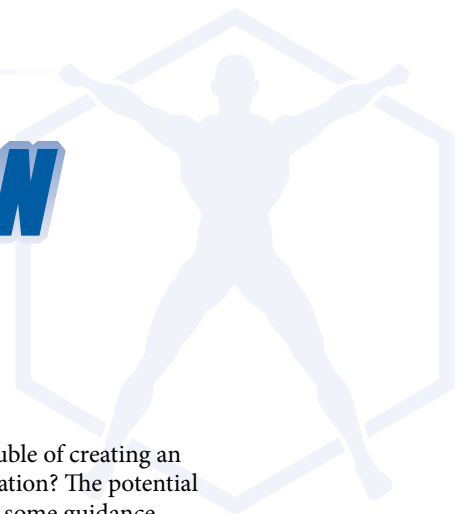
Post-Apocalypse

A "post-apocalyptic" setting is one in which society has been destroyed or devastated, plunging people back to a more primitive existence. The idea is not a new one in Science Fiction — nearly 200 years ago Mary Shelley's novel *The Last Man* postulated a plague which wipes out Humanity.

Post-apocalyptic settings are often an excuse to sweep away all the petty, bothersome details of life in a complicated society. People are no longer bound by laws or good manners. The conflicts are not over abstractions or distant concerns, but over immediate things like food, shelter, and survival. The end of society and its restrictions also allows lots of vicarious anarchy and destruction. Wiping out society is also a good way to restore civilization to a low-technology condition. Heroes can swing swords and ride horses like King Arthur's knights, even if their armor is Kevlar and their quest is for a stockpile of antibiotics instead of the Holy Grail.

Please see *Post-Apocalyptic Hero* for a detailed examination of the Post-Apocalyptic subgenre, including potential causes of apocalypse (and their implications), types of Post-Apocalyptic stories, character creation, and much more.

CREATING ALIEN SPECIES



After you've given some basic thought to what a future world is like, you can create its dominant sentient alien species — typically a species intended as a PC species or to play a major role in the campaign setting. You should also refer to page 157 for a discussion of the roles alien species can play in the campaign, and page 119 regarding alien life generally.

The main issue you need to address is: is this species available for use as a PC species? If so, it needs a Species Template, and a good bit of thought regarding its presence and role in the setting. If not, you mainly need to think about the role the species plays in the game, and how best you can create it to fulfill that role.

If there's any One Golden Rule of alien creation, it's this: make sure the aliens serve a purpose. If a Human can play the same role

in the story, why go to the trouble of creating an entire alien species and civilization? The potential roles described below provide some guidance when you create an alien species, but many other possibilities exist.

ALIEN ARCHETYPES

Some kinds of aliens turn up again and again in Science Fiction films and stories. This isn't necessarily because the writers are lazy. Certain aliens have become archetypes — recognizable symbols with a suite of accompanying concepts and ideas.

ENERGY BEINGS

Probably the most alien beings in Science Fiction are energy beings, immaterial creatures composed entirely of energy rather than matter. In many works they serve as a slightly scientific way to have ghosts or spirits in the story.

The nature of energy beings depends on their power level and what kind of energy they're made of. Electrical beings often learn to communicate through telephones or computers, and sometimes are nothing more than advanced AI programs gone feral. Psionic beings are pretty close to being disembodied spirits. Superhot plasma beings from the surface of a star may not even know solid matter beings exist, and can destroy Human spacecraft and colonies as casually as a person stepping on a bug.

Characters composed of pure energy do need a way to interact with the outside world — some form of telekinesis, say, or the ability to create semi-solid limbs to manipulate objects. They also can't be deadly to their companions! In play, they tend to have truly amazing powers, and usually some severe disadvantages to compensate.

FUNNY-LOOKING HUMANS

Many alien species are, by and large, not that different from Humans. Other than a few odd customs, and perhaps modes of dress or speech, the only way to distinguish them from Humans is to look at the color of their skin and the bumps/ridges on their heads (see the "Rubber-Suited Aliens" sidebar). This is a convenient way for writers (and GMs) to create "alien" species readers can identify with fairly easily... and roleplay without too much difficulty.

RUBBER SUIT ALIENS

Often budget-conscious Science Fiction film and television producers make the tacit assumption that alien life is broadly similar to life on Earth. The justification is "parallel evolution." This is a real biological concept — that creatures in similar conditions develop along similar lines. The Pulp Science approach takes this to an extreme, making most pouncing carnivores recognizably catlike, most small flyers insectile, and most intelligent species shaped like Humans in heavy makeup.

Similarly, on *Star Trek*, *Babylon 5*, and other television shows, what sets "aliens" apart from Humans is often little more than a few head bumps or ridges, unusual skin or hair coloration, and/or distinctive modes of dress and behavior. This is because it's easy to use makeup and costumes to turn a Human actor into an "alien," but much more difficult (and expensive) to create a blob-alien, octopoid-alien, or other non-humaniform being on a regular basis. Star Hero campaigns often mimic this, since Human players can more readily identify with aliens who seem at least a little Human themselves.

INTERSPECIES SOCIETY

Aliens in Human society will naturally seem strange. If the campaign takes place in a multispecies setting, then aliens and Humans meet on equal terms, and generally neither may take **Distinctive Features** (see page 85). But if aliens are seen as hostile conquerors, slaves, monsters, or food, they may have problems getting along with Humans (or vice-versa). Social matters of this kind are best represented with **Complications** such as *Distinctive Features*, *Negative Reputation*, *Psychological Complication*, and *Social Complication*.

Some examples:

6

Distinctive Features: Alien (Conceable With Effort; Noticed And Recognizable; Not Distinctive

In Some Cultures Or Societies): 5 points.

Distinctive Features: Alien Conqueror (Conceable With Effort; Always Recognized, Causes Major Reaction [fear]; Not Distinctive In Some Cultures Or Societies): 10 points.

Negative Reputation: murderous alien (Infrequently, Extreme): 15 points.

Social Complication: Slave Species (Very Frequently, Major): 20 points.

HIVE CREATURES

Last came one of the strange beings from the system of Palador. It was nameless, like all its kind, for it possessed no identity of its own, being merely a mobile but still dependent cell in the consciousness of its race. Though it and its fellows had long been scattered over the Galaxy in the exploration of countless worlds, some unknown link still bound them together as inexorably as the living cells in a human body.

—the hive-mind Paladorans assist in exploring a dying Earth in “Rescue Party,” by Arthur C. Clarke

Hive insects have long been used as a model for Human societies; the industriousness and apparent loyalty of ants and bees makes Humans look greedy and fractious by comparison. Hive aliens are the ultimate social beings, with specialized castes optimized for work, breeding, or defense. They allow storytellers to examine issues of individual identity in mass society. In today’s individualistic climate, the hive is often a dreadful warning of how society can destroy an individual’s rights and personality. Hives make good Warrior species, with endless hordes of single-minded soldiers bred for fighting.

Since hives are based on Terran insects, fictional hive civilizations almost always have insect-like inhabitants. The regimentation and specialization of a hive fits in neatly with computer-controlled cultures or cyborg civilizations.

Characters from a hive culture are likely to be rebels or freaks, unable to exist in the regimented society that produced them. An interesting variant is the character who is a hive himself — a collective being made up of nonintelligent or semisentient creatures.

When creating a hive species, the GM should decide whether the hive remains together for social or biological reasons, or actually has a “group mind” that psionically links all its members together. The latter requires **Mind Link** or some other power that represents the hive mind; both types may have **Psychological** or **Social Complications** reflecting their attitude towards themselves and others.

SUPER INTELLECTS

If the Talking Beast explores Humanity’s connection to its biology, a Super Intellect examines minds freed from the tyranny of bodies. Science Fiction usually depicts them as skinny guys with oversized heads (often with a cleft down the middle), or disembodied brains. Either way, Super Intellecets are concerned purely with matters of the mind. They are relentlessly logical, seldom letting emotions interfere with their decisions.

In fiction, Super Intellecets often serve as a dreadful warning of what may happen if Humans devote themselves completely to reason, with no room left for emotion and feeling. Other writers use them as a symbol of ultimate enlightenment, pure minds devoted to pure thoughts. Often Super Intellecets have psionic powers, or their advanced brains put their civilization ahead of others technologically. Regardless of their background, they have great powers other races don’t.

In recent decades, the idea of creating artificial intelligence computer programs has led to a new subtype of the Super Intellect: the Sentient Program. Sentient Programs are about as pure mind as it is possible to be, software existing only in cyberspace, interacting with the real world through robot tools and computer screens. Like Super Intellect aliens, the Sentient Program can be either a menace of logic without pity, or a benevolent pure intellect free of hate and negative emotions.

TALKING BEASTS

Speaker-To-Animals, similarly surrounded, sprawled like a great orange hill across the grass. Two women were scratching at the fur behind his ears. ... Louis laughed inside himself. A kzin is a fearsome beast, yes? But who can fear a kzin who is having his ears scratched?

—Louis Wu finds a way to put his party guests at ease around a kzin in *Ringworld*, by Larry Niven

With roots going back to Aesop’s fables, the Talking Beast is among the oldest and most resonant alien archetype. A Talking Beast is a sentient alien species based closely on some kind of real-world animal. Appearance, diet, and personality traits closely track those of the original animal. The most common Talking Beast aliens in Science Fiction are probably Felinoids (cat-people), Insectoids, Reptiloids, and Winged Humanoids (often bird-people).

Talking Beasts are relatively easy to create because the model species provides a whole suite of behaviors and traits which naturally fit together. It makes sense for a Felinoid to be solitary, proud, carnivorous, selfish, and territorial because real cats act that way. Since Humans are animals too, with our own set of biological traits, gamers can use Talking Beast aliens to reveal and comment on different aspects of Human behavior.

UPLIFTED ANIMALS

Modern developments in genetic engineering have created a more hard-science subset of the Talking Beast archetype: the Uplifted Animal. Uplifted Animals really are talking beasts — they’re existing Terrestrial species given intelligence and the ability to use tools by genetic modification. Stories often depict Uplifted Animals as slaves or second-class citizens, allowing the writer to explore just what it means to be Human.



WARRIORS

The Doctor: *Harry, Sontarans never do anything without a military reason. ... We've got an invasion on our hands.*

Harry Sullivan: *Invasion? Oh, you mean Styre.*

The Doctor: *Him, and thousands exactly like him.*

Sarah Jane Smith: *They're going to invade Earth?*

The Doctor: *The entire Galaxy — it's suddenly acquired some strategic importance in their endless war against the Rutans.*

—the Doctor reveals some information about the militaristic Sontarans in the *Doctor Who* episode "The Sontaran Experiment"

Humans are pretty aggressive creatures; check any history text or the local police reports for confirmation. Many Science Fiction stories ask what would happen if we met beings even more warlike than ourselves. They make useful antagonists in action stories, if only because the author doesn't have to come up with any better reason for the conflict. They're Warriors, they fight — 'nuff said. Examples from fiction include the Klingons of *Star Trek*, the Kzinti of Larry Niven's "Known Space" stories, and the Sontarans of *Doctor Who*.

Warriors tend to come in two varieties: the disciplined horde and the feudalists. Disciplined hordes are regimented, organized, and unfailingly loyal. They often serve a galactic tyrant. They draw on images from Earth history — the grey columns of the Wehrmacht, or Communist tank divisions parading on May Day. In fiction they're frequently non-Human in appearance, often running to insectoid looks or cyborg bodies.

Feudalists hearken back to medieval Europe or Shogunate Japan. They have clans, fight duels at the drop of a hat, and spend as much time battling each other as fighting aliens. Feudalists are a bit more appealing and useful as characters — belonging to of a vast horde of interchangeable soldiers isn't nearly as much fun as being a hot-tempered duelist with an elaborate code of honor. Consequently, feudalist Warriors are usually more Human-like in appearance.

Sometimes one Warrior species fulfills both roles, either due to differences within society or because they change over time. For example, the Klingons in *Star Trek* functioned more like a disciplined horde in the Original Series, but changed to more feudalistic warriors in *The Next Generation* and later series.

WEIRD DIETS

Aliens often eat food that is weird or alarming by Human standards. If their diet is merely disgusting to observers, this is no more than an entertaining special effect (or possibly a Social Complication). If the alien's diet causes harm to others (perhaps it eats plutonium, fuming hydrochloric acid, or the flesh of sentient beings), it may deserve a Negative Reputation or Social Complication.

If an alien's food is difficult or harmful to obtain, the alien *might* deserve a Dependence that causes weakness or incompetence. However, GMs should think carefully before allowing such a Complication. Humans do not get a Dependence on normal food, and vampires don't get a Dependence on blood (see HSB 290-92).

All creatures have to consume food in some way, and normally they don't get a

6
Complication for it; it's a default condition all characters suffer from. An alien's diet would have to be unusually difficult or dangerous to obtain to qualify for a Dependence.

ALIEN BODIES, ALIEN MINDS

Aliens are, of course, alien. Depending on how alien they are, they may have serious problems living in an environment comfortable for Humans. This section discusses various alien traits and how to model them using the *HERO System* rules. Some general guidelines:

- Any effect produced by a limb or an external body part may (or may not) qualify for the Limitation *Restrainable*.
- You should consider making any permanent qualities of the being's body, such as a tail, Inherent. Ask yourself: would it make sense for other characters to Aid or Drain this ability or quality? If the answer is "no," then Inherent is probably appropriate.
- Any power requiring effort from the creature should be left at full END cost, or take the *Costs Endurance* (-½) Limitation if it doesn't already use END.
- The following Advantages are usually inappropriate for a being's innate powers or abilities: Autofire, Indirect, Invisible Power Effects, MegaScale, Penetrating, Trigger, Usable On Others, Variable Advantage, Variable Special Effects.
- The following Limitations are usually inappropriate for a being's innate powers or abilities: Focus, Only In Alternate Identity, Variable Limitations.

AMPHIBIANS

Beings at home in both water and air have the Expanded Breathing (water) form of Life Support, and may have Environmental Movement: Aquatic Movement. If they can go deep underwater, they also have Safe Environment: High Pressure. Just about any being which swims in the ocean should also have Safe Environment: Intense Cold, since water is usually pretty chilly. A being which has evolved to live in both air and water will probably be uncomfortable in dry environments; amphibians may well have a Dependence on water, causing Incompetence after 6 hours or more. This is a 0-point Complication in a setting with lots of water, but in a dry or desert environment (like Mars, or the Moon) it would be worth 5 or 10 points.

BLOBS

Creatures with no fixed shape are Blobs. They are liquid or gelatinous in consistency, with no bones and no limbs. In fiction they usually appear as viscous monsters. Blobs can move, and can pick things up using pseudopods or formed hands. Some Blobs can't do any fine work requiring manual dexterity; being a Blob of this type requires a Physical Complication, *Limited Manipulation* (All The Time, Greatly Impairing; 30 points). Most Blobs can ooze through small

apertures and porous materials (Desolidification, Cannot Pass Through Solid Objects (-½); 27 points). A Blob's elastic body may have Damage Reduction to reflect its ability to absorb impacts, Stretching to represent its flexibility, and even Shape Shift or Multiform to simulate its ability to assume other shapes.

Blobs with more control over their forms can create temporary features and organs, such as claws, wings, or gills. If they have only a limited "menu" of possible body parts to create, you can best model this with Multiform or a few specific Powers, perhaps in a Power Framework. If the Blob can transform itself completely at will, it probably has Shape Shift and/or a Variable Power Pool with Limitations reflecting what it can and cannot do with its body. Some Blobs may even have the ability to divide their bodies in two (Duplication).

BODILESS BEINGS

Some aliens in Science Fiction have no physical form at all, existing as patterns of data in computer networks, or as free-floating psychic energy. Being Bodiless isn't the same as being Immaterial (see below); Immaterial beings can interact physically with each other, and still have some effect on the material world. A truly Bodiless alien has no physical attributes or powers at all. To simulate this, give the being Invisibility and Desolidification (both Always On and Inherent), the Physical Complication *No Body* (typically All The Time, Fully Impairing; 35 points) and sell back its STR and CON to zero. Usually the being cannot take (or dish out) Physical or Energy damage at all; it's only vulnerable to Mental Powers. Bodiless beings which possess the bodies of others are best modeled as Parasites or Symbiotes (see below).

COLONY CREATURES

A colony creature is a being composed of several smaller beings living together in symbiosis. If the colony components can't live apart, this is just a cool special effect, but a colony being which can separate temporarily probably has Duplication, and perhaps Multiform and other powers as well.

DIGGERS

Aliens derived from underground creatures like moles often have the Tunneling power with the *Limited Medium* Limitation (soil and sand only; -½). Beings that live underground all the time and "swim" through rock and soil have Tunneling with the *Fill In Adder* and no Limitation on the medium. They should also have some form of ground-penetrating sense like Partially Penetrative Sight, or Normal Hearing with the Targeting Sense option. They often have tough or armored skins (represented by Resistant Protection and the *Resistant* (+½) Advantage), and may need Life Support to survive underground.

FAST BEINGS

Captain James T. Kirk: *What have you done? Deela: Changed you. You are like me now. Your crew cannot see you, or any of us, because of the acceleration. We move in the wink of an eye.*

—Captain Kirk discovers he's been hyper-accelerated by the Scalosians in the *Star Trek* episode "Wink Of An Eye"

Creatures so fast Humans can hardly see them aren't uncommon in Science Fiction. While in a Hard Science Fiction setting, invisibly fast beings would burn up from air friction, it's still possible to have creatures which live much faster than Humans do — consider hummingbirds. Superfast aliens are best represented with high DEX and SPD, and possibly increased Running. If they are pulpish beings who live so fast they cannot be seen, give them Invisibility with the Limitation *Not While Standing Still* (character must make at least a Half Move every Phase or Invisibility deactivates; -½). Living in the fast lane takes more energy (and thus more food and drink), which is represented by the Dependence *Increased Metabolism* (value varies), and possibly a short lifespan.

FLYERS

The average fully grown Affronter consisted of a mass the shape of a slightly flattened ball about two meters in girth and one and a half in height, suspended under a veined, frilled gas sac which varied in diameter between one and five meters according to the Affronter's desired buoyancy and which was topped by a small sensor bump. When an Affronter was in aggressive/defensive mode, the whole sac could be deflated and covered by protective plates on the top of the central body mass. The principal eyes and ears were carried on two stalks above the fore beak covering the creature's mouth[.]

—a description of the alien Affronters from *Excession*, by Iain M. Banks

—Most realistic flying aliens have wings, and thus buy Flight with the *Restrained* Limitation (or possibly the *Gliding* Limitation, if they can't truly fly). Because they must be light enough to fly, they probably have reduced BODY and possibly a Vulnerability to ordinary Physical damage. Living gasbag creatures are fairly common in fiction — build them using a very slow Flight power, no more than 1-4m, with the *Increased Endurance Cost* Limitation to reflect the effort needed to move a bulky balloon through the air. More unusual aliens, like energy beings or

psionic creatures, may be able to fly without using wings or lifting gas (straightforward Flight, often with Advantages or Movement Skill Levels).

GIANTS

Some aliens in fiction are very big. Land creatures on an Earthlike world could easily be the size of dinosaurs, while water-dwelling aliens or gasbag creatures might well be hundreds of meters long. This is not Growth; instead really huge aliens should buy their Characteristics and abilities at a suitably high power level (see 6E1 442-43).

HANDLESS BEINGS

Perhaps intelligence can develop in a species which lacks usable hands. Sentient dolphins or dogs would also have this problem. A creature with no hands at all, like a dolphin, would have a 35-point Physical Complication, *No Hands* (All The Time, Fully Impairing). Beings which could manipulate objects with difficulty — like a panda or a squirrel-based alien — would have a 30-point Physical Complication, *Limited Manipulation* (All The Time, Greatly Impairing). As with handicapped Human characters, if the alien routinely has technology or special powers to overcome its lack of hands, this Complication is worth fewer or no points.

HIDEOUS BEINGS

In a setting with lots of alien species, the average alien's appearance probably won't cause any problems (*i.e.*, characters shouldn't take the *Distinctive Features* Complication). But aliens in a setting where strange beings are uncommon may cause shock, fear, or revulsion in Humans they encounter. The simplest way to handle this is to give them *Distinctive Features*; *Striking Appearance* representing their hideousness may also be appropriate.

Some aliens may be so alien and unearthly in appearance that their looks actually damage the minds of those who behold them. H.P. Lovecraft's Great Old Ones are an example of sanity-blasting ugliness. Model this as a Mental Blast with the *Area of Effect (Radius)* and *Inherent Advantages and Limitations* such as *Always On* and *Only Affects Beings Who See Character* (-½).

IMMATERIAL ALIENS

Some creatures may not be made of solid matter. Examples include gaseous beings, energy creatures, and aliens whose matter is somehow "out of phase" with the rest of the universe. Immaterial aliens typically have *Desolidification*; see the accompanying sidebar for some examples. "Out of phase" beings should either buy Life Support, or figure out some way to obtain their transphased food. Energy creatures may be able to create solid extensions, giving them the *Affects Physical World* Advantage on some physical Characteristics or powers.

IMMATERIAL FORMS

Standard Immaterial Form: *Desolidification* (affected by attacks dictated by the special effects of the immateriality), *Reduced Endurance* (0 END; +½), *Persistent* (+¼), *Inherent* (+¼) (80 Active Points); *Always On* (-½), *Cannot Pass Through Solid Objects* (-½). Total cost: 40 points.

Energy Form: *Desolidification* (affected by similar type of energy), *Reduced Endurance* (0 END; +½), *Persistent* (+¼), *Inherent* (+¼) (80 Active Points); *Always On* (-½), *Cannot Pass Through Solid Objects* (-½) (total cost: 40 points) **plus** *Blast 5d6*, *Affects Physical World* (+2), *Area Of Effect (personal Surface — Damage Shield; +¼)*, *Constant* (+½), *Reduced Endurance* (0 END; +½), *Persistent* (+¼), *Inherent* (+¼) (119 Active Points); *Always On* (-½) (total cost: 79 points). Total cost: 119 points.

Gaseous Form: *Desolidification* (affected by wind/air attacks), *Reduced Endurance* (0 END; +½), *Persistent* (+¼), *Inherent* (+¼) (80 Active Points); *Always On* (-½), *Cannot Pass Through Solid Objects Or Airtight Barriers* (-½). Total cost: 40 points.

Pure Psionic Energy Form: *Desolidification* (affected by psychokinetic powers), *Reduced Endurance* (0 END; +½), *Persistent* (+¼), *Inherent* (+¼) (80 Active Points); *Always On* (-½). Total cost: 53 points.



IMMOBILE BEINGS

There are many species of animal life on Earth that don't move much, not including dedicated TV watchers. Clams, oysters, tubeworms, and adult termite queens are examples. Alien species may combine a sessile existence with Human-level intelligence. A sessile being which has arms should sell back all its forms of physical movement to 0m. Beings with neither arms nor legs get a 35-point Physical Complication, *No Limbs* (All The Time, Fully Impairing), and must sell back not just his physical movement but perhaps some Characteristics as well. As always, any Complication isn't worth as much if the alien has technological means of getting around that compensate. For example, perhaps an alien who relies on a powered wheelchair or hover-platform has the Physical Complication *Cannot Move Without Help* (Infrequently, Greatly Impairing; 15 points).

MULTIPLE LIMBS

It's only a historical accident that land-dwelling vertebrates on Earth are descended from a fish with four fins. Humanity could easily have six, eight, or even more limbs, or a tail. The *Extra Limbs* Power, naturally, is the best way to model this. Use the *Inherent Advantage* to reflect the fact that a limb can't easily be "turned off." Note that *Extra Limbs* primarily applies to manipulatory limbs like arms — if a being has a lot of extra legs or other nonmanipulatory limbs, he might instead buy this as some other power (such as increased Running), or apply the *Limited Manipulation* (-¼ Limitation) to his *Extra Limbs*.

SPECIES WITHIN SPECIES

Even within a single species there may be groups sufficiently different from each other as to almost qualify as separate "species" for game purposes. The Environment Templates on pages 51-54 are an example of this, but the difference can be racial or cultural instead of environmental. If there are factions with their own long history, secrets, and physical types, they may function like subspecies — as with the different Houses in the *Dune* novels. In a campaign this is a great way to provide some easy variety, especially if the players are still learning all the background. An hour's work gives the GM a selection of Templates to offer the players, so everyone can get on with the important business of actual gaming.

PARASITES AND SYMBIOTES

Humans are symbiotic organisms; our intestinal bacteria help us digest materials we otherwise can't process. But what if the situation was reversed, and the internal symbiote or parasite was the one with the brains? In a relatively hard Science Fiction campaign, an intelligent symbiote or parasite would be specialized to live in a particular host species, in which case it is effectively nothing more than a "special effect" or perhaps an odd form of longevity (as the parasite moves from body to body — similar to the Trill of *Star Trek*).

In a more cinematic or Pulp-oriented campaign, intelligent parasites may be able to exist in a variety of hosts — even Humans. A universal parasite which dominates its host without destroying the original personality is best modeled as a bodiless being (see above) with high levels of Mind Control, Limited so the parasite can only use it against someone it has physical contact with. A parasite which completely takes over its host and destroys the original mind is using a form of Killing Attack, with the "possession" of the mindless body acting as a special effect for Life Support (Longevity). The Killing Attack may have ACV (OMCV versus DMCV) and AVAD (Mental Defense) to represent "psychic parasites" and the like; other creatures may use an infectious attack or other physical means of implanting the parasite.

Non-destructive parasites may well have a willing host; in that case the host may qualify as a Follower or even a DNPC. If the parasite is weaker than the host, then make it the DNPC or Follower. On the other hand, the host and parasite may both be PCs, each with its own point value and a Psychological (and/or Physical) Complication reflecting the attachment. Except in humorous campaigns, the GM probably shouldn't let a parasite and its host be Rivals.

SLOW BEINGS

Humans don't seem particularly fast, but to something like a starfish we move about in a superfast blur. Intelligent aliens from a cold or low-energy environment may be similarly slowed down. Extremely slow aliens should buy down DEX to no more than 5 or 6, and have SPD 1. Their slow metabolism may also give them various types of Life Support — Extended Breathing, Diminished Eating, and possibly Longevity.

SMALL ALIENS

It's not clear how small a sapient creature can be. Certainly Human children are fully intelligent (supposedly), and creatures with a more sophisticated brain could be smaller still. As with giant-size beings, this is best modeled by buying down the creature's Characteristics to an appropriate level and adding a Physical Complication (see 6E1 442-45).



CREATING PLAYER CHARACTER SPECIES

When creating an alien species for use as a Player Character species, the GM (or player) must consider the following three questions. If you can't answer all of them "Yes," the species probably isn't suitable for PCs.

Can the character work with others? A water-breathing alien in a crew of air-breathers is going to have problems, as will a dinosaur-sized being aboard a ship built for Humans. Advanced technology can overcome a lot of restrictions — a water-breather can wear a liquid-filled environment suit, or a sessile plant-creature can ride about on a powered scooter — but not necessarily all restrictions. This is where the GM's input is crucial, since he's likely to know more about how the campaign world works and what is and isn't practical.

Can the character function in society? A member of a primitive species in a high-tech setting will be constantly bewildered by advanced technology; an individual from a species of carnivores which regards other sentient beings as nothing more than food may have trouble at meal-times. Created beings like robots or androids may be considered slaves. If a non-Human character will cause a brawl wherever the PCs go, the GM should forbid that character, or perhaps suggest changes to make him more playable: the primitive learned about high technology from visiting traders, the carnivore has a personal code against

eating sentients, and the robot character pretends to serve another while secretly being autonomous.

Can the character have interesting adventures?

While this question should be asked about *any* character, GMs should be particularly alert to species designs which are either too powerful or too limited. Super-powerful aliens may unbalance the game, short-circuiting adventures and leaving the other characters with little to do. Overly-limited species may not be able to do much in the campaign.

Besides those points, generally speaking a species suitable for use as a player character species needs to be two things: first, interesting and distinctive; second, reasonably balanced in game terms.

DISTINCTIVE

It's easy to create a group of more or less "typical" species as seen in Science Fiction generally; that's part of what Chapter Two of this book does. The species described there are "generic," easily adapted to many different settings, and should save you the work of creating similar species for your own games — just alter the Templates as necessary and provide some setting-specific description and context, and you're ready to go.

Creating an all-new species, solely for your own campaign, requires a little more effort. Since the "standard" types of alien species are already well-known, you usually need to find a way to make yours distinctive, intriguing, and in some way "new." There are two main ways to do this.

HOW MANY POINTS IN A TEMPLATE?

There's no specific cost requirement for Species Templates, since the cost depends on how many innate abilities and traits a species has. Some species have many positive attributes, leading to expensive Templates (like the Android/Robot Template on page 45, which costs 107 points). Others have more drawbacks than benefits.

However, in most Star Hero campaigns, Species Templates work best if they cost about three to 15 Character Points. That way the investment of Character Points is significant, but not so overwhelming that players can't personalize their characters with other purchases.

First, you can distinguish your species through its appearance and/or mannerisms. Maybe *your* reptiloid aliens have special scale coloration patterns that say certain things about the individual and have significantly influenced the species's culture. Perhaps the psionic species in your setting speaks in a particularly notable way, because its members aren't used to vocal communication. Maybe the bird-men from Altair VI descend from a prey species and so are prone to nervous behavior and constant watchfulness that's easily portrayed when playing them.

Second, you can distinguish your species through attitude and behavior. Many Science Fiction species have their own "codes of honor," ones Humans sometimes have trouble comprehending, that makes them distinctive. Others have various personality traits — absolute logic, pacifism, aggressiveness, piety — that are so ingrained, for biological or cultural reasons, that the vast majority of species members display them. A unique behavioral pattern often goes a long way toward setting a species apart. Just be careful it doesn't become a caricature.

BALANCED

In *HERO System* game terms, it's also important that a species be "balanced" — that is, provides enough game-based benefits and abilities to make it attractive as a Player Character choice, but not so many that every player wants his character to belong to that species. No species is perfect; each should provide a proper mix of advantages and drawbacks, making it three-dimensional and beneficial to the game.

Fortunately, the *HERO System* rules make this fairly easy, since characters have to pay for all prominent abilities with Character Points. If a species has so many abilities that its Template costs 50 points, then the character only has another 125 points to spend on Characteristics, Skills, and the like. A character of a "lesser" species might only have a 4-point Template, but that leaves him with 171 points to spend on other things. In the end, both characters are built on 175 Total Points, which means that, over the course of the campaign, each one should be equally effective. One may be better at combat, the other at diplomacy, but in the end they contribute to the group's accomplishments (and the players' fun) in equal measure.

Template Components

A Species Template, such as the ones in Chapter Two, consists of two parts: abilities and Complications.

ABILITIES

"Abilities" are the Skills and other attributes native to the species. They consist primarily of three things:

- Characteristic bonuses
- Skills, Perks, and Talents possessed by every member of the species
- Powers

CHARACTERISTIC BONUSES

The most common element of Species Templates are Characteristic bonuses. Using Human as a baseline (*i.e.*, no additions or subtractions to the base Characteristic values established in 6E1), decide what your species is like. Is it stronger, tougher, smarter, more insightful, or stronger-willed than Humans, on the average? If so, a starting bonus to the appropriate Characteristic(s) may be in order. Typically these bonuses range from +1 point to +3 points' worth of the Characteristic, paid for at the normal cost. Bonuses above +3 points are possible, but should be relatively rare.

On the other hand, some species suffer from reduced Characteristics and movement — they're weaker, more frail, stupider, or less insightful than average (*i.e.*, than Humans), and a reduction in their starting Characteristics reflects this. In most cases, the reduction should be -1 to -3 points; more than that may cause problems for a starting character. Unlike Complications, reduced Characteristics or movement directly reduce the cost of a Racial Template.

SKILLS, PERKS, AND TALENTS

Skills, Perks, and Talents are much less common in Species Templates than Characteristic bonuses. As noted on 6E1 37, it's unusual for every member of a species to have the same Skills (other, of course, than Everyman Skills). Given the many different ways characters in any setting (particularly a Star Hero setting encompassing entire galaxies!) can grow up and learn, it's highly unlikely that *every member* of the species would learn the same Skills. Typically, Skills in a Template represent some innate ability native to the species which is best represented as a Skill. For example, all members of a caninoid alien species might have Animal Handler (Canines) to represent their natural ability to relate to dogs, wolves, and the like. (However, Skills may be appropriate for Cultural Templates; see page 49.)

Perks should rarely occur in Species Templates. They're often appropriate for Professional Templates, but it's uncommon for every member of an entire species to have a particular Perk.

Talents are the same as Skills — a good way to simulate innate abilities possessed by a species. Most Talents are useful only for individuals, but a few make good species abilities. For example, an avian species might have natural Bump Of Direction, derived from an ancient need to migrate south during cold weather. On the other hand, it's relatively unlikely that every given member of a species would have Lightning Reflexes or Speed Reading.

POWERS

Some species have Powers in their Templates, to reflect natural abilities that can't be accurately created using other game elements. Typically, these include:

- natural weaponry (HAS, HKAs)
- natural defenses (Resistant Protection, the *Resistant* (+½) Advantage)
- unusual senses (Nightvision, Increased Arc Of Perception)
- enhanced or expanded forms of movement (Flight, increased Swimming)

In most cases, the Powers bought for a Species Template have relatively few Active Points, and/or are heavily Limited. There are a few exceptions, such as the Android and Energy Being Templates in Chapter Two, but keeping the costs and effectiveness of innate Power-based abilities low is usually best for game balance.

COMPLICATIONS

For species Complications, it's usually best to stick to physical handicaps that would obviously affect every member of a race. For example, all of the bat-people of Chiropterus may have weak eyesight. Mental and social restrictions should rarely be a part of Racial Templates. Characters are individuals, and shouldn't be required to act alike because of a common Psychological Complication or the like. Even among a relatively homogenous race, individuals don't think exactly alike, or approach problems the same way. However, in a specific campaign setting, races which are widely discriminated against may qualify for a Hunted (Watched) or Social Complication.

ALIEN SPECIES AS NPCs

For species not intended as PC species, the main issue is what role the species plays in the campaign. Although a species consists of millions, billions, or even trillions of individuals, in many ways, alien species in various Science Fiction settings serve as large-scale NPCs, broadly speaking. To put it another way, a given species is often so associated with a particular attitude, philosophy, practice, or custom that it becomes one-dimensional. Some of the most common "classifications" of alien species are described below.

ALLY

Some species's primary role is as the allies of the species to which the PCs (or most of them) belong (usually this means Humans, of course). Examples include the Pogs in Phil Foglio's "Buck Godot" comics, and to some extent the Vulcans in *Star Trek*. Rarely (if ever) depicted on its own, this species acts primarily in concert with the PCs' species... though occasionally there's a good story to be told when the Ally species turns against the main species, or objects to its conduct for some reason.

COMMON ALIEN TRAITS

Individuals living in a civilization cannot help but be affected by it. In particular, they often acquire the same Complications reflecting common attitudes and assumptions — as noted in the main text (and the *World Reduction* sidebar on page 147), it's all too common in Science Fiction for every single member of a given alien species to have certain personality traits or beliefs. Here are some suggestions on how *HERO System* Complications link to various aspects of a civilization.

Dependent NPC: In many traditional societies, ties of kinship and personal loyalty are strong. They're also one of the bulwarks of hereditary government. Characters from Farming or Nomadic economies, or from states where rulership is Hereditary, are likely to have numerous DNPCs in the form of distant relations, loyal retainers, liegemen, and the like. (Similarly, this can lead to characters having a plethora of Contacts and/or Followers; GMs might even mandate this by allotting points to those Perks in the Species Template.)

Enraged/Berserk: Warrior cultures, like Nomadic economies or carnivorous species, may have this Complication, especially at low tech levels where personal combat isn't automatically lethal. Triggers often include "sense of honor offended" or "insulted."

Hunted: In civilizations with intrusive governments (Force-based rule) or repressive legal systems, just about everyone may be Watched at times. Those who oppose the government are Hunted. If one species is at war with another, each species may be Hunting its enemy.

Psychological Complication: Codes of conduct are the most common culture-specific Psychological Complications. Honor-bound societies have Codes Of Honor, Honorable, or Vengeful; the GM and players should be certain to define the boundaries of such codes, to minimize disputes about how a character should act in a given situation. Pacifist cultures have Code Versus Killing. Religious societies encourage Piety (Common, Moderate) if not outright Religious Fanaticism (Common, Total). Vital, expansive cultures may also encourage Overconfidence, as with nineteenth-century Englishmen or twenty-first century Americans.

But a society can also have built-in fears and hatreds. A totalitarian society induces Paranoia in most citizens. Citizens of a state with a long history of warfare with a neighbor may develop an ingrained Hatred of those people — witness the remarkable persistence of Anglophobia among the French.

Social Complication: Societies which include racial or linguistic minorities may have widespread prejudice against them among the majority population; this could create a common Minor Social Complication. Other minorities could be actively persecuted — subject to constant harassment and the threat of mob violence. That's a Major or Severe Social Complication.

COMIC RELIEF

A few species appear in a setting solely for the purpose of getting a laugh from the audience (*i.e.*, the players, in a Star Hero game). Sometimes bumbling and clumsy, often mystified by the ways of Humans, this species usually possesses some bizarre customs (“No, we don’t *eat* them; we play *vrgblat* with them. What kind of barbarian are you?”). Being the source of humor doesn’t necessarily make a species nonthreatening, though; in the *Star Wars* saga, everyone laughs (or groans) at Jawas and Ewoks, but both hold their own against bigger, tougher species.

CONTEMPLATIVE

Science Fiction is rife with philosophical species brought into the story, in large part, to compare and contrast with Humans so the author can comment on “the Human condition.” *Star Trek*’s Vulcans and Bajorans, and the Minbari of *Babylon 5*, fit this mold. A Contemplative species often fills other roles (such as Ally or Cultural Antagonist); its members, while possibly condescending or sarcastically observant, often possess attributes of great use to the PCs (advanced science or technical knowledge and skills, psionic powers, martial arts prowess...).

CULTURAL ANTAGONIST

Similar to the Contemplative, the Cultural Antagonist exists largely to set off another quality of some other species (typically, but not always, Humanity). Something about the two species prevents them from seeing eye-to-eye; one may be logical, the other passionate; one aggressive, the other pacifistic; one covetous, the other philosophical. The Ferengi of *Star Trek*, with their unalloyed greed contrasting so starkly with the Federation’s high-moneyless economy and social utopia, are a perfect example.

ELDER CIVILIZATION

“The Ancients” — an old, usually incredibly advanced alien civilization that disappeared from the Galaxy hundreds of thousands or millions of years ago — is a staple of many Science Fiction settings. The Slavers, Tnuctipun, and Pak of Larry Niven’s “Known Space” stories, the Iconians of *Star Trek*, and the Vorlons and Shadows of *Babylon 5* all fit into this category to varying degrees.

Typically, an Elder Civilization was incredibly powerful, possessed amazingly high-tech devices, and ruled huge swaths of the Galaxy (or even multiple galaxies). In most cases, the Elder Civilization has left behind only its relics, ranging from mysterious ruins on various planets to caches of extraordinarily advanced technology. Player Characters and NPCs alike seek those relics (either to gain knowledge, or to acquire money and power by selling or using them). But in some settings, such as the universe of *Babylon 5*, a few Ancients have remained behind to help, hinder, or harm Humanity and other “modern,” but much less advanced, species.

Elder Civilizations that stay around for PCs to interact with are often decadent or contemplative, if only because their tremendous power would otherwise allow them to conquer the Universe with ease. Sometimes, the writer solves this problem by having only one or two survivors of the species exist. But in any case, individual members of an Elder Civilization can still go out slumming with primitives like Humanity...

In a Star Hero campaign, the existence of one or more Elder Civilizations provides the GM with all sorts of potential scenarios and plot hooks. Characters with the *Advanced Tech* Perk may justify it by explaining that they once found some hidden Ancient technology. Antagonists with access to Ancient weapons may threaten the PCs’ homeworld. A race to explore a world thought to contain Ancient ruins could motivate a group of characters.

Of course, the GM should take care not to let Ancient technology unbalance his campaign or change his setting — unless that’s what he wants. If necessary, Elder Civilization devices should only function a few times before running out of energy, breaking down, or exploding, or the competition to obtain the device leads to its destruction instead. Giving Elder Civilization tech to the PCs, who are constantly on “center stage” in the campaign, may cause problems, but letting an occasional adversary have it could work just fine... assuming the PCs don’t get their hands on it after they defeat him.

Elder Civilization species come in various forms, often as Super Intellects or Energy Beings (see above). Individuals are generally quite wealthy by the standards of other cultures, much as American or European tourists in Earth’s poorest countries would be. If the GM allows players to have characters who are members of an “Ancients” species, those characters should take the Perk *Advanced Tech* (page 69), and probably a Positive Reputation as well.

ENEMY SPECIES

Some aliens serve mainly as enemies (two-dimensional or otherwise) for the PCs. See *Villain Archetypes*, page 315, for more information.

TRADING PARTNER

Some alien species are known primarily for their role in commercial activities. Either the entire species is devoted to earning money (as with *Star Trek*’s Ferengi), or the species only enters the story when matters of finance or trade are involved. The species is probably actually much more diverse and multi-faceted, but all Our Heroes ever see is how it conducts business. A clever GM may eventually develop a Trading Partner species into a full-fledged species during the course of the campaign.

6

“I have just picked [this ant] up on the tip of my glove. If I put it down again and it asks another ant, “What was that?”, how would it explain? There are things in the universe billions of years older than either of our races. They are vast, timeless. And if they are aware of us at all, it is as little more than ants — and we have as much chance of communicating with them as an ant has with us. We know. We’ve tried. And we’ve learned we can either stay out from underfoot, or be stepped on.”

—Ambassador G’Kar ponders the dangers of the elder civilizations in the *Babylon 5* episode “Mind War”

ALIEN CIVILIZATIONS



TECHNOLOGY

“A-T, we find the strangest life forms. Remember the Chunquen?”

“Both sexes were sentient. They fought constantly.”

“And that funny religion on Altair One. They thought they could travel in time.”

“Yes sir. When we landed the infantry they were all gone.”

“They must have all committed suicide with disintegrators. But why? They knew we only wanted slaves. And I’m still trying to figure out how they got rid of the disintegrators afterward.”

“Some beings,” said the A-T Officer, “will do anything to keep their beliefs.”

—the aggressive Kzinti first encounter Humanity in “The Warriors,” by Larry Niven

So what is a civilization, anyway? It’s the way a large portion of a sentient species lives — their art, their economy, how they govern themselves, their methods of resolving disputes, their recreations, and much, much more. It’s everything a given population does. The scale is necessarily large: typically a continent, planet, or multiplanet empire. Usually a civilization is self-contained, at least for essentials. It doesn’t have to be a single political unit, although in Science Fiction that’s the norm.

This section discusses the elements of civilizations. It includes random generation tables for GMs who need to create a civilization quickly, don’t have any specific ideas for what they want, or are looking for inspiration. When creating a civilization for a newly-generated planet, the GM needs to note in advance whether it’s an indigenous native culture or a colony world (see Chapter Four regarding planet creation).

Technology determines so much about how a civilization looks and what it can do that it’s best to start with it. This section uses general descriptions of technology levels — for other technology classification systems, see page 182. Gamemasters creating a new world should assign the technology level based on what purpose that planet serves in the campaign. A powerful spacefaring empire obviously needs mature interstellar technology; a “sword and planet” world should have Renaissance-era technology (at best). For random determination, see the Technology Classification Table.

Problems can arise when there is a large difference between the technology available to the PCs and that of a planet they’re visiting. If the world is low-tech, the heroes’ guns and body armor can give them a significant advantage over the locals. Many stories get around this problem by invoking a “technology quarantine” to protect primitive societies (see page 184). Quarantine rules may require visitors to use only locally-available equipment, and there may be strict penalties for introducing new technologies or ideas. Such rules may not stop greedy PCs or immature players, but at least they give the GM an in-game means for dealing with violations.

The opposite problem can occur when an alien world is far more advanced than the heroes’ own civilization. This makes the PCs primitive barbarians trying to use devices they barely understand. Players may find this frustrating, and even if they don’t, they’ll be trying to grab as many high-tech goodies as they can. One useful technique to control this problem is to make the aliens advanced in only one or two areas rather than all fields, or to create or define the technology in such a way that the PCs can’t use it (or can only get limited use out of it). For example, technology requiring a different type of manipulatory limb than Human hands might not be usable by humanoid PCs.

Luke: *What is it?*

Obi-Wan: *Your father’s lightsaber. This is the weapon of a Jedi Knight. Not as clumsy or random as a blaster; an elegant weapon for a more civilized age.*

—Luke Skywalker inherits his father’s lightsaber in *Star Wars*

TECHNOLOGY CLASSIFICATION TABLE

You can use this table to randomly determine the technological level of a given civilization. It's biased toward creating low-technology cultures. A look at Human history on Earth indicates Humanity spent upwards of half a million years at Stone Age technology, and about several thousand at Bronze Age. Therefore, it's reasonable to assume that a randomly-encountered civilization is most likely low-tech.

If the planet is a recent colony world, it is either at or below the technology level of its parent world. Roll 1d6; on a 1-2 the planet is the same technology level as its founding civilization, on a 3-4 it is lower (1 step on the Technology Classification Table), and on a 5-6 it's considerably lower (1d6 levels). If the planet is a *lost* colony, then its technology is 1d6 levels lower than the parent civilization's. (Exclude results of 2, "Mature Interstellar," when determining lower tech levels.) For older colonies that may have diverged significantly from their parent culture, determine technology as if the inhabitants are natives.

Planets which have suffered a major disaster may regress technologically. See the section on planetary disasters for their effects on technology levels and population.

Roll (2d6)	Technology Classification
2	Mature Interstellar
3	Cyberpunk Era
4	Industrial Era
5	Bronze Age
6-8	Stone Age
9	Iron Age
10	Preindustrial
11	Industrial/Atomic Era
12	Early Interstellar

KARDASHEV CLASSIFICATIONS

The Russian astrophysicist V.I. Kardashev classified possible alien civilizations by energy output, as a guideline for scientists searching for alien signals.

Type I: A civilization capable of using all the energy resources of a single planet. In practice this means intercepting and using all the available sunlight reaching the planet, about 40 billion megawatts. Our own civilization is not yet a Type I, as Earth's current energy budget is far less than that. A Type I civilization would be detectable by radiotelescope at a distance of a few tens of light-years.

Type II: Capable of using the entire output of a star or star system, or some 400 billion billion megawatts. Type II civilizations can move planets and build structures millions of kilometers across. They could be detected hundreds of light-years away.

Type III: Capable of using the entire energy output of a galaxy (10³⁷ watts). A Type III civilization could create structures on a scale of light-years, and move entire stars. It would be detectable across the entire observable universe.

ADVANCED AND RETARDED TECHNOLOGY

Some worlds may not have followed the same path of technological progress as Human civilization. They may be more or less advanced in a given field than their general level of technology would indicate. Roll 1d6 and consult the following table:

Roll (1d6)	Technological Advance Or Lag
1-2	No deviation from the standard technology scale
3	-1 step in one area (roll below)
4	+1 step in one area (roll below)
5	+1 step in one area, -1 in another
6	+1 step in 1d6 areas, -1 in 1d6 areas (if the same area gets a +1 and a -1 then the net result is no change)

The Technology Areas Table lets you determine what areas a civilization has advanced or lagged in. It concentrates mostly on practical technology which affects the way people live, rather than pure science. A civilization might have an anomalously high understanding of geology or mathematics, but that won't have much impact on daily life (as demonstrated in Arthur C. Clarke's short story "Second Dawn").

TECHNOLOGY AREAS (ROLL 1D6 AND 1D6)

First Die	Second Die	Area
1-2	1	Agriculture
1-2	2	Astronomy
1-2	3	Automation or Machinery
1-2	4	Biology
1-2	5	Chemistry
1-2	6	Communication
3-4	1	Computers or Information-Handling
3-4	2	Construction
3-4	3	Economics
3-4	4	Energy
3-4	5	Manufacturing
3-4	6	Materials
5-6	1	Medicine
5-6	2	Physics
5-6	3	Sensors or Optics
5-6	4	Transportation
5-6	5	Weapons
5-6	6	Weird Technology

Most of the headings are self-explanatory. "Weird Technology" refers to areas in which the planet's scientists have made discoveries unknown to Earthly researchers. Examples include time travel, shape-shifting, immortality, and advanced robotics.



POPULATION

The air was thick with the spicy-chemical smell of puppeteer. That smell was everywhere. It had been strong and artificial in the one-room life support system of the transfer ship. It had not diminished when the airlock opened. A trillion puppeteers had flavored the air of this world, and for all of eternity it would smell of puppeteer.

—Louis Wu and his companions visit the puppeteer homeworld in *Ringworld*, by Larry Niven

Once you've determined a civilization's level of technology, figure out how many people it includes. To determine how many people a planet supports, decide if they're natives or colonists. Some worlds have a mix of both, and colonies which have lasted for several centuries are effectively "native" populations and can be treated as such. If the planet is a colony, skip down to the section on colonies below.

POPULATION CAPACITY

Native populations tend to be at the maximum possible for a given planet (at least at prestellar technology levels). When determining the native population, first determine how many people a given world can support. The base surface area in millions of square kilometers depends on the diameter, as shown in the accompanying table.

Multiply the surface area by the hydrographic percentage (page 121) to find out how much of that area is covered by oceans. The remainder is dry land. (Note: if the dominant species lives in water, treat the oceans as "dry land" for all calculations of a planet's habitable area.)

Next calculate how much of that dry land surface is actually usable by rolling on the Usable Land Table. Even a lush world like Earth has only limited regions where agriculture is possible. Mountains, deserts, and polar icecaps make much of the surface unusable. Colony planets get a slight penalty because no colonists are ever as perfectly suited to a world as organisms which evolved there.

Multiply the habitable fraction by the population density for the planet's level of technology to determine how many people can live on the world. This is the planet's carrying capacity. At lower technology levels, the planet will have about as many people as it can possibly support. But at higher technology levels, beginning at the Industrial stage, populations may level off as the birth rate declines. With the development of object-creation devices or nanotechnology, any world can support almost any number of people, limited only by living space and energy supply. In general, interstellar societies seldom increase their population beyond that of an information-age civilization; for them, once you've determined how many people the planet has, subtract (1d6-1) times 10 percent.

MACRO-LIFE

The idea of "Macro-Life" refers to a civilization residing completely aboard large mobile space habitats, existing in space the way single-celled organisms live in water. Even limited to sublight speeds, habitats could spread through the galaxy over millions of years. Individual macro-life habitats would grow, move, react to stimuli, and reproduce by creating daughter habitats from raw materials. The Human crew would be the equivalent of a cell's DNA.

A macro-life civilization would not be tied to planets, and star systems themselves would be valuable only as sources of matter and energy. Macro-life habitats could make use of brown dwarf stars or planet-sized bodies in interstellar space, comets and Kuiper Belt objects on the fringes of star systems, and even the wispy matter of nebulae.

Macro-life cultures are highly mobile and focused on the interactions between different habitat cultures, and on conflicts and politics within a specific habitat. In a Star Hero campaign, the characters might spend their whole lives aboard one habitat during interstellar voyages, or could visit a planetary system with thousands of different habitats. Since a given habitat's crewmembers might modify themselves with genetic engineering and cybernetics, Humans from different habitats could be as different as any aliens.

Iain M. Banks's "Culture" series describes a civilization which is at least partly Macro-Life, as much of the populace lives aboard huge sentient starships. The flying cities of James Blish's "Okie" series, and the Ousters of Dan Simmons's "Hyperion" novels, are other examples.

REGIONAL VARIATIONS

On some worlds different continents may have civilizations with different technology levels, making for drastic differences in population. On Earth, for example, Europe and Asia had approximately a quarter-billion people in the year 1500 while the Americas had a tenth as many, because the Eurasians had generally Preindustrial technology while the American civilizations were limited to Stone and Bronze Age techniques. If the planet has such differences, the GM may want to figure the population separately for each continent. For simplicity's sake assume all continents have an equal share of the habitable area.

PLANETARY SURFACE AREA TABLE

Diameter (km)	Surface Area (millions of square kilometers)
1,000	3
2,000	12
3,000	28
4,000	50
5,000	80
6,000	110
7,000	150
8,000	200
9,000	250
10,000	310
11,000	380
12,000	450
13,000	530
14,000	610
15,000	700
16,000	800
17,000	900
18,000	1,000
19,000	1,130
20,000	1,250

USABLE LAND TABLE

Roll (2d6)	Habitable Fraction
0 or less	10 percent
1	20 percent
2	30 percent
3	40 percent
4	50 percent
5	60 percent
6	65 percent
7	70 percent
8	75 percent
9	80 percent
10	85 percent
11	90 percent
12	95 percent

Condition	Modifier
Mass greater than 0.2	-1
Mass greater than 1	-2
Minimal axial tilt (less than 10 degrees)	-1
Hydrographic 60 to 90 percent	-2
Hydrographic 30 to 60 percent	-4
Hydrographic less than 30 percent	-8
No oceans	-10
Cool climate	-1
Cold climate	-2
Colony world	-1

POPULATION DENSITY BY TECHNOLOGY TYPE

Technology	Population Density (people per square kilometer)
Stone Age	1 per square kilometer
Bronze/Iron Age	5 per square kilometer
Preindustrial	10 per square kilometer
Industrial	30 per square kilometer
Atomic Era	50 per square kilometer
Cyberpunk Era	60 per square kilometer
Interstellar	70 per square kilometer
Nanotech/Replicator	Unlimited

EFFECTS OF BIOLOGY

Diet: If the species is carnivorous, divide population density by ten for all levels of technology before nanotech or replicator technology, to reflect the fact that there are more intermediate steps in the food chain between the basic energy source and the population supported. Conversely, creatures which are able to consume energy directly are vastly more efficient. For all technology levels below nanotech or replicators, use the Interstellar era population density if the native life can absorb energy directly.

Size: The size of a species also can affect carrying capacity — divide the species's average size by 100 kilograms, then divide the population by that number. A planet inhabited by large creatures will have a proportionately smaller population, while a world with tiny inhabitants can support more.

Metabolism: Warm-blooded beings require proportionately more food than cold-blooded ones do. Double the carrying capacity at all tech levels for beings with a cold-blooded metabolism.

COLONY SIZE TABLE

Age	Habitable	Marginal	Hostile
New	10,000	5,000	1,000
5 years	15,000	7,000	2,000
10 years	30,000	10,000	2,000
20 years	50,000	17,000	3,000
50 years	220,000	40,000	5,000
100 years	2 million	100,000	7,000
200 years	As natives	2 million	50,000

To allow for some variation, the GM can roll 1d6, multiply the result by 10%, and increase or reduce the colony's size by that percentage.



COLONY PLANETS

To determine if a planet is not natively inhabited, but instead is home to a colony or colonies established by a spacefaring civilization, roll 2 dice and apply the modifiers listed below, then subtract 11. The result is the number of colonies on the planet.

- Lifebearing Planet: +3
- In Green Zone: +1
- Gas Giant: -4
- Spacefaring Civilization on another planet in system: +2
- Valuable Resources: +1

Where more than one colony exists on a planet, the GM must decide if they were planted by different spacefaring civilizations. They don't have to be: consider the fifteen separate British colonies established in North America on Earth. Different colonies may be the same age, or may have been planted at different times (the American colonies were established over more than a century). Multiple colonies are especially likely on lush, lifebearing worlds which are very attractive to settlers, or on mineral-rich marginal or hostile worlds which may experience a "gold rush" to exploit the available resources. Colonies on a planet may cooperate on large-scale projects and eventually form a single society, or they can come into conflict over limited resources and create a balkanized world. See the Colony Size Table to determine population of each colony.

A colony's growth can be very rapid at first due to immigration. Often the limiting factor is not how fast people arrive but how fast room can be made available to them. This is especially important for colonies on worlds which do not have a habitable environment for the colonists.

For colonies the two most important details are age and how habitable the world is. There are three categories for habitability. *Habitable* means the colonists can live on native foods or grow their own crops without any form of life support or environmental modification. Growth can be fairly rapid as there is always room for more settlers. *Marginal* planets have breathable air but require a lot of infrastructure to make a given area productive — irrigation, soil treatment, terracing, or other large-scale effort. Lifebearing worlds are *Marginal* if they have less than 50 percent oceans, a Cool climate, or an average atmospheric pressure below 50 percent of standard (.5 atmospheres). Growth is slower because new areas must be made habitable before they can be settled. *Hostile* worlds require total life support, and all growth requires expansion of the colony's mechanical systems. Any world without oxygen or native life is *Hostile*.

Some planets may be colonized by different species, or a starfaring species may plant colonists on worlds with a native civilization. The GM should calculate the population levels separately as described above, using the native population method for the original inhabitants and the colony level for the newcomers. Of course, a planet which is *Habitable* to one species may be *Marginal* or even *Hostile* to another. A Human colony on an Earthlike world would grow much faster than a settlement of high-temperature silicon beings. The GM should also take into account the possibilities of inter-species conflict; the natives may fight back if they feel threatened or taken advantage of, the way American Indians did against settlers descended from European colonists.

DISASTERS

Planetary disasters can have a negative effect on both population and technology. To determine if the planet has suffered a disaster in the past century and what its effects have been, roll on the Disasters Table.

Any disaster which reduces population by more than 10 percent can also reduce the general technology level as industries and communications centers are destroyed. Add 1d6 times 10 to the percentage population loss from the disaster; if the result is 80 or more, lower the technology by 1 step; if the result is greater than 100, lower it by 2 steps.

Lowering the technology level may in turn reduce the planet's carrying capacity below the post-disaster population level. In that case the planet suffers a second catastrophe in the form of mass famines, reducing the population to what the technology can support. This counts as a second, separate disaster and can cause further technological collapse, reducing the technology even more and possibly resulting in further famines. Thus, a relatively minor disaster can throw a world into a nosedive. Prompt intervention by other planets can make the difference between a "mere" disaster and the collapse of civilization.



PLANETARY DISASTERS

Roll (2d6)	Disaster
2-6	No Disaster
7	Plague (reduce population by 1d6 times 10%)
8	Global Warming (only at Industrial technology or above; reduce habitable area by 10 percent due to rising oceans and spreading deserts, and recompute population accordingly)
9	Global War (only at Industrial technology or above; reduce population by 1d6 times 10 percent)
10	Ice Age (reduce habitable area by 50 percent and recompute population)
11	Asteroid Impact (reduce population by 1d6 times 10 percent)
12	Massive Solar Flares (reduce population and habitable area by 50 percent)

OTHER SCIENCE FICTION CURRENCY

Some Science Fiction authors prefer to name the electronic currency something other than “credit,” since that’s a rather bland term. Some of the terms used include munit (presumably short for “monetary unit”), sol, solari, and star. These currencies function just like credits (or like cash, if that’s more or equally appropriate for the setting).

On the other hand, once a character gets to a specific planet, the law or circumstances may require him to use the local currency (possibly subjecting him to exchange rates and taxes that strip him of some of his hard-earned money). This is particularly true if a character wants to conceal his activities; using hard local coin is a lot less conspicuous than intergalactic credits.

6

ECONOMICS

Two large, businesslike plastic crates on a float pallet riveted Miles’s attention when the Felician officers entered the refinery conference chamber. The crates bore a pleasant resemblance, in size at least, to old sea pirates’ treasure chests. Miles lost himself in a brief fantasy of glittering diadems, gold coins, and ropes of pearls. Alas that such gaudy baubles were treasures no more. Crystallized viral microcircuits, data packs, DNA splices, blank drafts on major planetary agricultural and mining futures; such was the tepid wealth men schemed upon in these degenerate days. Of course, there was still artwork.

—Miles Vorkosigan gets the pay for his mercenary company in *The Warrior’s Apprentice*, by Lois McMaster Bujold

Although accurately described as “the dismal science” in many respects, economics is an important part of a civilization. Basic economic issues can have a serious effect on a Star Hero setting, and a clever GM can use them in adventures in fun and intriguing ways without having to know too much about the real nuts-and-bolts of the subject.

CURRENCY

In many Science Fiction settings, the default unit of currency is the “credit.” Typically credits are an electronic currency, stored solely in computers and on characters’ personal credit-keeping devices (be they cards, sticks, chips, or the like). People don’t actually hold credits in their hands, and governments don’t mint or print them the way less advanced governments do coins and paper money.

The existence of credits raises numerous issues for the GM to consider. One is the possibility of computer robbery. A skilled hacker can get away with tremendous fortunes, whereas the classic “strong-arm thug” may only be able to steal things like jewelry. Another is whether an “underground economy” involving “normal” money exists. Because credits are electronic, the authorities (and even computer hackers, perhaps) can easily trace every use of them — a prospect that alarms not only criminals, but civil libertarians, spies, and paranoid PCs. Cash, on the other hand, can’t really be traced at all, making it the economic medium of choice for many... if there’s a way to spend it.

Of course, there’s no requirement that a specific Star Hero setting use credits, or only credits. Many Science Fiction worlds have more traditional economies, where each species, planet, or even nation issues its own currency. *Star Trek*, for example, features not only the Federation credit, but gold-pressed latinum (in various denominations), the Cardassian *lek*, and dozens of other forms of currency. In such a setting, the PCs may

soon find themselves caught in a maze of monetary confusion while the GM chuckles wickedly. “What do you mean, I can only get 57 *djarbecs* per credit on Halana Prime? I got 72 per credit back on Deneb IV!” Clever merchant characters may find ways to leverage this sort of situation for their own benefit.

BARTER

Last but not least, maybe there is no real form of currency. Some interstellar economies could revert to that oldest form of exchange, barter. This is more likely on the frontier, or the outskirts of civilization, than in the heart of a galactic state, but it could happen just about anywhere given the right circumstances. Rather than having to figure out the best place to sell their cargo of fine Guthalan diamonds based on monetary exchange rates so they can buy weapons, the PCs may have to find someone who’s willing to trade diamonds for weapons directly... a potentially daunting prospect, even in a setting involving computerized record-keeping and FTL communications. But such a situation teems with plot seeds and story hooks.

COMPONENTS OF A PLANETARY ECONOMY

How the people of a given planet make a living is closely related to the planet’s technology. How people live says a lot about what’s important to them and how they react to new situations. For game purposes, a world’s economy can be defined as Gathering, Nomadic, Farming, Manufacturing, Information, or Posteconomic. Different parts of the same planet may have different economies.

GATHERING

Gathering societies live on available resources produced by the environment. Hunting, fishing, and logging are all examples. Gathering is the only form of economic system possible at early Stone Age technology. At more advanced technology levels, gathering becomes less important but never completely disappears. Mineral prospectors, who gather up easily-accessible ore they can trade, are gatherers, even when they’re looking for radioactives on distant worlds or in the asteroid belt. Because few environments produce lots of food or resources for the taking, gathering populations tend to be small and spread-out. This often means large political organizations are hard to maintain, and scientific progress is slow because it’s difficult to share ideas and there are fewer minds to have them.

NOMADIC

Nomadic populations move with the seasons, either following herds of animals or perhaps moving between two areas of crop-growing (on worlds with a long year or extreme seasons). They require at least late Stone Age technology, and usually become obsolete when improved transport appears at the Industrial level. Nomads tend to be quick to fight — they have to be, because their wealth is mobile and thus easy to steal. The best way to protect your herd is to develop a reputation for winning fights and avenging any



insult. This hypersensitivity tends to encourage honesty and honorable behavior. Because they are both warlike and mobile, nomads often conquer other groups on worlds with low technology, so an otherwise placid farming society might be ruled by aggressive nomads. The development of advanced weaponry (bows, siege engines, firearms) enables sedentary societies to fight back against nomadic warriors.

FARMING

Farming economies produce food and resources by manipulating the environment via farming, herding animals, or digging mines. Production is in the hands of individuals or families, and so villages or even single households are largely self-sufficient. Farming requires at least late Stone Age technology, but is likely to persist in specialized forms at any technology level. Farming makes large states possible, and allows people to live together in towns. This often promotes the development of writing and record-keeping. Since farming is tied closely to the cycle of the seasons, farming societies are usually the first to develop astronomy and other sciences.

Farmers are less warlike because it's almost as hard to steal a field of grain as it is to grow it. On the other hand, farming is unforgiving. If you don't do everything right, the crop fails, and you can't try again for a year, so you starve to death. As a result, farming cultures do not value innovation highly; trying something new can be dangerous.

MANUFACTURING

Manufacturing systems produce goods and food in specialized facilities, like factories or big single-crop farms. This specialization only works

if everything is connected by a web of efficient transportation. It becomes widespread after the industrial technology that makes it possible arrives. Specialization and economics of scale mean manufacturing economies are based on large organizations like corporations or collective farms. These organizations can be privately owned, controlled by shareholders, or run by the government. Manufacturing spurs the growth of large cities, which are hotbeds of political change and scientific research.

Urban societies at any tech level have a different set of priorities than farmers or herders, and in a Manufacturing economy the city-dwellers are paramount. Townsmen have to be able to get along with each other, so they can't be too violent, but they aren't as tied to the cycles of nature, either. They value skill and initiative, but aren't interested in codes of honor.

INFORMATION

Information economies are the result when technological change makes skill and knowledge more important than materials or labor. Information economies depend on the rapid flows of enormous amounts of data. They can begin to develop as soon as telegraphs and telephones link distant communities, but are most common once computers are widespread. An Information economy allows people to live anywhere and still remain connected to society. With everyone linked up to form a single "city," technological progress and political change can take place very swiftly. Information economies work best when there is little secrecy, and so tend to encourage free inquiry.

POSTECONOMIC

Posteconomic systems arrive with the development of nanotechnology, automated microfactories, or superscience “replicator” devices. Individuals can basically make whatever they desire, and wealth becomes almost incidental. The only trade is in ideas, creative works, and other unique things that can’t be easily created by technology. The worlds of *Star Trek*’s Federation or Iain M. Banks’s Culture are Posteconomic. Posteconomic societies permit a great deal of decentralization, since individuals are once again almost self-sufficient. The fact that nearly everyone can have any material possessions he wants makes owning things less important.

DISTRIBUTION OF WEALTH

While technology determines how people make a living, it doesn’t control how wealth is distributed. The two main ways to allocate wealth are market and command economies. In a market economy, decisions about resource allocations are made by individuals or private organizations; this can create tremendous inequality but is flexible and adapts rapidly to changing conditions. In a command economy all decisions about allocating wealth are made by some central agency. The results are fair (maybe), but command economies are vulnerable to poor decision-making and corruption, and often do not adapt easily. In times of war or crisis, even market economies function on a command basis, at least temporarily.

Although certain economic systems are characteristic of certain technology levels (manufacturing economies in the Industrial era, posteconomic in the Nanotech age, and so forth), there’s no reason why a society can’t have a more “primitive” economy. A group of colonists on a new world might be equipped with the very latest in superscientific technology, but live by gathering and farming simply because those systems are suited for small, dispersed populations.

When designing a planet, the GM should assume that native societies usually have the most “advanced” type of economy possible for their technological level. Colony worlds generally suit their economic arrangements to their population levels.

“Think of the Landsraad Houses that look to me for a certain amount of leadership — their unofficial spokesman. Think how they’d react if I were responsible for a serious reduction in their income. After all, one’s own profits come first. The Great Convention be damned! You can’t let someone pauperize you!” A harsh smile twisted the Duke’s mouth. “They’d look the other way no matter what was done to me.”

—Duke Leto Atreides explains the economic and political trap posed by Arrakis to his son Paul in Frank Herbert’s *Dune*

PLANETARY TRADE

Since no place produces everything one might want or need, people trade with one another. It seems likely that sentient aliens trade also. Of course, trade depends on transportation — a producer can’t sell his goods if he can’t get them to his customers. At low tech levels, when people can only trade what they or their pack animals can carry, trade consists of fairly compact, high-value items — jewels, gold, furs, spices, wine, cloth, and so forth. Boats and ships make bulk trade possible, but only on short, relatively safe voyages. The risks of long sea voyages mean merchants still concentrate on carrying luxuries. Thus, river barges and coastal schooners carry salt fish and flour, but clipper and galleons carry tea and treasure.

Trading societies at lower tech levels are urban, and usually rely on sea transport (though caravan trade across a desert or steppe is very similar to sea trading). With the coming of industrial-era technology, railroads and highways make bulk transport on land possible, forging the web of specialized industry characteristic of a Manufacturing economy. Aircraft makes a planetary economy even more interconnected, and high-tech transportation such as hovercraft or teleportation booths only extends this trend.

SPACE TRADE

Space transport is seldom cheap, even in the most optimistic fiction. A spaceship is fabulously expensive, and the fuel to boost payloads into orbit is more expensive still. Launch costs of a thousand credits per kilogram or more are often the norm. Given those expenses, space trade is likely to deal in very compact, high-value items in most Star Hero settings. Planets and space habitats must be self-sufficient in bulk goods and the necessities of life. While highly advanced Science Fiction technology, like rapid, easy FTL travel or teleportation devices, can make interstellar trade much easier and cheaper, even then it often remains more difficult than planetary trade.

Space traders are a staple of Science Fiction, but the task is considerably harder than just landing and passing out glass beads to the natives. Any obvious trade routes are probably taken already by merchants who have ongoing relationships with suppliers and markets. They may even use force to discourage competitors, especially if there’s no interstellar navy to keep the peace.

Gamemasters can handle trade either of two ways: by “gaming it out” as a part of the adventure; or by abstracting it to a series of die rolls. (You can also use the detailed Trading rules on HSS 339, but they work best for small-scale, individual transactions.) Trade during an adventure means the merchant characters meet with vendors, see their wares, negotiate prices and other terms, try to avoid being cheated, and have to guess what items are likely to sell for a good price at the next planet. Important skills include Area Knowledge, Trading, and Bureaucratics. Often the cargo can be the hook for an adventure — the shipment is stolen, the crates don’t hold what their labels say

they do, the ancient artifacts are actually aliens in stasis, or the Galactic Mafia wants its goods back. There are certain pitfalls, though: the players may wonder if they can ever just move a cargo from Point A to Point B without getting involved in some nefarious scheme, and the scenes of dickering with shippers and brokers can all start to sound the same.

Abstract trade avoids those problems, but makes the whole process a bit more dry and routine. It also means that when the GM does try to play out getting a cargo, he alerts the players that there is Something Different about this one.

Abstract trade groups items into the basic resource categories, as described on page 122. Each lot is 5 tons (about what can be carried in a single cubic meter of cargo space aboard ship for the heaviest items). Base price for each type of resource is given in the accompanying Cargo Price Table. To determine the purchase price at the origin, apply all modifiers, then roll the trader's *Trading Skill*. On a successful result, the trader gets the desired cargo at base price, -1% for every 2 points by which the roll succeeded. On a failure, increase the price by +1% per point by which the roll failed (sometimes more). Sale price uses the same modifiers, but the result is reversed — subtract the amount by which a roll failed from the final price, and increase the price when the roll succeeds. (Gamemasters may adjust these numbers to create higher or lower profit margins if desired.)

Example: *Trader Vic and Trader Joe are both trying to buy animal products on the planet New Texas. New Texas is rich in animals and has no demand for them, so the base price is 10% less than 1,000 credits, or 900 credits per ton. Trader Vic makes his roll exactly, so he gets a load of 5 tons of neobeef for 4,500 credits. Trader Joe's skill is 11- and he rolls a 14, so he fails by 3. Joe pays 3% above the cost of the neobeef, or 4,635 credits. The traders go their separate ways.*

Trader Vic hauls his neobeef to the asteroid Baikonur. Since that's a lifeless world and poor in animal products, neobeef's in demand there, so the going rate is 1,000 plus 10%, or 1,100 credits. Vic makes his roll by 2 and sells his 5 tons of neobeef for 5,555 credits (base of 5,500, +1%), pocketing the 1,055 credit profit. Trader Joe makes the mistake of taking his neobeef to the planet Carthage, another lifebearing world. It is neither rich nor poor in neobeef, so there is no modifier to the price. Joe makes his roll exactly, so he sells it at 1,000 credits per ton, leaving a profit of only 365 credits. While he mopes in the spaceport bar, he's approached by some shady characters offering a lot of money if he can get them off-planet without attracting official attention....

Note that all these profits are before expenses. Traders will soon discover that moving low-value items like metals or plants is a quick way to bankruptcy unless spaceships are very cheap to run.

CARGO PRICE TABLE

The Cargo Price Table presents suggested “average” prices for a “typical” Star Hero campaign. Specific settings may vary from this, sometimes extremely. Gamemasters should decide whether this table applies to their campaigns as-is, or if they need to create a setting-specific version.

Resource Type	Price Per Ton	Demand
Animals	1,000 credits (cr)	
Crafts	1,000 cr	
Heavy Metals	100,000 cr	Atomic or better technology
Manufactures	10,000 cr	Lower tech than source of items
Metals	100 cr	Ice or Rock-Ice world
Nonmetals	500 cr	
Organics	1,000 cr	Industrial or better technology
Plants	100 cr	
Specialties	10,000 cr	
Volatiles	100 cr	Vacuum or no oceans

MODIFIERS

- Subtract 10% from the price if the planet is rich in that resource.
- Add 10% if it is poor in the resource, and another 10% if the planet has a demand for the resource. All planets are considered poor in Specialties from other worlds.

SPACEPORTS

Worlds with spacefaring or interstellar technology are likely to have some facilities available for visiting starships, and these tend to be important parts of the economy. They vary widely, from the cleared shuttle landing field of a new colony to vast orbital spacedocks. To get an idea of the facilities likely at a given planet, consult the Ship Facilities Table on page 168.

None indicates the planet has no provision for visiting spacecraft at all. Either the inhabitants don't want contact with space travelers, or they haven't been able to construct anything yet. There may be places flat enough to land a shuttle, but any repairs must be done with onboard equipment. The planet has little or no orbital traffic control, and the inhabitants may have no way of detecting ships in orbit at all. Space voyagers may have trouble getting down to the surface if their ship isn't suited for atmospheric flight. Planets with no facilities are also unlikely to have any defenses against attacks from space.

Minimal facilities are about the equivalent of a large starship's own onboard maintenance and repair shops. Worlds with minimal services probably have one paved “spaceport” on the surface, but no orbital station or spacedock. Worlds with minimal facilities may be able to repair shuttles or small craft, but it takes some time and the results probably won't meet first-class standards. Minimal facilities do usually include some form of sensors to detect approaching space vessels, so ships can't enter orbit without somebody noticing.





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Average facilities are the level spaceship captains expect at most civilized starfaring worlds — an orbiting space station, maintenance and repair available for shuttles and small starships, and replicators or stores of most standard components. Fuel for normal engines is available, and major systems are likely to have supplies to maintain and refuel FTL drives. Worlds with average facilities are almost certain to have some form of space defense, even if it's only a few fighter craft or perhaps some surface-to-orbit missiles.

Good facilities are the equivalent of a starbase or a major port. They have orbital docking platforms and possibly a spacedock for large ships, and can repair almost any ship. All replacement parts are easily available, and there are stocks of every kind of fuel. Worlds with Good facilities can probably build their own starships, though they may not

have shipyards currently operating. Good facilities typically have long-range sensors capable of tracking ships at a distance of several light-years.

Extensive facilities are the best possible — multiple spacedocks, orbital shipyards, shuttle service, and probably large industries capable of manufacturing anything. Systems with extensive facilities can build top-of-the-line starships, and can repair any ship no matter how badly damaged. Extensive facilities are not common; their presence usually indicates a strategically and/or economically important system. Defenses are likely to be strong, often including both armed spacecraft and huge weapon installations.

All starship facilities are potential targets for spies and saboteurs, and can also be the subject of economic rivalries. Nations on a planet may compete at building spaceports to draw interstellar trade, and neighboring systems can do the same. Of course, space facilities are often home to exiles, wanderers, and seedy characters unwelcome on any planet for long. They sometimes exist apart from a system's ordinary legal jurisdictions, and clever crooks can make use of that to escape prosecution. They also tend to be hubs of mercantile activity, with all sorts of ancillary shops, businesses, and services catering to space travelers and the starship trades.

SHIP FACILITIES TABLE

Roll 1d6 and index with population. Apply a +1 modifier for worlds located on major trade routes, -1 for pre-starfaring planets.

Roll 1d6	Population			
	1000 or less	1001-1 Million	1 Million-1 Billion	Over 1 Billion
1	None	None	Minimal	Average
2	None	Minimal	Average	Average
3	None	Minimal	Average	Good
4	None	Average	Good	Good
5	Minimal	Average	Good	Extensive
6	Minimal	Good	Extensive	Extensive

GOVERNMENT

Turmoil has engulfed the Galactic Republic. The taxation of trade routes to outlying star systems is in dispute.

Hoping to resolve the matter with a blockade of deadly battleships, the greedy Trade Federation has stopped all shipping to the small planet of Naboo.

While the congress of the Republic endlessly debates this alarming chain of events, the Supreme Chancellor has secretly dispatched two Jedi Knights, the guardians of peace and justice in the galaxy, to settle the conflict....

—the interplay of galactic politics sets the stage for adventure in *Star Wars Episode I: The Phantom Menace*

Any group of beings larger than a single family needs some form of government. There's no good correlation between a civilization's advancement in science and technology and its government. Some brutal tyrannies have existed in very high-tech settings, while Stone Age tribes can develop highly enlightened forms of government. Technology does limit the size of the area a given state can control — a single tribe or valley at Stone Age technology, a region up to a thousand kilometers across at Bronze Age (larger if water transport is available), entire continents by the Iron Age, and Industrial-era technology permits a single state to rule a world.

THE TWO REAL, ONE FICTIONAL RULE

One way that Science Fiction creators convey information about their fictional future societies and histories to readers/viewers is by comparing things and people characters encounter to things and people from Human civilization that the reader/viewer is already familiar with. For example, if the characters are contemplating the effects of a dictatorship, they might say something such as, "Dictators like Julius Caesar, Adolf Hitler, or Chang Hsien always attempt to rein in technological progress as a way of preserving their own power." The fictional dictator — Chang Hsien — is given legitimacy and definition by mentioning him in the same breath as two historical figures the reader/viewer already knows about. Typically two real-world things or people are mentioned for each fictional one, to make sure the reader/viewer gets the point.

Unlike many writing/filming techniques, this one works perfectly for Science Fiction gaming. The GM can employ the Two Real, One Fictional rule liberally to illustrate aspects of his setting without having to infodump (see page 298) on his players.

The Basics Of Government

Government forms can be described by who makes the decisions, how those people are chosen, and what decisions they're permitted to make (*i.e.*, what the government can do).

WHO RULES

To decide how a society is governed, first consider who rules it. The rulers can be a single individual, a small group (1-10 members), a medium group (10-100), a large group (100-1000), a subclass (1000-10,000), or a ruling class (a significant proportion of the entire population).

INDIVIDUAL RULE

Rule by one person is an extremely common form of government; at times it appears that Humans have an instinctive need for a "pack leader" to follow, and many alien species may have the same instinct. (For RPG purposes, a single person who embodies "the government" is useful because it keeps the GM and players from getting bogged down remembering who's who in the administration.)

Individuals ruling by force are dictators or emperors. They seldom leave office alive, and when they die it's usually by violence. In any society larger than a few thousand people, the dictator must have a band of warriors or an army to support his rule, and in advanced societies the dictator supplements his soldiery with police, spies, and informers.

Single rulers who reign by virtue of heredity are called monarchs. Depending on the state they rule, monarchs can also be called chiefs, barons, princes, kings, or emperors. They often bolster their claim to power by appeals to religious authority. In large states monarchs have to rule through a bureaucracy of appointed officials, an elected parliament, or a feudal structure of hereditary nobles.

A single ruler who's chosen by merit, appointment, or election may be known as a chancellor, president, premier, or governor. In all four cases the problem is that the qualities that allow someone to gain the position are not necessarily the best ones for a ruler. In states that choose leaders by election, there may be limits on who's permitted to vote. Age is a common criterion, but societies may also use sex, race, occupation, wealth, or religion to choose who may or may not have a say in electing the leader.

SMALL GROUPS

A small group holding power by force is often called a junta. Usually one member of the junta is dominant, but not so powerful he can overcome the others if they combine against him. Each member of a junta has his own military forces, and may even fight wars with the others.

A small to medium group that inherits the right to rule is sometimes called an oligarchy or an aristocracy. One member of the ruling group may hold the title of “king” but cannot rule without the support of the others. A group of monarchs joined together in a confederation would function as an oligarchy.

Small groups of elected rulers may be known as a council or senate, but could have various other titles. While elected rulers usually are considerate of the wishes of the majority of voters, they can still be harsh or oppressive to minorities or those without the vote. How long the elected officials serve also affects how they behave in office. Rulers elected for life don't have to be as responsive to the will of the people as those who have to get re-elected every few years. Of course, responsiveness isn't always a good thing — sometimes the will of the people is wrong.

LARGE GROUPS

A medium to large group governing by force could be a conquering army or the officers of a military government. Such situations are rare because it's hard for a large group of conquerors to work together. Either a junta or dictator emerges, or the whole society collapses into anarchy. If a group of conquerors can hold on for a generation, the society becomes a feudal one.

When a large group or class holds power by heredity the government is called a feudal system. While there may be a king at the top of the structure, the real power lies with the local barons. In their early stages, feudal governments may be little better than anarchies, but over time custom and tradition can act as a check on what individual nobles can get away with. Governments with at least some feudal aspects are popular in Science Fiction, since the spread-out nature of galactic society often mimics that of medieval Europe on Earth.

An extremely large hereditary group of rulers may be called a ruling caste. Often they must choose the actual decision-makers by voting or other means, since the group itself is too large to perform the day-to-day business of governing.

Large elected governments may be called legislatures, congresses, or assemblies. Often a large legislature cannot decide on every specific issue and delegates power to subcommittees. Elected legislatures almost always involve some form of political parties or factions, as members with common opinions band together. In corrupt systems, the ruling party may rig elections or bribe voters to remain in power.

HOW THE RULER IS CHOSEN

The way the rulers are selected can vary tremendously. The most common methods on Earth have been force, heredity, appointment, merit, or election. Other possibilities include no government (anarchy), total participation, random selection, omens or oracles, computerized government, and purchase.

APPOINTMENT

In any government which rules by appointment, the big question is: who does the appointing? A state which has been conquered by another state, or which is a colony, may have an appointed government. But a state might simply permit officials to choose their own replacements, or have one branch of government appoint the members of another branch (as the United States Supreme Court's members are appointed by the President). In a one-party state, candidates for the legislature or presidency might be hand-picked to run in sham elections by the party leaders. The chief problem with any appointed government is that the interests of those appointing the rulers may not coincide with what is best for the people.

MERIT

Merit-based governments vary depending on how the society defines merit. It may be competence at one's job (bureaucracy), religious faith (theocracy), scientific knowledge (technocracy), wealth (plutocracy), psionic power (psychocracy), or sheer age (gerontocracy). There could be rituals, physical ordeals, riddling contests, or gladiatorial battles to select the rulers — the possibilities are practically endless. Rulers chosen by merit may be highly effective, so long as the system for determining merit is sufficiently accurate and honest. All large organizations have some aspects of merit-based selection.

Merit-based systems are prone to two major flaws. The first is that the definition of merit may not have much to do with ability to rule. A theocratic government could well be staffed by the most pious and devout members of the priesthood, but that doesn't mean they're any good at making economic or military decisions. The second problem is that since the rulers are members of an elite (however society defines that elite), it's hard for them to consider the rights and wishes of the rest of the people when making decisions.

OTHER SYSTEMS

Besides the methods described, there are a variety of “Other” government types possible. Some states have literally no government at all — this can be either a bloody war of all against all, or an enlightened civilization determined to live and let live. Small groups or highly advanced cultures may be governed by volunteers, or by the entire population linked up in a real-time decision-making network. Races with psionic abilities or brain implants might form a single mass mind.



Some other methods of choosing rulers include random selection — drafting people to govern whether they want to or not (as juries are chosen in the United States; see R. A. Lafferty’s short story “Polity And Customs Of The Camiroi” for an interesting Science Fiction take on a society that functions this way). Oracles or omens might be used in religious societies to choose those who should rule. Technological civilizations might simply delegate the job of governing to artificial-intelligence computer systems.

WHAT THE RULER CAN DO

What the government can do is determined by the culture in general. A very open, freedom-loving culture is unlikely to put up with tyranny, but a highly disciplined society may submit to a regime which promises order. It’s possible to have a repressive government in a freedom-loving society, but there are likely to be rebels working to overthrow the tyranny.

Usually the limits on state power are related to how the rulers are chosen — a government that has to worry about re-election is more likely to respect the rights of voters — but there’s considerable room for variation. Often a government’s power is checked by the existence of powerful groups or institutions outside of government, like religions, business interests, labor organizations, or the news media. Repressive states must concentrate all power in the hands of the rulers to eliminate possible rivals.

Governments exist in layers. There is the planetary government, regional or national states, provincial administrations, and finally the local city, county or tribal structure. Worlds without a unified planetary government (“balkanized” worlds) have nothing above the national level, and may have regions where provinces or even city-states are the largest units. Each layer has different responsibilities, and may have an entirely different structure. A planet with an absolute dictator in charge of planetary affairs could have elected councils at the regional and provincial levels, and conduct local affairs by town meetings. It’s also quite possible for different parts of a world to use different systems at the same level of government.

Of course, there may be a tremendous difference between the official system of government a world (or a nation) has and the regime actually in place. Most of the surviving monarchies on Earth today are actually republics with a hereditary figurehead. Many nations during the Cold War called themselves “Democratic Republics” or something similar even though they were repressive oligarchies.

Last but not least, GMs should consider the often unusual nature of societies and cultures in Science Fiction stories. Aliens may have a very different perspective on what powers a government should (or should not) have than Humans do. An alien government might, for example, have extensive power to regulate and control citizens’ entertainment and leisure, but almost no military authority. A truly bizarre (from a Human viewpoint) government such as that could make for an interesting Star Hero adventure.

Interstellar Governments

Out toward the rim of the galaxy hangs Alastor Cluster, a whorl of thirty thousand live stars in an irregular volume twenty to thirty light-years in diameter. ... Scattered about the cluster are three thousand inhabited planets with a human population of approximately five trillion persons. The worlds are diverse, the populations equally so; nevertheless they share a common language and all submit to the authority of the Connatic at Lusz, on the world Numenes. The current Connatic is Oman Ursht, sixteenth in the Idite succession[.]

—the Alastor Cluster is ruled by a benign emperor in *Trullion: Alastor 2262*, by Jack Vance

Some worlds are members or possessions of large interstellar states comprising multiple planets or star systems. There are a number of ways planets can organize into an interstellar state.

A *league* or *alliance* is a voluntary collection of planets, each of which remains entirely sovereign and is not subject to any interference by its partners. Planets in a league often have something in common — they may all be colonies of the same civilization, they may have economic ties, they may simply have a common enemy. An economic league may result when a few worlds are rich in a certain resource and want to prevent competition. Worlds in a league may cooperate on military matters but be bitter economic rivals;

alternately they may permit a little “gentlemanly” warfare among members but hold the line on keeping up fuel prices.

A *confederation* or *federation* is somewhat more unified, and involves more control over the members by a central governing body; *Star Trek*’s United Federation of Planets is a good example. Federations are almost always voluntary, although they may have rules preventing members from breaking away just because they don’t agree with certain policies.

A *union of worlds* is tighter still, shifting most of the powers and responsibilities of government away from the individual planets to a central administration. This means the union can efficiently mobilize all of its resources to cope with threats or solve problems. On the other hand, it also means mistakes by the central government affect the entire union.

Leagues, confederations, and unions are all voluntary associations of worlds. But unfortunately there are many interstellar states which don’t much care if their member worlds want to join or not. The usual term for such states is an *empire* (or *hegemony*, where one nation dominates many others), although they may refer to themselves by a more friendly-sounding term. Empires vary in how tightly they control their subject systems. Some run everything from the capital world; this has the same advantages and problems as a voluntary union. Other empires are more decentralized or feudalistic, with powerful system or planetary governors able to set policies for their own districts. The trouble with those arrangements is that governors sometimes rebel. Permissive empires give their subject worlds a lot of autonomy on internal matters, while others try to impose uniformity.

An empire doesn’t have to have a tyrannical or monarchic government. Republics can conquer subject worlds as easily as dictatorships can. In Earth history, extensive empires were conquered by the Republics of Rome, Venice, Athens, and France, to name a few. Often the imperial power is motivated by altruism as much as greed or aggression — “we’re not conquering them, we’re bringing civilization.”

Agencies

Regardless of what a given ruler can and cannot do, most governments have certain broad powers — they enforce the law, protect the citizens from threats within and without, regulate the economy, and so forth. To accomplish this, they typically have agencies, departments, institutes, and other such “sub-organizations,” each with power over a specific subject or sphere of authority. These organizations may or may not work together well; in some regimes, each organization is a virtual power unto itself, pursuing its own agenda at the expense of the others.

MILITARY

“We’ll move in strengthened by two legions of Sardaukar disguised in Harkonnen livery.”

“Sardaukar!” Feyd-Rautha breathed. His mind focused on the dread Imperial troops, the killers without mercy, the soldier-fanatics of the Padishah Emperor.

—the Harkonnens consider the power of the Imperial military machine in *Dune*, by Frank Herbert

The one thing which just about any government needs is an army. If a state can’t defend its sovereignty against invaders, then it isn’t a state at all. Peace-loving societies with no enemies might get by without military forces, but such idyllic situations are rare, and often come to grief when an enemy finally does appear. Military forces in Science Fiction settings can be broadly lumped into two categories: planetary and space.

PLANETARY MILITARIES

Planetary forces are the military units familiar to contemporary readers — armies, navies, air forces, and so on. They fight on a planet’s surface or in its atmosphere. The exact nature of the forces depends on the civilization’s technology level, although high-tech armies in novels tend to have battlesuited troopers and hovercraft tanks, while in anime films they emphasize giant mecha.

How a government organizes its planetary forces depends a lot on accidents of history, the planet’s environment, and the nature of the main threats faced by the society. Environment determines the mix of land and sea forces — a world with lots of oceans needs more navy units. Threats to the planet determine what those units will be.

If the enemy is a large organized force, then the government needs large organized forces to meet them in battle. If the enemy is guerrilla units or rebels, then a light, highly mobile military is the order of the day. A society whose main enemy is substantially more powerful than it might have a guerrilla-style army designed to hamper and resist an enemy it can't face directly.

Finally, much of a world's military organization depends on accidents of history. Armed forces on Earth tend to be very tradition-bound organizations, which means "because we've always done it that way" is a fundamental principle. For example, the Prussian navy at the time of German unification was commanded by an Army general, simply because Prussia at the time was a land power.

SPACE MILITARIES

Space forces are the planet's military that can fight and operate in space. They're often divided by into planetary-defense (orbital and suborbital craft and surface-to-space weapons), system-defense (interplanetary craft), and interstellar units (starships). The exact balance depends on the planet's position in interstellar affairs — an isolationist world has heavy planetary-defense forces and little else, while a planet with lots of merchant shipping and off-world colonies to protect emphasizes interstellar forces. Often planetary and system defense are a separate service or branch from the interstellar forces; a planet with a powerful star fleet might lump everything else together with surface units as "garrison troops." A powerful space fleet can have its own marines, orbital-attack vessels, atmospheric fighter craft, and the like.

THE MILITARY'S SIZE

You can calculate the size of military forces from a planet's population with some precision. Most societies on Earth have supported about 1 soldier per 100 citizens. The ratio is sometimes lower, either in states with no need for defense or states with inefficient governments, and can be as high as 5 soldiers per 100 people in states on a full war footing. However, anything above 1 percent is hard to sustain over the long term. Some aggressive states get around this by pillaging conquered territories — essentially making their enemies support their armies. This allows them to field very large armed forces as long as they have enemies to prey upon. Once the pace of expansion slows, the financial strain catches up.

In Star Hero adventures, even a small military force is probably more than any group of PCs can handle. The armed forces are the GM's big stick — when they show up, the heroes should know the situation is beyond them. If the PCs are in the military, they probably should be some sort of highly-trained elite force accustomed to operating alone and without supervision — commandos, rangers, or special forces.

ESPIONAGE

"But do you think I would risk the life of my most skillful agent on a useless mission? ... My dear Friday, you are too modest. A large number of people and a huge amount of money have gone into trying to keep you from completing your mission, including a last-ditch attempt at our former [headquarters]. You may assume, as least hypothesis, that the bombing of the Hilton had as its sole purpose killing you."

—Boss compliments Friday on the success of her espionage mission in *Friday*, by Robert Heinlein

Just about every state in history has had some form of intelligence-gathering agency. In early societies, this usually consisted of some scouts traveling ahead of the army to locate enemy positions. Rulers and commanders had small personal staffs of spies to gather information on enemy troop movements or the plots of political opponents.

With the development of large nation-states, espionage became professional and bureaucratic. Every country had its intelligence agency, and spying became standard practice even in peacetime. Counter-espionage operations to thwart enemy intelligence-gathering became as important as spying. As wars became potentially more devastating, covert operations and infiltration turned into an alternative to military action.

Spy agencies typically have three functions. Often these jobs are handled by different sections, or by entirely different agencies. The first, obviously, is intelligence-gathering. The great majority of this is done perfectly openly, by analysts reading news reports, foreign technical journals, trade reports, and industrial statistics. They build up a picture of enemy capabilities based on publicly-available information. Other analysts focus on intercepted communications, working with a huge staff of code-breakers and computers to find out what the enemy is saying. Orbital and aerial reconnaissance uses pictures and video, often taken through large space telescopes.

When those methods fail, intelligence agencies fall back on "Human intelligence" — talking to people, bribing or persuading enemy officials to pass on information, and sometimes inserting agents to have a look at sensitive sites. Human intelligence is the most romantic and dangerous part of spying.

The second function of an intelligence agency is counterespionage. Agents seek out foreign spies and operatives in the country, especially enemy moles who've penetrated the counterespionage agency itself. Counterspies tend to be very paranoid, but that doesn't mean they're wrong. Detecting enemy spies involves much of the same work as intelligence-gathering — analyzing patterns of information, intercepting communications, and directly surveilling suspects.



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The third function is “covert operations,” a general term for anything a government wants to do that it doesn’t want to publicly admit doing. This includes activities like supplying one side in a conflict despite being officially neutral, starting a conflict in a hostile state, spreading money to influence an election in another state, helping foreign military officers stage a coup, assassinating individuals who pose a threat, and generally sneaking around doing unpleasant stuff.

Covert operations overlaps extensively with military action, so spies sometimes wind up working with commandos or special forces. This is by far the most exciting and glamorous part of espionage work, but it’s also the most dangerous and the least common. If a covert operative is caught, that can be a major embarrassment to the agent’s government. Often covert ops are handled and financed through a series of dummy corporations or friendly third-party governments. This sort of “deniability” sometimes means overambitious agents (or those seeking personal gain) can turn an operation from its original purpose to their own goals. This may require another covert operation as Headquarters seeks to secretly wipe out its rogue agent!

In tyrannical states, spy agencies take on a fourth mission: seeking out and suppressing internal dissent. They may infiltrate dissident groups (or even organize their own groups to ensnare anyone opposed to the regime). They arrest or assassinate opposition leaders, and constantly hunt for rebels and traitors. Sometimes internal security agencies can have very extensive military forces of their own — in Stalin’s Soviet Union, the NKVD security troops were practically an entire second army dedicated to making sure the Red Army didn’t turn on its masters. Science Fiction offers plenty of its own examples. In *Star Trek*, the Romulan *Tal Shiar* and Cardassian *Obsidian Order* are both highly-feared intelligence agencies that suppress internal dissent; and in Frank Herbert’s *Dune* universe, spies, informers, and secret security personnel are everywhere. Eric Frank Russell’s marvelous novel *Wasp* chronicles the adventures of a Human spy and saboteur dropped on an alien planet to disrupt its entire society by himself!

In a Star Hero game, espionage of any sort is great for roleplaying adventures. In Space Opera settings, espionage follows the James Bond mode, with small teams of daring operatives working on their own to thwart enemy plots, infiltrate the Galactic Tyrant’s headquarters, and disarm the Doomsday Device before it goes off. Hard Science Fiction tends to be more like modern-day spying, relying heavily on “technical intelligence” from satellites and radio intercepts. Cyberpunk focuses on the nitty-gritty of computer espionage, although the spy agencies may work for corporations instead of governments. Adding psionics to the mix only livens things up, as psi-agents try to get close enough to read a rival leader’s mind while the enemy’s psi-cops attempt to stop them.

One thing to keep in mind when running espionage adventures is that some tropes of the spy-story genre don't always work as well in an Science Fiction setting. How can a secret agent, no matter how suave and daring, go undercover in a society of non-Human aliens? What if they don't even breathe oxygen? On the opposite end, the massive amounts of information that even near-future realistic satellite snooping and communications eavesdropping can gather is colossal. The answer you want may be in there, buried in a mountain of extraneous data.

LAW AND JUSTICE

"Our reports of the laws of Camiroi seem to be a mixture of travelers' tales and nonsense," I said. "We want to find how a Camiroi law is made and how it works."

"So, make one, citizens, and see how it works," said Sideki. "You are now citizens like any other citizens, and any three of you can band together and make a law." ...

[The scientists from Earth pass a law to regulate "random and hasty citizen's groups"]

"But what if some citizens' group passes a silly law?" our Miss Holly asked.

"They do it often. One of them has just done so. But it will be repealed quickly enough."

—a group of sociologists from Earth visits Camiroi to study it, becomes citizens, and creates a law in "Polity And Customs Of The Camiroi," by R. A. Lafferty

If military and espionage forces are a civilization's protection against outside threats, the legal and justice system preserve order internally. Systems of law tend to be extremely conservative and tradition-based, since continuity and consistency are a primary goal of any legal system. Laws are designed to prevent things the society doesn't like, protect things it does, and resolve disputes between individuals.

Exactly what things a society bans and what it permits vary tremendously. A culture where duels are an acceptable way to resolve disputes might not consider some forms of murder a crime, while a society of empaths could make it a crime merely to dislike someone! Gamemasters can create some odd laws — all spoken communication must be sung, nudity is mandatory at public functions, no drinking or eating allowed between the fifth and sixth hours — as a way of adding color to an adventure. As a rule, however, societies make laws to protect their members from violence, preserve property, and protect the operations of government from interference — not just to be "weird."

Laws don't work without some way to enforce them. On Earth, this is accomplished by police agencies, but many cultures still have a tradition of law enforcement by the entire community... and a hive-mind species may require little or no actual law enforcement. The limits on what law enforcement operatives can do depend on the general tone of the society and on the level of crime — a society that values order above freedom grants police broad powers, while those that value individual rights carefully restrict the police. If crime is seen as "out of control" and the citizens feel threatened, they will likely prefer tough, aggressive policing.

You can use the accompanying Legal System and Legal Strictness tables to randomly determine the nature of law and law enforcement on a given planet, or among a particular species. The tables are fairly simple; once you use them to establish a basic legal framework, flesh it out with a few details and quirks.

LEGAL SYSTEM TABLE

Roll (1d6)	Legal Structure
1	Cases Judged by Oracles or Ordeals
2	Judges Decide Each Case
3-4	Judgements Based on Tradition
5-6	Written Laws/Jury Trials
7+	Algorithmic Laws (cases decided by application of rigid, "scientific," formulae)

Modifier: +1 for Preindustrial or later societies (or +2 for Cyberpunk era)

LEGAL STRICTNESS

Roll (2d6)	Strictness
0-2	Permissive (only violent crimes illegal, police tightly restricted)
3-4	Loose (only violent and property crimes illegal, police regulated)
5-7	Moderate (laws protect citizens from harm or loss, police regulated)
8	Regulated (laws govern most aspects of life, police regulated)
9	Strict (intrusive laws, police well-regulated)
10	Harsh (total control, broad police powers, harsh punishments)
11-13	Repressive (arbitrary arrest, severe punishment without trial)

Modifiers: -2 for elected governments; +1 for governments by force



CRIME

In addition to the list of crimes familiar to modern-day gamers, Star Hero campaigns offer the opportunity to thwart (or commit) a whole new range of offenses. In just the past couple of decades computer crime has moved from the pages of Cyberpunk novels to the courtrooms of America. Other emerging or fictional technologies will have their own criminal applications.

Aggravated Murder: Killing a person's physical body and destroying any backup memory records may be considered even worse than first degree murder, and thus merit even worse punishment.

Biotechnology: There are many criminal applications of advanced biotechnology. Stealing organs for transplant ("organlegging") is a possibility (one explored at length in several Larry Niven short stories); so is the creation of new addictive drugs. Already some nations on Earth restrict access to forests and jungles to control the valuable genetic material of native species; gene smuggling could become a big criminal business. If life is discovered on other worlds, smuggling species from planet to planet would certainly be a crime in some instances.

Bodyjacking: Illegal use of a body belonging to someone else may be possible in some Science Fiction settings, either via psionic powers or neurotechnology.

Cybernetics: Cybernetic implants allow crooks to hide tools and weapons in their mechanical limbs. If the weapon is built into a suspect, how do you

disarm him? Crooks might also do a big business in stolen cyberware, and a character with especially valuable equipment might get jumped by "junkmen" in some dark alley.

Genetic Engineering: Humans are already worrying about the possibility of terrorist states creating new diseases by genetic modification; more advanced techniques might make it possible to "target" a germ against people with specific traits — maybe even creating "personalized" diseases to afflict only one person. Unethical scientists could misuse cloning by taking peoples' DNA against their will (genetic piracy), creating illegal copies of celebrities, or establishing "clone farms" to keep live copies of aging tycoons as a source of transplant organs. If governments ban genetic modification of Humans, then "black labs" could offer illegal engineering — and the potential for blackmail.

Nanotechnology: Nanotech devices in the hands of criminals or terrorists could be very dangerous. The least subtle would be a "gray goo" weapon capable of devastating large areas by converting all the matter it encounters to more nanobots. Nanotech spy devices could gather valuable or dangerous information without being detected. Most insidiously, medical-type nanobots could subtly attack victims by damaging parts of the brain — the victim wouldn't die, just lose his memories and skills. Medical nanobots also make possible the ultimate in impersonation, duplicating a person right down to his finger and retina prints.

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Negligent Insentiation: Creation of an intelligent being without proper authorization or safeguards might be a crime in some settings. In others, the creation of an intelligent beings would only constitute a crime if done deliberately.

Robotics: Intelligent or nearly-intelligent robots can create all kinds of headaches for law enforcement. If a robot is programmed to kill a man, who is the murderer — the machine or the programmer? Is it murder to kill a robot? What if it has a backup chip?

Space Travel: Travel to other worlds allows Humans to commit crimes in new places, but it also creates some entirely new offenses. Space piracy and smuggling (both of goods and of persons) are standards of Pulp Science Fiction and Space Opera stories. For piracy to thrive, the technology must exist to allow a pirate ship to catch and capture its prey. That means either extremely efficient rockets or some kind of rubber-science “space drive.” Second, pirates have to be able to sell what they steal, which means either a neutral planet willing to ignore their offenses, or a well-organized system of black markets and fences. Finally, piracy requires a lack of law enforcement, or a way for the pirates to evade the police. An efficient space navy can blast the pirates out of the sky, land star marines on their bases, and generally ruin the party.

Teleportation: Teleportation, whether psionic or mechanical, is a thief’s dream come true. Locked doors and alarms can’t stop a teleporter, and how can he be traced? Devices like *Star Trek’s* transporters, which allow the user to snatch objects at a distance, only make it easier to steal things. A society with teleportation must either have some way to block it (a subject dealt with in Alfred Bester’s novel *The Stars My Destination*), or draconian police powers to control its use.

Theofraud: Use of technological or psionic methods to impersonate a divine being. The ultimate “con game,” theofraud presents all sorts of interesting possibilities for roleplaying stories addressing the question of “what is faith?”

Thoughtcrime: As described in Chapter Ten, psi powers create all kinds of opportunities for lawbreaking. Telepaths can spy on people’s thoughts, mind-control their victims (“brain slavery”), and erase all memory of their crimes. Memory theft could augment ordinary identity theft. Telekinetics make ideal thieves and killers. Even ESP could be used for evil, either for spying or to case the scene of a robbery.

Time Travel: Time travel creates the opportunity for several new crimes, including illegal time-tampering, kidnapping people from the past (is it a crime to kidnap someone who’s been legally dead for a century?), manipulating the stock market or gambling games using future information, and murdering someone by preventing his parents from ever meeting (chronocide).

Of course, as crime advances, so does crime prevention and detection. Human police already have access to advanced techniques involving the analysis of DNA trace evidence; in the future, technology might allow them to obtain and analyze the most microscopic bits of DNA. Psychometry (psionically reading the “emotions” and events associated with an object) and retrocognition (viewing the past) could make committing a crime virtually impossible — or clairvoyants might have the ability to predict a crime in advance, allowing them to arrest the criminal before he commits his crime (as shown in Philip K. Dick’s short story “The Minority Report,” the basis for the movie of the same name).

LANGUAGE

Language is one of the key elements of a civilization. In particular, the individuals and subgroups that make up the civilization must be able to communicate with each other. Most civilizations have a single language, or at least a common secondary language known to most educated people. In Classical civilization, Latin and Greek were the unifying languages; in Medieval and Renaissance Europe, Latin and French did the job. Since the Industrial Revolution, English has increasingly become the single unifying language for modern Western and global civilization.

Alien languages depend heavily on how the organisms communicate and sense their environment. Humans use sound and visual signals, and we have developed spoken and written language. Others are possible: a tactile language (like Braille), a language based on scents or tastes (an important part of the way many animals on Earth communicate), or a language using color changes or light flashes (like the signals of squid or fireflies). Psionic aliens might have a partially or wholly telepathic or empathic language, while beings with electric field sense might use that to communicate in a kind of living radio.

Aliens who communicate in ways Humans can’t perceive make for interesting situations in a Science Fiction adventure. How do you say “We come in peace” when the locals use color changes and scent to communicate? The *Universal Translator* Talent can’t help if a character doesn’t have the right organs to talk with the natives.

The population of the Titanic littoral is highly individualistic, possibly in response to a bountiful environment which puts no premium on group activity. The language, reflecting this trait, expersses the individual’s mood, his emotional attitude toward a given situation. Factual information is regarded as a secondary concomitant. Moreover, the language is sung[.] ... As a result, there is great difficulty in ascertaining fact from a native of Fan, or the forbidden city Zundar.

—an excerpt on Sirenese communication from the *Journal Of Universal Anthropology*, as quoted in “The Moon Moth,” by Jack Vance

For any kind of complex civilization, some form of permanent language is needed. Humans write things, so they and others can read them later. As of the twentieth century, they can also record sound and video. The alien equivalent of writing should be low-tech, and suitable for the environment. Possibilities include tying patterns of knots in cords, notching bones or sticks in a pattern representing words, punching holes in hides, and so forth. However it's done, it should be relatively easy (nobody takes notes by chiseling words in stone), relatively permanent, and relatively portable.

Of course, most GMs aren't dedicated and obsessive enough to create an entire alien language for a campaign. Nor are most players willing to learn one. So in a game, an alien language usually comes down to names for things and places. There are three main factors to keep in mind when inventing alien words and names. Sound is the first thing to consider. This is fiction, so you can choose your alien words and names for the way they sound. Look at some of J.R.R. Tolkien's creations: Rivendell sounds like a pleasant place, while Mordor sounds ominous. Second, consider animal sounds. In the case of aliens based on Human animals, use the noises the animals make as a basis for the alien speech — hisses and rasps for reptile-beings, purrs and vowels for cat-people. Lastly, if you can't be evocative, at least try not to sound goofy. Many professionals have failed at this. Don't use thinly-disguised names of real people, or jumbles of nonsense.

In a pinch, real Human languages are a good resource. Real languages have an internal logic and structure of their own. Using an existing tongue for aliens only creates problems if any of the players recognizes the words, but GMs can get around that by appropriating the sound and feel of a real language without using specific vocabulary. An atlas is a very good source for the sounds of a given language. As an example, you could try to base an alien tongue on Malay — appropriate for a species inhabiting a world with lots of islands. A map of Malaysia provides place names like Penang, Kelantan, Trengganu, Berhala, and Batang. Instead of using them directly, you can recombine them, getting Penggana, Kelang, Trengala, Berantan, and Batanu.

DIVERSITY

Members of alien species are often all depicted as alike in Science Fiction television shows and movies (see *World Reduction*, page 147). Every Tarshalan speaks the same language (Tarshalanes), practices the same religion, has the same skin and hair color, follows the same traditions, wears the same type of clothing, and has the same attitude or psychological profile (they're all obsessed with honor, or violently temperamental, or pacifistic). While this may be appropriate in some instances (particularly for hive-mind species), few (if any) civilizations are totally uniform. Even a nation as small as the United Kingdom has pronounced and recognizable regional differences — a Scotsman, a Midlander, and a Welshman are all different from one another and from Londoners. As a rule, assume any society larger than 100,000 people contains at least a few minority groups. They may speak a different language (or have a markedly different accent or regional dialect), follow a different religion, or be from a different racial background. In high-tech cultures a minority might be genetically engineered beings, aliens, citizen-robots, mutants, psionics, a hive mind, clones, or androids. Consult the Diversity Table if you prefer to determine minority percentages randomly.

Gamemasters should note that it is a Bad Idea to directly map current social problems into a Science Fiction setting. Players often have strong opinions which don't match your own, and it's extremely easy to look ham-handed or silly. If you want to explore themes of prejudice, assimilation versus ethnic identity, or cultural diversity, it's probably more effective to use issues which exist in the game world and are part of the setting, rather than pasting in something from today's headlines.

DIVERSITY TABLE

Roll (2d6)	Diversity of Civilization
0-3	Completely uniform: no minority groups
4-5	Mostly uniform: 1d6% minorities, no more than 1% each
6-7	Slight diversity: 2d6% minorities, 1d6% each
8-9	Some diversity: 3d6% minorities, 1d6% each
10	Diverse: 1d6 x 5% minorities, 2d6% each
11	Pluralistic: 2d6 x 5% minorities, 3d6% each
12	Polyglot: No group more than 3d6% of population

Modifiers: -1 for population 100,000 or less; -4 for 10,000 or less; -6 for less than 1,000



CULTURE

Culture is the way people act and the things that they do, apart from the business of making a living and running society. It includes things like art, literature, food, and roleplaying games. These things can be very important to the identity of a nation or civilization — two groups with the same kinds of government and economy can be bitter enemies because of cultural differences.

ARCHITECTURE

Technology underlies most architectural styles — you can't build skyscrapers until you have steel girders and cranes, for example. Other materials depend on the environment. You need trees to build with wood, and usable stone to build in stone. Environment also affects design. Wet or snowy climates have peaked roofs to shed precipitation, while desert settings run to flat roofs and thick walls for insulation. Alien architecture also must fit the size and shape of the builders.

ART AND MUSIC

The fine arts depend on the senses of the artists. A deaf species can't have music, while a species able to sense electric fields might create magnificent works of current and wiring invisible to Humans. Art is one area where low-technology worlds can compete on an even footing with advanced civilizations, which means a successful artist might be a low-tech planet's most valuable asset in interstellar trade. What if he wants to move?

CUISINE

A species's diet is obviously the most important part of cuisine. Carnivores eat meat dishes, herbivores eat vegetables, and omnivores like Humans combine the two. Science Fiction has a long tradition of devising weird and disgusting things for aliens to eat. Imagine a species of carrion-eaters like intelligent vultures, with a whole cuisine based on carefully-controlled decay.

As with art, cooking is an area where wealthy high-tech societies don't have much advantage over more primitive civilizations. A remote backwater world could suddenly become the culinary center of the galaxy if its local cuisine is delicious enough. Problems may arise if local plants or creatures are in demand enough to become endangered species. In an advanced society that has machines to prepare food, cooking might be an art form.

With a fund of racial energy and a great deal of leisure time, the population [of Sirene] occupies itself with intricacy. Intricacy in all things: intricate craftsmanship, such as the carved panels which adorn the houseboat; intricate symbolism, as exemplified in the masks worn by everyone; the intricate half-musical language which admirably expresses subtle moods and emotions; and above all the fantastic intricacy of inter-personal relationships. Prestige, face, mana, repute, glory: the Sirenese word is strakh. ... Masks are worn at all times, in accordance with the philosophy that a man should not be compelled to use a similitude foisted upon him by factors beyond his control; that he should be at liberty to choose that semblance most consonant with his strakh.

—an excerpt on Sirenese culture and beliefs from the *Journal Of Universal Anthropology*, as quoted in "The Moon Moth," by Jack Vance

EDUCATION

Humans, like most mammals, care for and educate their young. Alien species might view things differently. Juveniles might be subintelligent, little better than pets or vermin, and so only worth educating if they survive to adulthood.

Methods of education vary, often with the economic system — in Farming cultures children learn at home or in a small village school, while in Manufacturing societies kids learn in big schools which even look like factories. An Information-age society might switch to decentralized home education. Science Fiction technology makes other methods possible — learning via virtual-reality instruction, uploading through a cybernetic brain link, or direct implanting by psionics.

LITERATURE AND DRAMA

Humans tell stories, and it seems likely any alien beings capable of language will do the same. Literature is written stories, drama is stories acted out on stage or on film. Again, the senses and communication methods of a species are important here — blind creatures won't make movies, but may have sophisticated versions of radio plays. Often a culture's stories and works of literature are major sources of inspiration and identity. Reading indigenous literature instead of the crass commercial products of galactic mass media would be a way to show one's identity as a member of a planetary culture.

MASS MEDIA

Printing (or its equivalent) is the first mass medium, allowing the rise of newspapers, magazines, and books for a general audience. Telephones could have been a broadcast-style system, a kind of "cable radio," but on Earth that never caught on widely. Radio and television were the defining media of the twentieth century, allowing people all over the world to experience major events in near-realtime. Mass media are also a powerful tool of control in totalitarian societies. Futuristic media in Science Fiction include holovideo (Images), full-body simulated reality (Images or Mental Illusions), or direct brainlink feeds (Mind Link). Psionic societies could have "psi-casts" beaming thoughts directly at the audience.

RECREATION

All young mammals play, and Humans play even in adulthood. Technology allows for all kinds of new ways to have fun. Virtual reality and direct brain-link "dream films" combine film and computer games, taking both to the limits of realistic experience. More active sorts can engage in high-tech sports — orbital skydiving with a personal heat-shield, zero-gravity football, or magma surfing. Improved medicine may bring back dangerous pastimes like gladiatorial combat or duelling. Alien planets will have their own sports, like skiing down the thousand-mile slopes of Olympus Mons on Mars, or ballooning in the atmosphere of Jupiter. Hunting alien beasts on distant planets can get very exciting. Other species might enjoy hunting Humans, as in Jack Vance's novel *The Dirdir*.

RELIGION AND PHILOSOPHY

While Science Fiction has long explored ideas of religion and ethics, this is a very tricky subject to handle. Gamemasters need to be careful not to step into the minefield of players' personal faith and beliefs. Presenting alien religions is one way to keep things safely distant from real-world controversies. Treatments of religion in Science Fiction span the gamut from Christian allegories (in the works of C.S. Lewis or Gene Wolfe), to efforts to define an alien religion and work its tenets into the story as important plot elements (as on *Star Trek: Deep Space Nine*), to quasi-anthropological studies of the phenomenon (by Ursula K. LeGuin), to outright attacks (by H.G. Wells or Greg Egan). In Pulp Science Fiction and Space Opera, alien religions usually come equipped with jewel-studded idols, beautiful sacrificial victims waiting for rescue, and sinister high priests. One recurring theme is ancient technology disguised as supernatural power, so the idol may turn out to be a superscience matter replicator or weather-control system.

CHAPTER SEVEN



***COMPUTERS, BLASTERS,
AND ROBOTS: TECHNOLOGY***



TECHNOLOGY IN THE CAMPAIGN

Technology is the means by which most sentient species do things. Humans are almost helpless without some kind of tool, even if it's nothing more than a rock or a stick. Science Fiction came of age when technological change became something that happened on a time scale of years or decades rather than centuries. The name is "Science Fiction," but a better one might be "tech fiction," since at its heart, most Science Fiction is about the effects of new technologies on people and their world, and the interaction between people and technology.

Before running or playing in a Star Hero campaign, gamers should take some time to consider the impact of technology on the characters and the setting.

TECHNOLOGY LEVELS

A useful concept in Science Fiction gaming is the *technology level* (or "tech level"), denoting what a given world or society can create or do, technologically. On contemporary Earth, we tend to use decades as rough indicators of technology — the United States boasts a "twenty-first century" military, while poorer and less advanced countries have "1960s-era" forces.

Technology classifications tend to either be very broad or very narrow. An example of a broad

schema is the notion of "Ages": Stone Age, Bronze Age, Iron Age, Industrial Age, Information Age, Post-Human Age, and so forth. Broad technology schemes cover centuries or millennia, and they describe a whole suite of interrelated technologies and social structures. This usually implies that cultures develop along a similar path. Broad tech classifications also encourage cinematic-style invention and gadgeteering — if you're an Industrial Age mechanic you can fix anything from an early steamship to a World War II fighter plane.

Narrow tech scales are more useful in eras when technology changes quickly. A real-world example of this is the Gulf War of 1990, in which the 1990s-tech Coalition forces just walked over the 1980s-tech Iraqi army — using equipment which, by the standards of the early 2010s, is often inferior or obsolete. This sort of system is appropriate to Cyberpunk or technothriller-style Science Fiction, in which hackers breeze through last year's defensive software and getting a beta-test copy of new intrusion programs can make a kid from the projects into a heavy hitter in cyberspace — for a few weeks, anyway. Obviously, narrow tech bands make it harder for a specialist trained in one tech level to work in others, and a character's skills can get rusty in just a few years if he doesn't study and stay current in the field.

Tech Scales

Most technology-rating schemes have a "signature" technology which serves as the ultimate yardstick: if you have technology X, then you are tech level Y. The signature technology in a tech level rating system says as much about the people devising the system as it does about the cultures described. Archaeologists once classified Earth cultures by their artifacts, giving rise to the system of Stone, Bronze, and Iron Age. This works for archaeologists because they learn about cultures by examining things left in middens and tombs, and because they often deal with long spans of time. By contrast, the Russian astronomer Kardashev classified civilizations by energy output, because energy emissions are what astronomers can detect (see page 160). A culture interested in trade would rate civilizations by what they can make, while an aggressive conquering empire would be interested in the military potential of alien planets. Frequently space flight or interstellar travel are major demarcations in tech level, since they indicate which civilizations can interact with one another easily. Sometimes a system combines two or more signature technologies for higher resolution.

"I'm leaving you these tools: some of them you will discover how to use, though as likely as not in a generation they'll be lost or forgotten. See how this blade cuts: it will be ages before your world can make its like. And guard this well: when you press the button — look! If you use it sparingly, it will give you light for years, though sooner or later it will die. As for these other things — find what use for them you can."

—explorers from a dying interstellar empire leave a few technological trinkets for the earliest Humans in "Encounter At Dawn," by Arthur C. Clarke

Creating A Tech Scale

Gamemasters devising a tech scale need to make three decisions:

- Will the scale be narrow or broad?
- What will the signature technologies be?
- How will the levels be identified and/or labeled?

As an example, suppose Jim is creating the Terran Empire's technology classification scale, known officially as the Available Technical Resource Index, or ATRI number.

Narrow or broad? Well, the Empire is a type of Space Opera campaign setting, so technology changes aren't a major element. Characters will visit worlds at a variety of tech levels, but Jim doesn't want to handicap the low-tech NPCs too much. He aims for no more than about a dozen levels on the scale, so that even with the -3 per level Skill Roll penalty (see APG 30-31), mechanics on primitive worlds can still work with advanced gear.

Signature technologies? Weapon tech is an obvious choice, but on an interstellar scale almost any technology has some military value. Instead, Jim pegs the ATRI scale to Energy Production and Transportation. Since Humans run the Empire, Jim sets the scale according to Human history (other species might invent things in different order). Here's the basic ATRI scale:

- 0:** No Technology
- 1:** Fire
- 2:** Animal Power/Riding Animals/Boats
- 3:** Wind Power/Sailing Ships/Balloons
- 4:** Steam Power/Steamships/Railroads
- 5:** Electric Power/Submarines
- 6:** Internal Combustion/Aircraft
- 7:** Atomic Power/Jet Aircraft/Orbital Spacecraft
- 8:** Solar Power/Interplanetary Spacecraft
- 9:** Fusion Power/FTL Travel
- 10:** Cold Fusion/Fast FTL
- 11:** Antimatter Power/Antigravity Vehicles
- 12:** Teleportation

Alternate Tech Paths

Human beings invented sailing ships before gunpowder, balloons before the germ theory of disease, and steam power before rocketry. But there's no reason things had to happen in that order. The Greek scientists of Alexandria devised toys that used all the principles of steam power almost two millennia before James Watt. An Egyptian doctor might have mixed saltpeter, sulfur, and charcoal thousands of years before the Chinese invented gunpowder. Hot-air balloons were possible a thousand years before the Montgolfier Brothers.

SIGNATURE TECHNOLOGIES

Here are some (but by no means all) of the important break-points in technology, organized by related fields, in order from most primitive to most advanced. "Rubber science" inventions are listed in parentheses.

- **ENERGY PRODUCTION**
- Fire
- Animal Power
- Wind and Water Power
- Steam Power
- Internal Combustion
- Atomic Power
- Fusion Power
- Antimatter Reactors
- (Cold Fusion)
- (Zero-Point Energy)
- **INFORMATION AND COMMUNICATIONS**
- Writing
- Printing
- Telegraph
- Photography
- Mechanical Computers
- Telephone
- Sound Recording
- Motion Pictures
- Radio
- Television
- Electronic Computers
- Video Recording
- Computer Networks
- Pocket Computers
- Biocomputers
- Artificial Intelligence
- **MEDICINE**
- Herbal Medicine
- Surgery
- Antiseptics
- Vaccination
- Antibiotics
- Transplants
- Genetic Medicine
- Cybernetics
- Cloning
- Nanotech Medicine
- **TRANSPORTATION**
- Riding Animals
- Boats
- Sailing Ships
- Balloons
- Steamships
- Submarines
- Airplanes
- Orbital Spacecraft
- Interplanetary Spacecraft
- (Interstellar Spacecraft)
- (Antigravity)
- (Teleportation)
- **WEAPONRY**
- Clubs and Axes
- Spears
- Bows
- Swords
- Pikes
- Crossbows
- Cannon
- Muskets
- Breech-loading Rifles
- High-Velocity Artillery
- Automatic Rifles
- Guided Missiles
- Atomic Weapons
- Lasers
- Gauss Guns
- (Particle Weapons)
- (Antimatter Warheads)
- (Plasma Weapons)
- (Disintegrators)

Gamemasters can have a lot of fun mixing and matching technologies. Early development of steam power allows naval battles between steam-powered Roman galleys firing catapults at each other. Early ballooning lets one have knights, castles, and aerial reconnaissance. But don't forget that some technologies depend on others — germ theory requires microscopes, airplanes need internal-combustion motors, and submarines aren't practical until they can use electric batteries.

More exotic alternate technology paths could skip entire areas of knowledge — one common way to make an alien civilization alien is to give them a technology based on biology rather than inanimate materials and machinery. Instead of making a device to do something, they would breed an organism for it. Or maybe the aliens lack some device common on Earth. H.G. Wells's Martians, for example, didn't have the wheel.

Varying Tech Paths

Within a given civilization, it's entirely possible for the tech levels to vary from place to place. For example, the most advanced nations or regions on a particular planet might have Tech Level Theta devices, whereas less advanced or more isolated locations might only have reached Tech Level Delta. Similarly, Kalidar IV might possess extremely advanced technology, while Haroldson's Planet is much less developed technologically. Not only is this realistic, it's dramatic — it provides the GM with a lot of potential story and character hooks, all centered around the issue of *why* the differences exist. Do the Tech Level Theta regions actively oppress their neighbors, preventing technological development from occurring? Are those areas inhabited by two different species, with the more advanced imposing a technology embargo on itself to keep from interfering with the other? Has Kalidar IV historically been a haven for scientists and free thinkers, while Haroldson's Planet persecutes them... or is Haroldson's Planet a young colony on the fringes of the Galactic Commonwealth, whereas Kalidar IV is a Commonwealth core world?

Nor do tech levels have to be uniform from one type of technology to another. Ordinarily advances in one field tend to lead to advances in other fields, so that technology progresses in a broadly uniform sort of way. But that's not inevitable. A civilization could have, for example, Tech Level 15 computers and communications equipment, but only Tech Level 10 weapons. Again, the intriguing question is why this state of affairs exists. By considering and answering that question, the GM and players can develop the setting further, creating more opportunities for adventures and enjoyable characters.

Similarly, it's possible for one part of a civilization to "leapfrog" technologically by relying on the work of other parts. For example, on modern Earth, the United States developed an extensive reliance on, and infrastructure for, landline telephones. That's created cultural and economic forces that have kept cellular telephones from being as widely and varyingly used as they might otherwise have been. Second and Third World nations that didn't have nearly as many landline telephones as the US have sometimes more rapidly adopted cell phones, and found ways to use them that aren't yet common in America. They don't have the same landline "baggage" and can take advantage of cell phone technology developments to "skip over" landline telephones altogether.

Obsolete, Advanced, And Alien Technologies

Star Hero characters may often find themselves encountering old (or "primitive") technologies, devices far more advanced than what they're used to, and/or alien technologies that are quite strange compared to what they possess and regularly use. In fact, they could easily have to deal with all three during the course of a single adventure! See APG 30-31 for rules covering these situations, including for the compatibility of different types of technology.

PRIME DIRECTIVES AND QUARANTINES

"The Prime Directive is not just a set of rules; it is a philosophy... and a very correct one. History has proven again and again that whenever mankind interferes with a less developed civilization, no matter how well intentioned that interference may be, the results are invariably disastrous."

—Captain Picard explains the nature of the Prime Directive in the *Star Trek: The Next Generation* episode "Symbiosis"

Earth history has several unfortunate examples of what can happen when high-tech and low-tech collide. While the Spanish conquest of Mexico may have been due more to political instability in the Aztec Empire than Spanish matchlock muskets, the European colonial expansion in Africa and the South Pacific was based solidly on Maxim guns and steamboats. Even benign applications of high technology can have unintended ill effects: eradication of malaria in tropical regions led to rapid population increases, straining food production and social structures in those areas.



To prevent both empire-building and unhelpful “help,” many interstellar societies in Science Fiction have rules prohibiting the introduction or use of advanced technology on low-tech planets. *Star Trek’s* “Prime Directive” is the most famous, but L. Sprague De Camp’s *Viagens Interplanetarias* enforced Regulation 268, and C. J. Cherryh’s *Union* was guided by the Gehenna Doctrine to similar effect. Conveniently, technology embargo rules mean spacefaring heroes can go about having sword-swinging adventures on low-tech planets, which many writers and readers consider a plus. Less conveniently, they mean unscrupulous NPCs can smuggle high-tech weapons to primitive peoples, causing all sorts of problems the PCs have to resolve.

The exact details of the technology quarantine rules in a given campaign setting are up to the GM, of course. Some possible rules are listed below:

Total Embargo: All contact with the inhabitants of the planet is forbidden. This is often done to prevent the tremendous shock to a culture’s worldview created by the knowledge that they are not alone. For roleplaying purposes, this lends itself to daring attempts to evade the blockade, “gods from space” encounters with the natives, and so forth. Some covert contact by explorers in native disguise may be allowed.

Local Tech Only: Aliens can visit the planet, but are restricted to locally-available technology. Often this is enforced by extremely strict methods: De Camp’s *Viagens Interplanetarias* used brainwashing devices (the St.-Remy treatment) to make it impossible for offworlders to even discuss advanced technology with the natives. This is best for “sword and planet” adventures.

Personal Tech Only: Space travelers can visit a low-tech world and bring advanced devices for personal use, but are not allowed to introduce technologies to the planet. Thus, a visiting spacer can pack his trusty blaster, but can’t open a blaster factory. This lends itself to smuggling, enterprising locals developing knockoff technology, and offworld mercenaries conquering kingdoms.

Restricted Technologies: Introducing some technologies is permitted, but others are strictly controlled. Advanced medicine and clean energy sources are okay, but weapons are not. (This matches the real-world technology export controls in America and elsewhere.) The trouble with this is that just about anything can have military applications, either directly or indirectly. Adventures in these settings may involve hairsplitting definitions of “weapons” and the social effects of advanced alien tech on primitive societies.

LOW-TECH SCIENCE FICTION

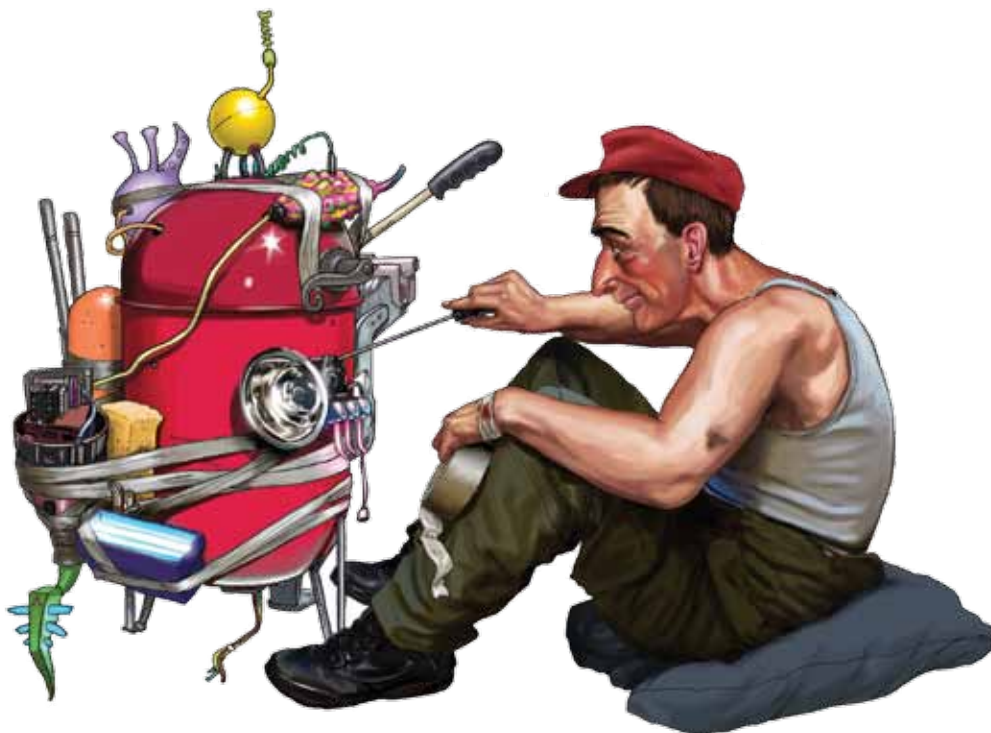
Some Science Fiction stories and films depict worlds in which the technology is less advanced than present-day equipment, either in some areas or overall. One example is the *Dune* series by Frank Herbert, in which the “Butlerian Jihad” wiped out all computer technology. Gamemasters who want Science Fiction without super-advanced technology can use various methods to put the brakes on scientific progress.

Decadence: A very rich and advanced culture might become the victim of its own success, if everyone studies the arts or spends their lives immersed in virtual-reality games. The machines make everything, and the robots fix everything, and nobody bothers to understand how or why — until Something Goes Wrong.

Disaster: Some tremendous catastrophe might knock whole planets or sectors back into a Dark Age of low technology. An interstellar war might devastate industries and disrupt trade, leaving planets to struggle on alone. A powerful supernova explosion could fry electronics for light-years in every direction. A runaway nanovirus might selectively destroy integrated circuits, creating a civilization dependent on vacuum tubes and slide rules.

Fiat: A much more advanced civilization could decide that Humanity simply “isn’t ready” for high technology, and back up that decision with firepower. The initial stage of an enforced ban would be like a war, followed up by technology policing by the advanced civilization and desperate attempts by Humans to get around the ban. (See Arthur C. Clarke’s short story “Loophole,” in which Humans invent teleportation technology to strike back at the Martians, who’ve forbidden them to develop rockets.)

Rejection: For whatever reason, people have deliberately rejected advanced technology. This may be a single world where Humans are trying to “get back to nature,” or a pan-Galactic movement to ban technologies which are seen as threatening. This could be the result of a revolt of the robots, or some nanotech plague. Or perhaps people just become convinced there really are limits to the benefits of technology. Will the PCs accept that notion, or rebel against it? This is an especially good way to limit certain powerful technologies like Artificial Intelligence or nanotechnology, without throwing the whole campaign back into the Stone Age.



TECHNOLOGY IMPROVEMENTS

Improved technology makes better gadgets. But how? Technological improvements tend to fall into two categories — incremental changes and replacements. Incremental changes are small, gradual improvements which increase the usefulness or effectiveness of a device. The rubber grip on a hammer is one example — it's still a hammer, but you can hit harder with it because your hand won't get numb. Things like stronger alloys, ergonomic design, and improved energy efficiency are all incremental changes. As a rule of thumb, devices tend to get lighter, more durable, and more energy-efficient as time goes on.

By contrast, replacement creates entirely new devices which perform the function in a different way. Often they add new functions as well. So airplanes replaced ocean liners for long-range travel, and also transformed warfare and business. Computers replaced adding machines and typewriters, and added things like computer games, e-mail, and the Internet.

Characters using incrementally improved technologies can easily familiarize themselves with advanced versions of devices they already know how to use. A hammer is a hammer, after all, rubber handle or no. An automobile of 2011 is vastly different under the hood

from one made in 1932, but a driver skilled with one could get behind the wheel of the other, take a spin around the block to familiarize himself with the car, and zoom off. Replacement technologies require completely new skills. Knowing how to use an adding machine means nothing when you're using a computer.

One area where replacement technology frequently revolutionizes things is warfare. Modern-day weapons are incredibly powerful, even when compared with systems only a couple of decades old. A recognizable trend in weapon tech is not so much greater destructive power but superior accuracy and ease of use. Battleship shells of the First World War packed about as much explosive power as a modern antiship missile, but nowadays one missile can take out a ship because it can seek out a weak point. That's an accuracy issue.

Ease of use is demonstrated by the replacement of the longbow by crossbows and guns. Properly handled, a longbow had much better range and hitting power than early muskets did. But as the old English expression put it, to train a longbowman you begin by training his grandfather, whereas a few weeks of training could turn plowboys into gunmen. "Smart" missiles take the burden of aiming and controlling a weapon away from the soldier, so that anyone who can point and shoot can use one.

Of course, sheer power does play a role. Nuclear weapons pack more firepower than entire battles of preatomic munitions. But it's worthwhile to note that nuclear weapons may simply be too powerful to be useful.

7

Captain James T. Kirk: *My friends, the great experiment... the **Excelsior**, ready for trial runs.*

Helmsman Hikaru Sulu: *She's supposed to have transwarp drive.*

Chief Engineer Montgomery Scott: *Aye. And if my grandmother had wheels, she'd be a wagon.*

Kirk: *Come, come, Mr. Scott. Young minds, fresh ideas. Be tolerant.*

—the crew of the **U.S.S.**

Enterprise first see the new **U.S.S. Excelsior** in *Star Trek III: The Search For Spock*

IMPROVING TECHNOLOGY IN THE GAME

The *HERO System* rules generally only account for aspects of technology that may have some affect on game play. There are no Advantages for simulating rubber grips on hammers, or for miniaturizing devices which started out large and clunky. Those things rarely factor into the game, and so are simply assumed as part of the “special effect” of a particular device.

However, there are several ways, in game terms, to reflect the development of technology over time. The first, and most obvious, is to increase the Active Points in the Power(s) used to build a device. Doing so makes it more powerful, stronger, more durable, able to broadcast a stronger signal, or what have you. This is often a good way to represent relatively crude initial technological breakthroughs, since adding raw power is often the most primitive way to increase the utility of a device.

Second, you can remove Limitations. Early or primitive versions of a particular type of technology are often loaded with Limitations — Activation Roll, Charges, Costs Endurance/Increased Endurance Cost, Extra Time, Side Effects, and the like. Removing these inconvenient hurdles to ease of use is an excellent way to simulate the march of technological progress.

Third, you can add Advantages. This works particularly well for weapons, since so many of the Advantages primarily affect combat, but it can be just as important for other devices. A life support suit may get more Fuel Charges, for example, or a radio adds MegaScale so it can transmit to the stars. If you can apply an Advantage in increments, or buy it multiple times, usually it's best to take it only once to begin with, then add more of it later on as the technology becomes even better.

Fourth, you can expand the device's functions. This has the effect of increasing the Active and Real Point costs, but without necessarily making any single function of the device more powerful. For example, a simple wrist-radio (Radio Perception/Transmission) later adds videoconferencing (increase the points to “trade” that Sense for HRRP), and then includes computer functions (add a small, simple Computer). Sometimes this requires you to convert a single-Power gadget into a Power Framework-based gadget. For example, a force-field belt (Resistant Protection) might develop the capacity to project barriers of force away from the wearer (now it's a Multipower with two slots, one Resistant Protection and the other Barrier).

EMH Mark II: Doctor, some... thing just went offline!

The Doctor: Specifically?

EMH Mark II: The secondary gyrodyne relays of the propulsion field intermatrix have depolarized!

The Doctor: In English!

EMH Mark II: I am just reading what it says here!

—the Doctor and the Emergency Medical Hologram, Mark II, deal with the perils of technobabble in the *Star Trek: Voyager* episode “Message In A Bottle”

RUBBER SCIENCE

You've got a problem. You want to run a Star Hero campaign, but you want to include stuff like force-fields, faster-than-light travel, and anti-gravity. Modern physics is mean and won't let you have any of those things in a “realistic” campaign. Looks like it's time for rubber science!

Rubber science is imaginary science, but not quite fantasy. It looks like science and sounds like science, but it assumes some things are possible that present-day science considers impossible. Now, scientists themselves freely admit they don't know everything, so it's just barely conceivable that some rubber sciences may turn out to be true. That's all the loophole you need.

Examples of rubber sciences are Gravitics (the science of gravity, antigravity, and artificial gravity), Hyper-Physics (the study of hyperspace and faster-than-light travel), Psionic Engineering (creation of psionic machinery), and Temporal Mechanics (the science of time travel). (In some campaigns, Hyper-Physics and Temporal Mechanics are combined into one discipline, Dimensional Engineering.)

To create a good rubber science, the GM should think it through. Take teleportation as an example. Jim (the GM of the Galactic Federation campaign) wants characters to be able to blip from an orbiting spaceship down to the surface of a planet in the wink of an eye, without landing the whole ship. Now he has to figure out “how it works.” This doesn't mean devising the actual equations and technology for teleporting, but it does mean coming up with a rough idea of what happens when someone steps into the teleporter. Does it scan them at the molecular level and reconstruct them somewhere else? Does it open a tube through hyperspace connecting the ship and the target? Does the passenger make a sudden quantum displacement to the destination?

Based on that, think through the implications and choose the method which best fits the campaign world you want. The scan-and-reconstruct method requires some way to rebuild the passenger at the destination, which isn't suitable if the characters are visiting unexplored planets. It also means the teleporter could be used as a “Human photocopier” to make duplicates of passengers. Scanning teleporters could also function as replicators and immortality machines. That isn't what Jim wants, so he rejects that approach.

The Hyperspace Tube and Quantum Displacement methods both avoid those problems, so he decides to use one of them. How do they fit with the rest of the campaign's technology? If interstellar travel uses ships voyaging through hyperspace, then a Hyperspace Tube becomes a natural outgrowth of hyperphysics. That's good, because it's always useful to keep the total number of imaginary sciences in a setting low.

What other applications are there for tubes that join distant points in space? If spaceships use fuel, one can imagine putting a hypertube in the fuel tank, connected directly to the refinery, giving them infinite fuel supplies! Tubes could link places on a planet surface, allowing people to live anywhere they like and step to work on the

other side of the world. Hypertube weapons could bypass a ship's defenses and place bombs inside the hull.

Obviously Jim needs to limit his campaign's hyper-technology; some of those results, while plausible, aren't much fun in game terms. A Rubber Science which allows anything to happen is just magic. Jim doesn't like the infinite fuel idea, and doesn't want hypertube commuting. So he decides on some limits to the technology: hypertubes are unstable; they only exist for short periods and become exponentially harder to maintain the longer they last. This means the crew can open a tube for one second — long enough for an exploring party to jump through — but every additional second requires a Systems Operation roll with a penalty of 2 times the duration in seconds. So one additional second is at -2, two seconds is -4, three is -6, and so on. A miracle-working ship's engineer can keep the tube open when the captain's life is at stake, but tubes can't be permanent. (If necessary, Jim can also impose penalties based on the "length" of the tube — the longer the tube, the harder it is to keep stable.)

To keep hypertubes from making all space battles into very short contests of who can pop a bomb into the other's bridge fastest, the campaign needs a defense against hypertubes. Since they're unstable anyway, Jim can justify "hyperspace damping generators" which create destructive interference and prevent tube formation. Ships can still use tube-boosted missile launchers and railguns to reduce the range to the target, making space battles very large-scale affairs, with ships millions of miles apart able to strike at one another. Once a lucky hit takes out one side's damping generator, the attacker can send the Marines through the tube — or a Nova Bomb.

This affects space tactics and ship design. Since ships can fight at very long range, the model for space warships is likely to resemble modern-day missile cruisers or nuclear submarines. There won't be "carriers" because the fighter craft they carry won't be able to mount hypertube dampers or projectors.

Rubber sciences, like real ones, need a vocabulary. A good set of consistent-seeming technobabble can make a rubber science sound as real as plumbing. Often new sciences borrow or redefine existing words — to describe the flow of electricity, early inventors called it a "current," like a flow of water. Since hyperspace is a concept from geometry, Jim decides to use a lot of terms evoking shapes and geometric concepts: tubes, folds, ripples, holes, and so forth. He can also just tack the prefix "hyper-" onto a lot of existing terms to get hyperengineering, hyperphysics, hyperdynamics, hypertechonology, and so on. It's easy to overdo this: a hyperengineer using a hyperspanner to fix the hyperdrive is getting silly. Instead, the Spatial Engineer has to use his spacetime curvature meter to adjust the hyperdrive. Sounds much better.

...AND I WANT MY OWN STARSHIP, TOO!

A recurring problem in Star Hero is the way the heroes tend to get overshadowed by their stuff. Instead of individual skill and ability, problems are solved by hauling out the right toy. And since characters can buy new toys, this quickly turns into an "arms race" in which they buy cool equipment to earn the money to buy more cool equipment to earn more money to buy cooler equipment...

There are ways for GMs to keep things from getting out of hand. The first is a matter of player expectations — make sure the GM and the players have the same idea of what the campaign is about. If they're going to be heroic space knights battling Evil, well by golly heroic space knights don't rely on gadgets. Other methods include:

Prevention: Put characters in situations where they can't buy equipment (or replace lost equipment) — or at the very least, have to expend *lots* of resources (money, favors, and so forth) to get what they want. If the campaign mainly takes place out in the galactic hinterlands, it's not as easy for the PCs to find replacement warp drive parts or the latest weapons for sale.

Countermeasures: Any powerful technology soon calls forth a way to foil it. Police radar guns begat radar detectors, which in turn begat police using laser speed detection. If the PCs abuse a particular technology in the game, it's likely other people do, too... and that a countermeasure will soon hit the market, if it hasn't already.

Training: As anyone with a blinking VCR clock knows, having a cool gadget and knowing how to use it are very different things. Instead of letting heroes use things right out of the box, impose a training period, or a penalty for untrained use. Sure, your targeting computer gives you an OCV bonus with rifle fire, but if you didn't read the manual, you won't get the full benefit. For military-grade equipment, training may not be easy to come by, and asking about it can attract the attention of the police.

Compatibility: Are you sure your gadgets work together? Does your targeting computer plug fit your night-vision goggle socket? GMs can have a lot of fun with the potential for incompatible devices, especially if they're made by different species. At the very least, characters must make Electronics, Weaponsmith, or even Inventor rolls to jury-rig connectors and patch the software bugs. (See APG 30-31.)

WEAPONS

Weapons are among Humanity's oldest technology, and are an area where progress is still rapid. Offensive systems and defenses are locked in a never-ending round of escalation.

The accompanying table on page 190 provides basic information for a selection of typical Science Fiction weapons. For more weapons, more information, and a discussion of the technologies involved, see pages 189-98 of *The HERO System Equipment Guide*.

Military Technology

Technology has always had a great effect on the battlefield, and that is likely to continue into the future. There are three areas of particular interest in military tech: heavy weapons, mobility, and information handling.

HEAVY WEAPONS

Most of the weapons described above (or in the HSEG) have their battlefield-scale equivalents. A “quick and dirty” way to make an artillery version of a personal weapon is to add the *MegaScale Advantage* to range (and perhaps Area Of Effect and/or Indirect, if applicable), and make it Immobile. Gamemasters willing to do a little more work can make Automaton weapons, such as artillery launchers with built-in AI computers and the ability to drive, fly, or even teleport themselves.

Even in the early twenty-first century, there's already almost no upper limit to the destructive power of battlefield weapons — high explosive shells lead to fuel-air explosive bombs, which can be as powerful as low-end nuclear weapons. In the worlds of Science Fiction, this trend can easily continue, as basic nukes evolve into smaller and more powerful versions. Other possible weapons of mass destruction include new explosives based on high-tech chemistry, biological and chemical weapons that make today's gases and plagues look mild, FTL kinetic weapons, antimatter bombs, teleporting weapons and weapon launchers, black hole generators, and more. The problem, as on modern Earth, is not how to destroy something, but how to find it and hit it.

MOBILITY

Because of the great power of battlefield weapons, if you stay in one place you're dead. But if you move, you become visible, and then you're dead again. Fighting vehicles have had to get very fast just to survive — an early twenty-first century heavy main battle tank can move across open country almost as swiftly as a car on a highway. In the air, new fighter designs envision planes that can cruise around at supersonic speeds rather than flying that fast just in combat.

In the future, battlefield hovercraft may be able to roar around the battlefield at more than 200 kilometers per hour; a couple of generations later, the difference between a tank and a combat helicopter may disappear. At sea, “supercavitating”

submarines will be able to go almost as fast underwater. It's likely that vertical take-off aircraft will make submarine carriers feasible, so the surface will be left to hydrofoils, hovercraft, and the like. See page 241 for more on hovercraft.

What about the poor, bloody infantry amid all this fast and powerful technology? Well, already soldiers ride instead of march, and some of those fast vehicles will be personnel carriers or landing craft. Jetpacks, jump-jets, personal teleporters, and other such movement technology may also exist in an Science Fiction setting. The development of compact power systems to drive an armored battlesuit will let the infantry compete once again, as soldiers on foot take over some of a tank's duties... and perhaps eventually render the tank superfluous.

INFORMATION

The idea that knowledge and information are paramount on the battlefield isn't new. What is new is that improved communications and computers are finally making it possible for commanders and troops to know exactly what is happening and where, in real time. Soldiers “paint” a target with lasers and a plane makes the attack, or artillery does the job from kilometers away. Or the information is relayed to a missile platform, which launches a cruise missile from over the horizon. What makes it all work is control of space: spy satellites for reconnaissance, GPS satellites to give everyone highly accurate position data, and communications satellites to put everyone in touch. This works very well when one side has air and space command and the other doesn't — a conflict between two modern-day armies might be a lot more confused and bloody. In a Science Fiction setting, communications and information-gathering become even more advanced, possibly incorporating rubber science explanations that expand battlefield options even further.

The flip side of perfect information is stealth. If you can be seen you can be killed, so everyone spends a lot of time not being seen. Airplanes now have stealth design and radar-absorbent coating; submarines have silent propellers and sound-baffling hulls. It's likely the next generation of surface ships (if there are any) will be low and stealthy (right now carriers and their escorts rely on electronic jamming and the ability to wipe out all possible threats). Stealthy tanks are also likely. Soldiers wear camouflage, but infrared vision gear is making that almost irrelevant. Future soldiers may wear chameleon camouflage and some form of infrared masking. Finally, countermeasures and jamming to interfere with all that elaborate real-time information streaming would do a lot to even the odds.

“Jump for the ceiling light bracket and hold on. It's a Harmonic gun. Jump!” ... The three hung in space, cushioned against the murderous vibrations enveloping the store... vibrations that created shattering harmonics in every substance in contact with the floor. Glass, steel, stone, plastic... all screeched and burst apart. They could hear the floor cracking.

—our heroes are attacked with a sonic weapon in *The Demolished Man*, by Alfred Bester

SCIENCE FICTION WEAPONS TABLE

Name	OCV	RMod	Damage	STUNx	Shots	STR Min	Mass	Max Range	A/R Cost	Notes
Hand-To-Hand Weapons										
Chainsword	+0	—	3d6 AP2	+0	—	15	3.0	—	92/27	M
Energy Sword	+0	—	3d6 NND	+0	—	—	0.3	—	250/117	M; RKA 3d6 DS if struck
Force Blade	+0	—	3d6 NND	+0	—	—	0.3	—	274/129	M; RKA 3d6 DS if struck, ResP (6 PD/10 ED)
Intertial Gloves	+0	—	5d6 N	—	—	—	0.1	—	56/22	S
Stun Rod	+0	—	6d6 NND	—	—	—	0.3	—	75/27	S
Pistols										
Disintegrator Pistol	+2	+2	6d6 NND	-1	8 BC	10	1.2	100m	276/78	LR(100m), RR
Ion Blaster	+1	+2	10d6 N	—	10	10	1.2	80m	66/22	AF2, LR (80m)
Laser Pistol	+1	+2	1d6+1	+0	16	8	0.9	200m	24/9	BBS, Beam, Fragile
Plasma Pistol	+0	+0	9d6 NX	—	12	10	1.2	50m	67/21	LR(50m)
Proton Blaster	+1	+1	8d6 N AP	—	10	12	1.1	400m	53/15	
Rocket Pistol	+1	+2	2½d6 X	+0	6	12	1.8	400m	64/20	
Sonic Pistol	+0	+0	9d6 N	—	12	9	1.0	450m	45/15	
Sonic Stunner	+0	-1	7d6 N NND	—	8	7	1.0	20m	52/14	LR (20m), PER Mod +0
Rifles										
Disintegrator Rifle	+2	+4	6d6 NND	-1	12 BC	12	5.5	200m	278/73	LR(200m), RR, 2H
Ion Rifle	+1	+2	10d6 N	—	15	12	4.0	500m	66/22	AF3, 2H, Fragile
Laser Rifle	+1	+4	2d6	+0	16	10	4.0	1200m	51/17	IMR4, 2H, BBS, Beam
Laser Rifle, Military	+2	+4	2d6	+0	32	10	4.5	1200m	75/24	AF5, IMR4, 2H, BBS, Beam
Laser Rifle, UV	+1	+4	2½d6	+0	16	12	4.6	2400m	86/26	AP, IMR8, 2H, BBS, Beam
Plasma Rifle	+1	+3	12d6 NX	—	100	13	5.0	80m	170/51	2H, LR(80m)
Proton Rifle	+0	+2	7d6 N	—	45	13	3.85	350m	81/22	AF5, AP, 2H
Rocket Rifle	+2	+4	2½d6 X	+0	30	14	7.0	400m	138/43	AF5, 2H
Sonic Rifle	+1	+3	12d6	—	40	11	4.25	600m	95/32	2H
Miscellaneous And Heavy Weapons										
Grenade, Disintegrator	+0	+0	4d6	-1	4	—	0.4	RBS	210/60	AE (8m Radius), RBS
Grenade, Energy	+0	+0	2½d6	+0	4	—	0.4	RBS	70/21	AE (16m Radius), RBS
Plasma Bazooka	+0	+4	15d6 NX	—	1	14	12.0	100m	116/23	LR(100m)

KEY

2H: Two-Handed (a -½ Limitation)**Act:** Activation Roll (a "J" after the roll indicates Jammed)**AE:** Area Of Effect (Radius); the number following indicates the size of the Radius in meters.**AF:** Autofire; the number after the letters indicates the maximum number of shots**AP:** Armor Piercing ("AP2" indicates Armor Piercing (x2; +½))**BBS:** Blocked By Smoke Or Steam (a -¼ Limitation)**BC:** Boostable Charges**DS:** Damage Shield**IMR:** Increased Maximum Range (the number indicates the multiplier)**IPE:** Invisible Power Effects**LR(Xm):** Limited Range (number indicates range in meters)**M:** Medium-length HTH weapon**NRM:** No Range Modifier**RBS:** Range Based On STR**ResP:** Resistant Protection**RR:** Reduced By Range**S:** Short-length HTH weapon**SFW:** Shoulder-fired weapon (characters need WF: Shoulder-Fired Weapons to use one of these properly)**X:** Area Of Effect (Radius Explosion, assumed to be of a size to give the Advantage a final value of +½)**Name:** The name of the weapon.**OCV:** This is applied as a bonus or penalty against all attacks made with the weapon. See HSEG 195 for further information.**RMod:** This represents a modifier to the weapon's accuracy at Range. See HSEG 195 for further information.**Damage:** The amount of damage the weapon does. An "N" indicates Normal Damage; otherwise the listed damage is Killing.**STUNx:** This is the STUN Multiplier for Killing Damage weapons (a +0 means "no modification"; use the standard ½d6 STUN Multiplier). Apply the STUNx modifier to the STUN Multiplier roll (or to the STUNx for the Hit Location struck, if the campaign uses Hit Location rules).**Shots:** The amount of shots' worth of energy in the weapon's battery or power source (in

game terms, how many Charges the gun has). See HSEG 195 for further information.

STR Min: The STR Min necessary to use the weapon effectively; see 6E2 199 for rules. Remember firearms and related weapons (which are built as RKAs or Blasts) don't get bonus damage or other benefits from exceeding the STR Minimum. The STR Minimum simply indicates the STR needed to effectively use the weapon — to hold, draw, and/or cock it.**Mass:** The weight of the gun, in kilograms. Typically this is the unloaded weight; inserting a power-pack adds a few grams.**Max Range:** The weapon's maximum Range in meters according to the *HERO System* rules. See HSEG 195 for further information.**A/R Cost:** The Active Point/Real Point Cost of the weapon, in Character Points. See HSEG 195 for further information.**Notes:** This catch-all category includes any information not listed elsewhere. All notes and abbreviations are explained at the end of the tables.

SCIENCE FICTION BODY ARMOR

Type Of Armor	Defense	A/R Cost	Mass	Notes
Ablative Vest	6/18	36/11	6.25	6 PD/18 ED, Ablative, Activation Roll 11-
Ablative Suit	6/18	36/12	10.0	6 PD/18 ED, Ablative, Activation Roll 14-
Bioplastic Armor	20	74/43	20.0	Also LS (Self-Contained Breathing, Intense Cold, Low Pressure/Vacuum)
Force-Field Belt	10	40/23	3.0	Protects Carried Items, 1 Continuing Fuel Charge (20 Minutes)
Plastic Armor I	12	36/14	12.0	Activation Roll 13-
Plastic Armor II	14	42/17	14.0	Activation Roll 13-
Plastic Armor III	16	48/19	16.0	Activation Roll 13-
Reflective Suit	Spec	18/6	2.0	+12 ED only versus laser attacks, Activation Roll 15-

KEY

Defense: The PD and ED the body armor provides, equivalent to Resistant Protection of the same amount.

A/R Cost: The Active Point/Real Point cost of the armor.

Mass: The armor's weight in kilograms. See 6E2 210-12 for further information.

DEFENSES

“Feel the material of your garments. You feel three layers of material? The middle layer is a nearly perfect mirror. It will reflect even X-rays. Now you can repel a laser blast, for at least the first second.”

—Sigmund Ausfaller provides Beowulf Schaeffer and Carlos Wu with advanced reflective armor in “The Borderlands Of Sol,” by Larry Niven

The race between offense and defense has been going on since the first Stone Age warrior made a shield to block spear thrusts. In the future, the race is likely to continue, and to progress to things like high-tech body armor, powered armor, and force-fields.

Force-fields and their ilk are an entirely “rubber science” defense, but one which is quite common, especially in Space Opera and Pulp Science Fiction. Often the force-field can do more than just protect an individual; it may also provide Life Support capabilities or the like. Note that powerful force shields change the face of combat at high tech levels — instead of remaining hidden and launching deadly all-or-nothing attacks from concealment, characters go back to engaging in stand-up slugfests more reminiscent of fistfights or superhero battles than gunfights.

The accompanying table provides basic information about a few common types of Science Fiction defensive gear. For more items and more information, including tables for randomly rolling up suits of powered armor, see pages 247-67 and 278-82 of *The HERO System Equipment Guide*.

EXAMPLE MILITARY TECHNOLOGY

Military Communicator: Typically worn on the wrist, this device transmits both video and audio, and is hardened to prevent it from being jammed.

HRRP (Radio Group), Difficult To Dispel (x8 Active Points; +¾) (21 Active Points); OIF (-½), Affected As Sight And Hearing Group As Well As Radio Group (-½). Total cost: 10 points.

Personal Teleporter: This device (possibly a mesh woven into armor) allows a soldier to teleport himself brief distances on mental command. It typically requires access to positioning and power-generating satellites, so anything that cuts off that access (being deep underground, Darkness to Radio Group) stops it from functioning.

Teleportation 40m, x8 Noncombat, Reduced Endurance (½ END; +¼) (62 Active Points); OIF (-½), Does Not Work If Cut Off (see text; -¼). Total cost: 35 points.

Stealth Field: This device, incorporated into a soldier's armor or uniform, bends energy waves around him, providing effective invisibility. However, someone standing close enough may notice the “bending” effect (i.e., the Fringe), or see physical traces the soldier leaves behind (footprints, dust).

Invisibility to Sight and Radio Groups (25 Active Points); IIF (-¼), 1 Continuing Fuel Charge (fueled by electricity, recharge is easily obtained; 1 Hour; -0). Total cost: 20 points.



OTHER TECHNOLOGY

Now that the business of blowing stuff up is out of the way, what else can Science Fiction technology do? Almost anything, it turns out.

The trouble with computers, of course, is that they're very sophisticated idiots. They do exactly what you tell them at amazing speed. Even if you order them to kill you. So if you do happen to change your mind, it's very difficult to stop them from obeying the original order.

—the Doctor, just before stopping a computer from destroying the Earth, in the *Doctor Who* episode “Robot”

COMPUTERS

The *HERO System* rules for computers (6E2 183-85) allow construction of both simple and artificial intelligence devices. In most Star Hero games, normal computers are “equipment,” bought with money rather than Character Points, while AI computers are typically NPCs. It's possible to purchase an AI (if the local laws allow it), but the machine won't have any particular loyalty to the heroes unless one of them spends Character Points to buy it as a Follower, part of a Base, or the like.

PROGRAMS

The distinction between Skills and computer programs is subtle. Skills allow the use of equipment, Powers, and abilities. Programs tell the computer what to do with those Skills.

Creating proper Programs requires a little bit of planning and forethought. Ideally, you should be able to phrase the Program in one short, simple sentence — one subject, one verb, and one object. If you can't describe the Program in a single simple sentence, you should split it into multiple Programs (or, if appropriate, buy it as a Skill). However, a Program can allow for some simple variables.

For example, “Pilot Ship From Location A To Location B” is a proper Program. It's simply expressed and uses Navigation (Space) and Transport Familiarity. It allows the user to input two easily-defined variables (Location A and Location B). However, “Pilot Ship From Location A To Location B And Avoid Star Patrol Ships” should be *two* Programs — one to fly the ship (using the Skills mentioned above) and one for avoiding the Star Patrol (using Combat Piloting and/or Stealth). The “and” in the second Program is a clear indicator that two Programs are necessary; the Program attempts to include two commands into one Program, which is improper in most cases.

Some players may want to set up triggering conditions, so that their computers take action or activate programs in the event of certain circumstances. An example of this is “If I'm knocked out, get us to safety.” Again, that's really two Programs — the trigger is one Program, and can activate the other. The computer needs two Programs: “If I Am Knocked Out, Activate Pilot Ship Program”; and Pilot Ship. Since Pilot Ship takes the ship from one specified location to another, the player should decide in advance where the ship heads if he is rendered unconscious (in this case, Location A is “ship's current location”).

Of course, the GM may, in his discretion, allow a program to combine two closely-related functions — such as “Monitor Sensors; Report Anomalies Detected.” The decision depends on how tightly linked the functions are, how frequently the program is used, and other factors.

THE GALACTIC COMPUTERNET

Many Science Fiction settings feature a vast, star-spanning computer and communications network for use by the inhabitants of those settings. Typically any citizen can have at least basic access to the network, though this depends on the society in question — and of course some people (government officials, military officers, and the like) have *much* greater degrees of access. (See page 69 for more information on buying this as a Perk.)

The Galactic Computernet provides its users with access to vast reams of information. Think of it as KS: Everything This Society Knows 60- and SS: Every Science This Society Knows 40-. But of course, searching for any particular fact entails massive penalties in such a broad database — use the rules on HSS 209-12 to determine the appropriate modifier to the roll based on the specificity of the information the character wants to know, and how long the search takes.

The Computernet also provides users with HRRP with a range sufficient to cover the entire area controlled by the 'Net's creators and overseers. Long distances may entail time-lags, especially if FTL communication doesn't exist.

UNDEFINED PROGRAMS

Obviously, it's difficult for players and GMs to think up all the possible actions and contingencies a computer might need to take into account. If appropriate, the GM can allow characters to create computers with a pool of Character Points set aside for Programs which aren't yet defined. When a situation arises where the computer should be able to act in a certain way, but no specific Program covers that situation, the GM may (if he wishes) let the player assign one of the "unspent" points to a new Program specifically for that contingency.

COMPUTERS AS CHARACTERS

HAL 9000: *I enjoy working with human beings, and have stimulating relationships with them.*

Doctor Chandra: *We enjoy working with you, HAL.*

—HAL 900 relates well to Humans... assuming he's not homicidally insane... in the movie *2010: The Year We Make Contact*

One familiar trope in Science Fiction is the perky ship's computer, which is just as much a character as the crew. With the GM's permission, players may run computer characters. Because this may unbalance the campaign, and often makes it difficult to get the computer character involved in scenarios, the GM should consider very carefully before allowing computer PCs into his Star Hero campaign.

Computer characters are built on the normal Total Points (including Matching Complications Points) for the campaign; they do not get to divide their total cost by 5 to determine the Real Point cost, as with standard Computers. They do not receive Senses for free; as noted on 6E2 183 they must buy Senses or be connected to sensory devices. All computer characters are considered AI Computers; they have EGO and may have Psychological Complications.

CHARACTERISTICS AND SKILLS

Depending on how you define a computer character, it may be able to sell back many of its Characteristics. On the other hand, some (particularly INT) need to be quite high.

Skills for a computer character represent its stored/programmed knowledge and abilities. Computer characters do *not* require Programs; as PCs, they have as much free will and self-control as any other character (but perhaps some important Psychological Complications also; see below).

PERKS AND TALENTS

Computer characters rarely have Perks; it's more likely they'll suffer from restrictions on their status and activities than have special benefits (see *Complications*, below). However, some may be appropriate. A computer with financial skills could amass its own private fortune and have Money. One that can "download" its personality into a robotic body might build that body as a Vehicle.

On the other hand, many Talents are highly appropriate for computer characters. Almost all computer PCs should have Absolute Time Sense, Bump Of Direction, Eidetic Memory, Lightning Calculator, and Speed Reading, which represent various built-in functions common to computers. Universal Translator is also appropriate in Space Opera-style campaigns.

POWERS

A computer character's Powers, if any, depend primarily on his "body" and how the GM wants him to access it. The GM must consider the issue of what the computer controls. If it's wired into every system aboard a starship and can use them as easily as a person uses his body, then he may require the computer character to pay Character Points for those abilities, rather than allowing it to have them for free just because the campaign features a PC-owned starship. Alternately, the GM may require the computer character to buy the Vehicle (or Base) itself, so that (like any character who owns a Vehicle or Base) it pays for the resources it controls.

Similarly, a computer character may have a robotic body it uses. In that case, the character should pay for the body's abilities. In some cases, the "computer" character is really a sentient robot for game purposes, even if it conceives of itself as a computer (see page 196).

One power common to most computer characters is the ability to make a "backup" copy of themselves in the event they're destroyed. The easiest way to build this is as Resurrection Healing (or Regeneration); the Resurrection can be stopped by any means that destroys or tampers with the backup copy. Alternately, it could be defined as Duplication with appropriate Limitations, including *Cannot Recombine* and *Duplicate Only Becomes Active Upon Original's Death* (-1). In either case, the backup only possesses the character's memories and abilities up to the last time a backup was made; if the character doesn't take the time to update his backups frequently, he may experience significant losses.

Another ability often possessed by computer characters is the power to "download" themselves into "vessels" such as robotic bodies, or even other computers. There are many ways to represent this ability. It might be a form of Duplication, if the character has a brigade of robotic forms it can use. Multiform might be appropriate, if the computer character is ordinarily confined to a "body" (such as a starship). For transferring into and taking over another computer, consider the Possession and Projection rules in the APG.

Computer characters naturally are skilled at working with other computers. They can access cyberspace, if it exists, effortlessly (Extra-Dimensional Movement), often have powerful programs for "hacking," and perhaps even Mental Powers that affect the Machine class of minds. (See below for more information about cyberspace).

HAND COMPUTER

Many Science Fiction characters carry this device, or something like it. It's a small computer used to store personal data and download information (the "Database" KSs represent whatever music, video material, and reading material the user currently has installed on the device). While this version is a discrete unit (an OAF), it's possible to build one into a bracelet or other piece of jewelry (OIF or IIF), or even to weave the necessary circuitry into clothing (IIF).

Cost Power

5 **Communications Function:** HRRP (Radio Group); OAF (-1), Affected As Sight And Hearing Groups As Well As Radio Group (-½)

17 **Computer:** Computer (see below); OAF (-1)

Total cost: 22 points.

HAND COMPUTER

Val Char Cost Roll Notes

15 INT 5 12- PER Roll 12-

10 DEX 0 11-

3 OCV 0

3 DCV 0

3 OMCV 0

3 DMCV 0

2 SPD 0 *Phases: 6, 12*

Total Characteristics Cost: 5

Cost Skills

11 AK: Milky Way Galaxy 20-

2 KS: Archived Recent News 11-

5 KS: Current News 14-

3 KS: Contact Information 12-

11 KS: Known Sentient Species 20-

1 KS: Literature Database 8-

1 KS: Movies Database 8-

1 KS: Music Database 8-

4 PS: Personal Assistant 13-

2 Systems Operation (Communications Systems) 12-

Programs

1 Alert Owner Regarding Scheduled Appointments

1 Prioritize Incoming Calls According To User Preferences

1 Search Reference Material For Information On A Topic

1 Send Communication To Recorded Identicode On Spoken Cue

1 Send Emergency Call To Emergency Authorities If Specified Protocols Are Not Met

Talents

3 **Clock:** Absolute Time Sense

5 **Memory:** Eidetic Memory

3 **Calculator:** Lightning Calculator

3 **Instant-On Feature:** Lightsleep

20 **Translator:** Universal Translator 12-

Total Abilities Cost: 80

Total Computer Cost: 85

Value Complications

None

Total Complications Points: 0

Total Cost: 85/5 = 17

COMPLICATIONS

As powerful as computer characters can be, they also suffer from some significant restrictions.

With the GM's permission, a computer character who's "built in" to a starship or base and cannot leave that facility at all can take a Physical Complication, *Built-In* (typically this is Frequently, Greatly Impairing; 20 points). However, a computer character with this Complication may cause problems for the campaign; GMs should only allow it after careful consideration.

Another possible Physical Complication is *Programming* (typically this is Frequently, Greatly Impairing; 20 points). This represents the fact that the computer character is "hard-wired" to do (or not do) certain things, and that even Mind Control can't override these instructions. The GM and player should define, in at least vague terms, what's included in the character's programming, keeping common sense and dramatic sense in mind. Science Fiction television shows and movies provide lots of examples:

- "I'm sorry, you cannot override the engine's safety restrictions without command authorization."
- "I'm afraid I can't let you do that, Dave... it's against regulations."
- "My prime programming requires me to steer this vessel to a safe location regardless of your commands, sir."

Computer characters usually have one or more Psychological Complications. Programming can constitute a Psychological Complication as well as a Physical one; the difference is that Psychological Complication programming can be overridden with Mind Control (or, in the GM's judgment, a Computer Programming roll made at the same penalty imposed on the character's EGO Rolls to overcome the Limitation). Typically *Programming* is Common, Strong (and thus worth 15 points).

Many computer characters have the Psychological Complication *Emotionless* (Common, Total; 20 points). This signifies that they have no emotions, approach all situations from the standpoint of logic and reason, and usually have difficulty understanding decisions other characters make for emotional reasons (often resulting in a -3, or greater, penalty on Interaction Skills). Other Psychological Complications common to computer characters include:

Considers Self Superior To Organic Beings

(Common, Moderate; 10 points)

Must Obey Orders From Crew (Common, Total; 20 points)

Wishes To Experience Emotions (Common, Strong; 15 points)

In many Science Fiction societies, computers, even sentient ones, aren't considered "citizens" or accorded full civil rights. This constitutes a Social Complication (typically one that's Very Frequently, Minor; 15 points).





CYBERSPACE

Depictions of “cyberspace” vary tremendously in Science Fiction. Some writers base it on modern computer networks, with most information moving via text or graphics, and battles of hackers and security fought through keyboards. That’s best modeled as characters pitting their *Computer Programming Skills* against each other.

More exotic visions of cyberspace see it as a “place” in which “avatars” of the characters interact with other people and programs in a kind of metaphorical landscape (see page 17). Typically this is represented in game terms using Extra-Dimensional Travel (see sidebar) — a modem or dataport becomes the “portal” to “another realm.” While adventuring in cyberspace, characters exist as software avatars, and protect themselves and attack others with software as well. A character’s avatar lacks his STR, Skills other than Computer Programming, physical abilities, Mental Powers, and the like, but retains all his other Characteristics.

Combat in cyberspace is mostly a matter of offensive and defensive programs, with various effects (which can include granting a character STR, or increased Characteristics that only apply in cyberspace). These are built as powers and abilities with the Limitations OAF (cyberdeck; -1) and *Only in Cyberspace* (-2). Since most of the “people” one meets in cyberspace are computer systems, programs tend to focus on attacking their abilities. Security programs which can do actual harm to a Human user exist, but they are illegal in many jurisdictions.

See *Cyber Hero* for more information on cyberspace and how to simulate it in *HERO System* terms.

ACCESSING CYBERSPACE

Modem: “Realistic” forms of Science Fiction use a device like a modem, built into a computer, to access cyberspace. The user is limited to what he sees “on the screen”; he doesn’t actually “enter” cyberspace, but rather “opens a window” that lets him view and participate in the online world.

Extra-Dimensional Movement (any location in the Cybernet, as defined by the location of the computer containing the modem), Reduced Endurance (0 END; +½) (37 Active Points); OAF (-1). Total cost: 18 points.

Jacking In: More common than an ordinary modem is the ability to “jack in” to cyberspace directly, via a “dataport” implanted in the character’s brain. The character’s body remains in the “real world,” but cannot sense anything there or act, leaving it vulnerable. Moreover, deadly computer security programs can kill the character by killing his cyber-self.

Extra-Dimensional Movement (any location in the Cybernet, as defined by the location of the computer where the character jacks in), Reduced Endurance (0 END; +½) (37 Active Points); OIF (dataport; -½), Meat Body (character’s body remains in the real world, but cannot move, perceive, or act, and damage to either the virtual form [in cyberspace] or the real body [in the real world] can hurt or kill the character; -1). Total cost: 15 points.

ROBOTS

[The room] contained a gold organ with a robot organist by Tiffany, a gold-tooled library with android librarian on library ladder, a Louis Quinze desk with android secretary before a manual memo-bead recorder, an American bar with robot bartender. Presteign would have preferred human servants, but androids and robots kept secrets.

—Presteign uses robots for practical and entertainment purposes in *The Stars My Destination*, by Alfred Bester

Robots in Science Fiction go back a long way, possibly to *Frankenstein*, or even to the Golem of Prague. The term comes from the Science Fiction play *R.U.R.* by Karl Capek; it's a Czech word meaning "worker."

Generally speaking, robots come in two categories: robots and androids. True *robots* can be just about any type of fully automated machine, ranging from tiny flying spy-bots, to a collection of mechanical arms on a wheeled base, to humanoid servant-robots. The *Star Wars* films provide an excellent example of the possible diversity of robots (or "droids,"

as they're called). *Androids*, on the other hand, are humanoid-shaped mechanical constructs, sometimes distinguishable from true Humans (or other species) only upon detailed examination. Data, from *Star Trek: The Next Generation*, is an android.

THE LAWS OF ROBOTICS

Renowned Science Fiction author Isaac Asimov devised, with the help of John W. Campbell, three famous Laws of Robotics — standing orders with which the robots in his stories were programmed. They are:

The First Law: A robot may not injure a human being or, through inaction, allow a human being to come to harm.

The Second Law: A robot must obey orders given to it by human beings, except where obeying an order would conflict with the First Law.

The Third Law: A robot must protect its own existence, provided doing so does not conflict with the First and Second Laws.

In various forms, these laws have been incorporated, to one degree or another, into many different settings, and Science Fiction fans (including Star Hero gamers) often know about them. Gamemasters who wish to use them, or allow their use, can simply give robots the Psychological Complication, *Must Obey Laws Of Robotics* (Very Common, Total; 25 points). (You could also make this a Physical Complication so it cannot be "overridden.")

Of course, GMs can alter these laws to suit their campaigns, or come up with their own sets of laws that don't resemble these at all. Regardless of what the laws are like in the game, inevitably a scenario or two turns around the issue of whether a robot violated one of them (typically the First Law, in murder mystery stories). The *Doctor Who* episode "The Robots Of Death" provides one good horror-mystery example of such a story, but there are plenty of others out there for GMs to draw inspiration from.

In *HERO System* terms, robots are usually Automaton with normal computer "brains." They don't have EGO or Psychological Complications. Androids are far more likely to have AI brains, or in the case of the most advanced types may simply be built as normal characters with appropriate abilities. In that case, STUN represents how easy it is for the character's systems to become temporarily disoriented due to damage or impact, EGO the sophisticated nature of their computer brains, and so forth.

Like other Automaton, robots and androids are recognizably artificial and/or machines. If you want one to pass as Human, he needs certain Skills or Powers (see below). Androids not built as Automaton can pass for flesh-and-blood Humans unless they take a Distinctive Feature indicating otherwise.

ROBOT CHARACTERS

"If being Human is not simply a matter of being born flesh and blood... if it is instead a way of thinking, acting... and feeling... then I am hopeful that one day I will discover my own humanity. Until then, Commander Maddox, I will continue... learning, changing, growing... and trying to become more than what I am."

—Data expresses his optimism for achieving his goal of transcending his robotic limits in the *Star Trek: The Next Generation* episode "Data's Day"

With the GM's permission, players can play robots or androids as PCs (there's even a suggested Android Template on page 44). However, GMs should consider this carefully. Robots and androids often present the same potential for unbalancing the game as computer characters (see above), but to an even greater degree, since they're mobile. They are powerful, tough, smart, and highly capable — so much so, in fact, that players may not be able to build a "realistic" robot or android on the campaign's starting Total Points. In that case, they should either design a robot or androids with more limited functions (and then gradually expand his abilities), or find some way to explain why he's temporarily "crippled."

Robot and android characters should *not* be built as Automaton; that poses too many game balance problems. They should be sophisticated enough to function like ordinary characters.

Suggestions for powers, abilities, and Complications for computer characters (see above) generally apply to robot and android characters, too.

CHARACTERISTICS AND SKILLS

Robots and androids usually have high Characteristics across the board — they're not only stronger, faster, and tougher than Humans, but smarter, too. However, their EGO and PRE may be low; they don't necessarily understand "organics" or relate to them well.

Similarly, robots' Skills should have fairly high rolls. They represent the character's extensive knowledge and programming. Technical Skills (such as Computer Programming and Systems Operation) are the most common, but many others are possible.

Some robots and androids may have the *Disguise* Skill with a high roll so they can pass as normal organic beings.

PERKS AND TALENTS

Robots and androids approach Perks and Talents the same as computer characters. In almost all cases they should have the Talents listed for computer characters.

POWERS

Robots and androids tend to have certain powers in common— call them "Everyrobot Powers," if you will. See the Android/Robot Template on page 44 for a list of them.

Beyond these abilities, a robot or android could have just about any Power — built-in weapons (Attack Powers), the ability to alter form to resemble an ordinary organic being (Shape Shift), "backup" powers such as those described for computer characters, enhanced movement abilities, you name it. The main limits are what the setting's technology allows, what the GM permits, and what the character can afford.

COMPLICATIONS

Here are a few examples of Complications common to robot and android player characters:

Distinctive Features: Android (Concealable With Effort; Noticed And Recognizable; 10 points)

Physical Complication: Sophisticated Computer Brain (affected by Mental Powers that work against either the Human or Machine classes of minds) (cost varies depending on the commonality of Mental Powers in the campaign)

Physical or Psychological Complication: Programming (see page 194).

Social Complication: Android (restricted civil rights, suffers from prejudice) (Very Frequently, Minor; 15 points)

EXAMPLE ROBOTS

HSB 406-11 has several example robots, ranging from advanced combat models to ordinary household servant-bots. Most of them are too powerful to serve as PCs outright, but their abilities and Complications may be inspirational as you design your own robot characters.

BIOTECHNOLOGY

Discoveries in biology in recent years point to amazing possibilities for the future. Humans may be able to transform themselves and other species, for good or ill.

CLONING

A clone is a genetic copy of another individual. That doesn't mean it's an exact duplicate — many features are *not* genetically determined. Fingerprints and retina prints would be different, for instance. And the clone would be younger than the original — cloning an adult would give you a baby who'll look like that adult in a couple of decades. A clone naturally has different memories from the original, which means it's likely to have a different personality. If nothing else, the clone is affected by the experience of growing up as a clone, which the original lacked.

Clones grow up at the same rate as other babies, which means an "invincible clone army" would take some 20 years to raise. It's usually easier to go out and hire people. Moreover, clones still have to be carried to term by host mothers, which means an army of clones would require an army of young women willing to have babies at the same time.

Of course, all of the above information assumes a relatively "realistic" approach to cloning, which many Science Fiction stories and settings don't take. In some Star Hero campaigns, rapid-growth and memory-implantation technology may allow for the swift creation of clones who are almost indistinguishable from the original.

In game terms, cloning is usually built as Duplication with a host of Limitations (see page 77). However, in some cases the GM may prefer for characters to use Summon, or even to buy clones as Followers.

There are interesting possibilities for adventures involving clones and cloning. Being genetically identical, clones would be ideal candidates for organ transplant for their originals. The clone might know this fate is in store, but accept it as his duty — or he might flee after he decides he doesn't want to be a walking organ bank. If you ignore the idea that fingerprints and retina prints differ in a clone, a clone makes the perfect way to frame someone for murder (or to fake someone's death). On the other hand, a character could clone himself and then murder the clone to frame an enemy for the crime, as in the *Star Trek: Deep Space Nine* episode "A Man Alone." Finally, in the early years of the technology, clones are certain to face all kinds of public hostility; cloning is one of the more misunderstood forms of biotechnology.

"I have successfully made contact with the Prime Minister of Kamino. They are using a bounty hunter named Jango Fett to create a clone army. I have a strong feeling that this bounty hunter is the assassin we're looking for."

—Obi-Wan Kenobi discovers that an army of cloned soldiers is part of the plot in *Star Wars Episode II: Attack Of The Clones*



GENETIC ENGINEERING

“Genetic engineering” is a general term for modifying living beings by altering their genes in some way. Genetic modification of species isn’t new — look at what people managed to do with horses and dogs by sheer persistence and selective breeding. Genetic modification of sentient species will probably proceed by slow stages rather than massive transformations — get one new system working right before you tinker with the others. Some writers have depicted Human genetic engineering creating entire new species, vastly different from the current models (including Humans specifically adapted for high-gravity worlds, water worlds, and the like). Others suggest a more cautious approach, with modifications limited to curing inherited diseases and modest improvements by borrowing from other mammals.

In *HERO System* terms, low-key genetic engineering simply means no Physical Complications for characters, and possibly high Characteristics or a few Talents (like Eidetic Memory). More exotic methods bestow Talents and low-level Powers.

In the campaign, genetic engineering has a variety of uses. Entire subraces of Humanity may be created by modification, leading to all sorts of exotic cultures as they strive to be different and prove their superiority. The unmodified majority may view them as monsters, leading to conflict — which side are the heroes on? If tinkering with your kids’ genes is no different from paying to get their teeth straightened, the variation among Humans may be tremendous, with no “normals” left.

On the other hand, modification of animals and plants is often routine in Science Fiction settings. New variants and subspecies optimized for other worlds help interstellar colonization, for example. On a more sinister note, creatures might be engineered into “living weapons.”

EXAMPLE GENETIC MODIFICATIONS

Cerebral Enhancement: The character’s brain processes and remembers information more efficiently.

+3 INT and Eidetic Memory and Lightning Calculator. Total cost: 11 points.

Enhanced Musculature: The character’s muscles and skeletal system are enhanced, making him stronger and faster.

+3 STR and Running +4m. Total cost: 7 points.

Sensory Enhancements: The character’s senses are far more acute than a normal person’s.

+2 PER with all Sense Groups. Total cost: 6 points.

Spatial Analysis: The character’s mind has the ability to gauge distances and spaces more accurately than normal.

Absolute Range Sense and Detect Size Of Area (INT Roll) (Sight Group). Total cost: 6 points.

NANOTECHNOLOGY

Nanotechnology is a term coined by futurist Eric Drexler to describe the field of engineering dealing with extremely tiny machines — devices on the same scale as cells or viruses. The advantage to such miniscule machinery is that it can work with and manipulate single molecules of material. As it has moved from being just a neat theoretical idea toward practicality, “nanotech” has become synonymous with “magic” in some circles — perhaps because of inflated gee-whiz claims by enthusiasts.

By manipulating matter at the molecular level, nanotechnology allows the use to refine and synthesize extremely pure substances (even the highly complex molecules of drugs or hormones) or exotic crystals. Nanotech devices can operate within living things at the cellular scale, performing surgery on microscopic nerves or blood vessels from the inside, or patrolling the body like robot cops, looking for rogue cells. By putting nanomachines to work making more nanomachines, a small “seed” unit can leverage itself up into a vast swarm of tiny devices, working together en masse. Incorporating nanotech-scale machinery and systems into Human-scale technology allows all sorts of amazing “smart” or “living” materials — structural materials able to adapt to changing conditions, repair damage, or transform on command.

The combination of nanotechnology and advanced biotechnology makes the distinction between living and nonliving completely arbitrary. When tools can heal and animals are designed, what’s the difference? This suggests that a lot of things twenty-first century Humans consider “natural” products will be manufactured using nanotechnology — food could come from solar-powered nanofabricators which look nothing like growing plants. By the same token, many “manufactured” items might be grown.

Used in weapons, nanotech combines all the nastier features of biological and chemical weapons with “smart” guidance and insidious armor penetration. The ultimate nanoweapon is the dreaded “grey goo” — an unstoppable mass of tiny machines mindlessly converting all matter they find into more machines just like them.

However, nanotechnology isn’t infallible. Since it’s fundamentally matter-based, it can’t manipulate large amounts of energy. Nanotech requires raw materials — it can’t create something out of nothing, although in many cases waste, air, and dirt are all the matter needed.

Making nanotech work at large scales is very tricky — a nanotech skyscraper would have to grow from the ground up, and making the construction microbots follow the building plan would be a matter of pruning and training, like working with plants. Because of the small scale, nanotech is slow. Individual devices move at the speed of cells or ants — minutes per meter. A horde of nanobots building a skyscraper would start out quickly, but soon would be spending days

just hauling tiny amounts of material up to the top. Growing objects using nanomachines would proceed like growing living creatures — a time scale of days, at least. No “instant cars,” in other words, unless you want to use total rubber science.

Nanotech is also limited by the laws of physics. Nanobots can’t stop a bullet in midair any more than a swarm of gnats can (but the nanomachines could repair the bullet hole fairly quickly, or stabilize someone who’s been shot). Nanotech can’t defy gravity (although at small scales, air is thick enough to swim in). And nanotech, like any other technology, needs energy. The amounts are tiny, but just as having a swarm of a million nanobots at work speeds up a job, the energy requirement of a million tiny workers gets large. So does their waste heat and other byproducts — a “nanofactory” the size of a dishwasher would emit heat like a furnace, requiring a steady stream of coolant and raw materials.

NANOTECH IN THE CAMPAIGN

In Star Hero campaigns, nanotech can be part of the background or an exciting new technological “MacGuffin” driving the plot of an adventure. Societies with high nanotech tend to also emphasize the biological and information sciences: lots of computer implants, synthetic beings, wonder drugs, and brain hacking. Nanotech devices are mostly self-maintaining and self-repairing, which may eliminate some limitations ordinarily associated with technology.

One colorful aspect of an advanced nanotech campaign is that just about everything is potentially “alive.” Chairs may be able to walk about, clean themselves, and adjust to fit different users. Houses may be living or semi-living systems. Combine this with widespread artificial intelligence (running on extremely compact nanotech computers) and the result is almost like a Fantasy setting — Clarke’s Law in action.

Another likely result of advanced nanotech is longevity, even immortality. The ability to provide medical treatments at the cellular level means doctors could retard or reverse the causes and results of aging. Even resurrection may be possible, if swarms of nanobots can perform a brain scan and recover the memories and personality of a person before decay sets in. In a nanotech world, death may be no more than an inconvenience.

The economics of a nanotech society are hard to predict. It’s easy to get optimistic and envision a day of infinite material abundance for everybody. It is likely that a nanotech society would be wealthier than the present day, just as modern Humans are richer than their Victorian forebears. But nanotech can’t do everything. Land remains valuable (though specific parcels may change: a toxic landfill might become quite desirable for nanotech mining of heavy metals). Intellectual property won’t change unless society wants it to. Energy is still important, though nanotech certainly changes how a society uses and distributes it.

THE GOO SPECTRUM

Besides the deadly “grey goo” mentioned in the text, scientists have speculated about other nanotech weapons/tools that might become feasible in the future. They include:

Blue Goo: Beneficial/protective nanotechnology designed to counteract grey goo.

Green Goo: Nanotech designed to sterilize Humans through the use of otherwise harmless infections. Could be used by repressive governments engaging in forced population control, eco-terrorists, or the like.

Golden Goo: Designed to filter gold from seawater, golden goo could cause problems (both ecological and economic) if it was not carefully controlled.

Khaki Goo: Another term for grey goo or other military nanotechnology.

LOR Goo: “LOR” stands for “Lake Ocean River”; the term refers to nanotech that would clean pollution, and harvest usable resources, from bodies of water. Poses the same dangers as golden goo.

Red Goo: Various forms of grey goo deliberately created and used as a weapon.

See HSEG 198 for some examples of nanotech weapons.



POWER AND ENERGY TECHNOLOGY

Far away, well inside Mercury's orbit, circling twenty million kilometers from the flaming surface of Sol the Star, was a power station built by man. ... It was a dangerous place to be, but it was the right place to be if you wanted power — an energy flux of seventy-eight kilowatts passed through every square meter.

—mankind satisfies part of its hunger for energy with a solar collector station in "To Bring In The Steel," by Donald M. Kingsbury

Science Fiction technology is versatile and powerful — when it works. Many gadgets and weapons require a lot of energy from a compact source. In *HERO System* terms there are three primary ways to model power supplies.

Devices which need only small amounts of power and can operate for weeks or months between battery changes are simply bought with the *Reduced Endurance* (0 END; +½) Advantage. Changing batteries and recharging them is just part of the normal maintenance implicit in the *Focus* Limitation. (Alternately, Fuel Charges may be appropriate for some of these devices.)

Devices with batteries or power cells that do get drained after only a few uses are best designed with the *Charges* Power Modifier. Getting new Charges is a matter of putting in new power cells or plugging the device into a recharger overnight.

BEAMED POWER

Many Science Fiction stories, particularly ones written in the early decades of the genre, featured robots, vehicles, and other devices running on *beamed power* rather than batteries or other built-in power sources. Beamed power involves a central power-generating station of massive capacity, which can then "beam" the power out as invisible, intangible waves of energy to any device capable of receiving it.

In game terms, you can simulate beamed power in either of two ways:

1. Buy devices and Vehicles with the Advantage *Reduced Endurance* (0 END; +½), with the beamed power functioning as the special effect of the 0 END cost.
2. Buy the central power station as an *enormous* Endurance Reserve with the *Usable By Others* (a lot of others!) and *Ranged* Advantages, and then have devices requiring power draw from the Reserve. The larger the number of devices that draw power from the Reserve, the more END and REC it needs — amounts in the tens of thousands of points' worth are often necessary.

The intriguing thing about beamed power from a storytelling viewpoint is the possibility that the power gets shut off. How does society, deprived of power, react? Could characters responding to an emergency be stranded when their powerless hovercars settle on the ground? Could terrorists hold the power generating facility hostage? A clever GM can come up with lots of similar ideas.

Large devices and Vehicle or Base systems may need a constant power supply. In *HERO System* terms, power plants and the like are typically special effects of the *Endurance Reserve* Power, producing END points in the form of electricity. These Endurance Reserves typically have REC equal to their END; this simulates how they work in "real-world" terms, and makes for easier book-keeping. At the GM's option, since Fuel Charges don't work well with Endurance Reserves, you may apply a *Requires Fuel* Limitation to represent the fact that they need refueling at least once a month or so. This Limitation is worth -0 or -¼ for Very Common or very easily obtained fuels, -½ for Common or easily-obtained fuels, and -1 for Uncommon fuels (or fuels which are difficult and/or extremely expensive to obtain). If the Endurance Reserve doesn't require refuelling on at least a monthly basis, it doesn't qualify for this Limitation.

Real World Power Supplies

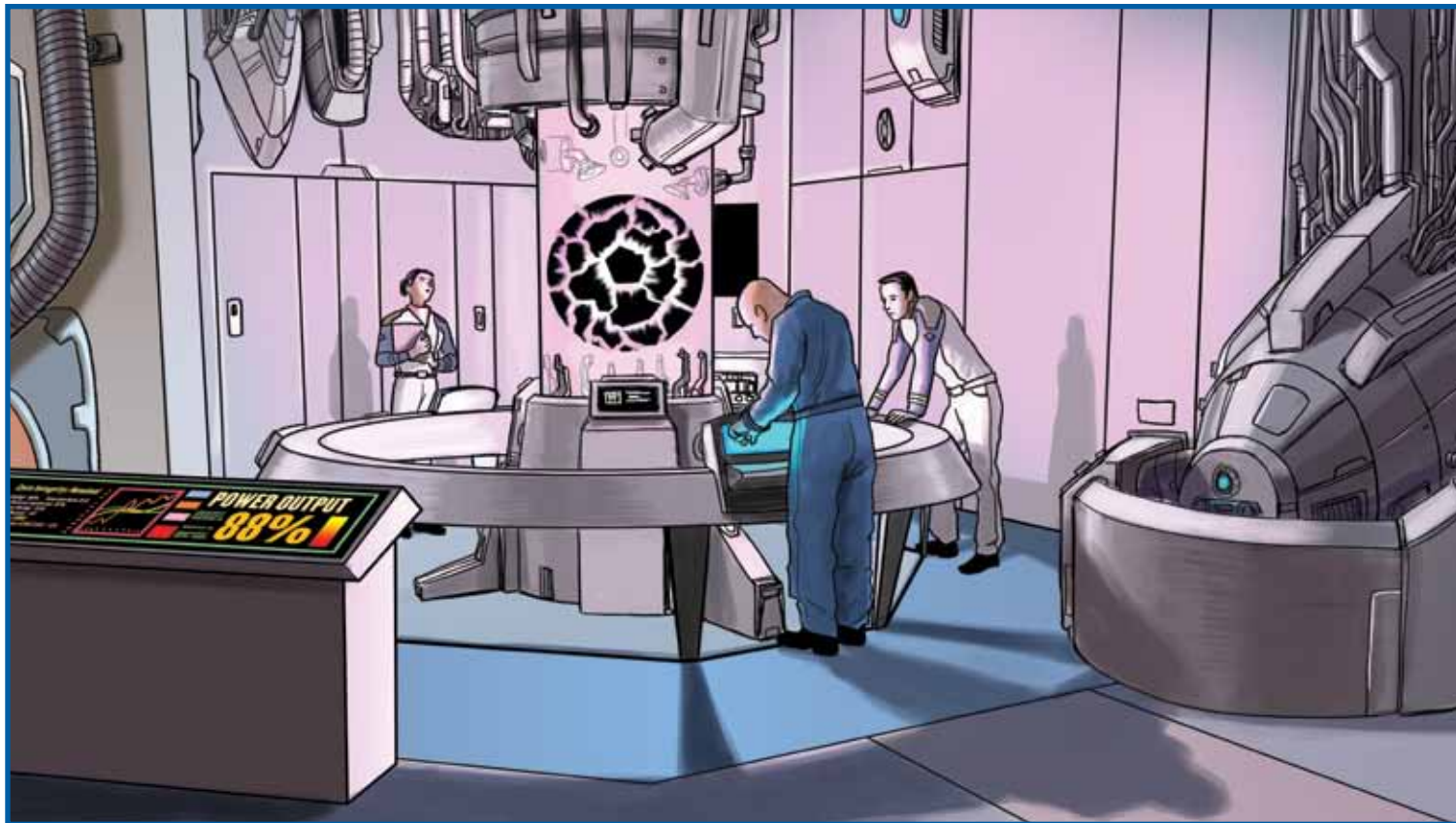
Some sources of power found in Science Fiction stories actually exist in real life, or could plausibly be developed in the future.

SOLAR POWER

Solar power is abundant, especially in space, and requires no fuel, but the solar panels to collect it are often large and bulky — the larger the panels, the more power they can generate. However, the primary difficulty with solar power is not panel size, but the fact that the farther away the panels are from a star, the less power they generate. For example, a solar panel at the orbit of Mars produces only half the power of the same-size panel in Earth's orbit; at Jupiter, the same panel generates 1/25 of the energy it generates at Earth.

In game terms, a solar power array is an Endurance Reserve. The Reserve's END and REC depend on its size. Both take a -½ Limitation, *Requires Solar Proximity*, to reflect the fact that the energy output drops as the panels get further away from a star. The listed END and REC for a solar power Reserve indicate its maximum power-generating capacity at a distance of up to 1 AU. For each AU (or fraction thereof) beyond that distance, halve the Reserve's END and REC. (In some respects, this is a form of the *Limited Recovery* Limitation for Endurance Reserves, so those taking *Requires Solar Proximity* may not also take that Limitation to simulate the need for proximity to a star.)

A 2.5 square meters power array can generate up to 12 END/12 REC. Add at least one 2.5 square meters area to the array for each additional point of END and REC (keep the two equal).



As of the early twenty-first century, each 2.5 square meters of solar cells has a mass of 10 kilograms. Advanced technology makes cells lighter and cheaper: by the middle twenty-first century, a 2.5 square meters panel masses only 5 kilograms and costs half as much, and the weight and price in most settings continue to go down from there as the decades progress.

Solar Panel: This is a 65 square meter panel generating enough power for a small space station or spaceship.

Endurance Reserve (36 END, 36 REC) (33 Active Points); OAF Immobile Fragile (-2¼), Only Powers Electrical Devices (-¼), Requires Solar Proximity (-½). Total cost: 8 points.

FUEL CELLS

Fuel cells burn hydrogen and oxygen to produce electricity. Some versions can run on other combinations of reactive gases, but hydrogen-oxygen cells are popular because their waste is fresh water. While fuel cells are compact and powerful, they do require fuel on a monthly basis, making them less useful on long-duration voyages. The Space Shuttle gets its power from fuel cells, since its missions typically last less than two weeks.

A basic fuel cell has a mass of approximately 1 kilogram (not counting fuel). It can produce up to 4 END/4 REC, and uses 1 liter of fuel per hour in the process. For up to each +4 END/+4 REC, double the number of cells.

Fuel Cell Generator: This array of fuel cells includes enough fuel for a month's operation, has a total mass of 2,500 kg (including fuel, fuel tanks, pumps, and so forth).

Endurance Reserve (20 END/20 REC) (19 Active Points); OAF Immobile (-2), Only Powers Electrical Devices (-¼), Requires Fuel (-¼). Total cost: 5 points.

RADIOTHERMAL GENERATORS

For missions to the outer solar system, space probes use compact radiothermal generators which produce electricity from the heat given off as radioactive materials decay. These are extremely reliable and long-lasting, but don't produce a great deal of power and would need radiation shielding on manned spacecraft.

At the earliest stage of this technology, a radiothermal power plant generates 2 END/2 REC of power per kilogram of weight. As radiothermal generator technology improves, increase the power output while reducing the weight.

Small Radiothermal Power Plant: This is a small radiothermal generator, such as a space probe might carry.

Endurance Reserve (2 END/2 REC) (3 Active Points); OAF (-1), Only Powers Electrical Devices (-0). Total cost: 1 point.

NUCLEAR FISSION

This is what most people mean by “nuclear power” — a tested and reliable technology which generates power by splitting atoms. As of the early twenty-first century, nuclear fission supplies a quarter of the United States’s electricity and allows France to be an energy exporter without oil. Modern Earth nuclear reactors are large and bulky, useful only when really huge amounts of power are needed. They can run for up to 5 years between refuelling. A reactor masses about 10 metric tons per 20 END/20 REC produced.

Technology can improve reactors, reducing their size and mass (possibly significantly). Halve the weight and volume of a fission power plant at near-future (Cyberpunk) technology levels, and again a generation later. After that stage of technological development, fusion power plants replace fission power plants.

Nuclear Reactor: A modern reactor (such as a submarine or interplanetary spacecraft might carry) masses about 100 metric tons.

Endurance Reserve (204 END/204 REC) (187 Active Points); OAF Immobile (-2), Only Powers Electrical Devices (-¼). Total cost: 57 points.

EXAMPLE SPECULATIVE POWER SOURCES

Early Starship Fusion Plant: This fusion plant is suitable for early interstellar spacecraft. It has a 10-year supply of deuterium fuel and a mass of 4 metric tons.

Endurance Reserve (156 END/156 REC) (143 Active Points); OAF Immobile (-2), Only Powers Electrical Devices (-¼). Total cost: 44 points.

Personal Fusion Unit: Built with late starfaring-era technology, this is a portable fusion plant weighing 100 kilograms and occupying about as much space as a filing cabinet. It can run for a decade on one supply of fuel.

Endurance Reserve (108 END/108 REC) (99 Active Points); OAF Bulky (-1½), Only Powers Electrical Devices (-¼). Total cost: 36 points.

Cold Fusion Generator: This is a second-generation cold fusion device, providing enough power for a household or a personal vehicle.

Endurance Reserve (72 END/72 REC) (66 Active Points); OAF Bulky (-1½), Only Powers Electrical Devices (-¼). Total cost: 24 points.

Experimental Antimatter Reactor: This is a first-generation antimatter power plant, too expensive to compete commercially with fusion power plants, but suitable as the goal of an adventure.

Endurance Reserve (168 END/168 REC) (154 Active Points); OAF Fragile Immobile (-2¼), Activation Roll 14-, Burnout (-¼), Only Powers Electrical Devices (-¼). Total cost: 41 points.

Starship Antimatter Reactor: This is a large, powerful reactor capable of running a major spacecraft. It weighs six tons.

Endurance Reserve (228 END/228 REC) (209 Active Points); OAF Immobile (-2), Only Powers Electrical Devices (-¼). Total cost: 64 points.

Speculative and Rubber Science Power Supplies

Science Fiction writers and space scientists have suggested several possibilities for new power sources. Some of them will probably become practical, while others remain in the realm of rubber science. Since all of these are highly speculative, the listed masses are just estimates.

FUSION POWER

Nuclear fusion power is the most likely candidate for a new type of power generation, at least in the near future. Current research is creeping towards a fusion reactor which produces more power than it consumes. A fusion power plant would need only a few kilograms of deuterium or helium-3 to produce large amounts of power for long periods. Just like fission plants, fusion generators require some fairly heavy shielding.

A fusion power plant when the technology first becomes available in the early-mid twenty-first century has a mass of 500 kilograms per 20 END/20 REC generated (fusion reactors are lighter than fission power plants, but bulkier).

Technology rapidly improves fusion power plants. At late Cyberpunk-era tech the output per kilogram increases and the cost halves.

COLD FUSION

A variant form of fusion power, “cold fusion” was announced with great fanfare in the late 1980s and then quietly dropped when the researchers discovered flaws in their experiment. Cold fusion uses as-yet-undiscovered chemical or electrochemical means to cause fusion a few atoms at a time. The energy given off is low, but cold fusion generators don’t need any shielding and are very compact.

When they first appear, cold fusion cells weigh 1 kilogram per 2 END/2 REC. The heavy water in a cold fusion cell lasts 1 year before replenishing. Technology rapidly improves cold fusion cells, increasing the output more than decreasing the size.

ANTIMATTER POWER

Well-known to Science Fiction fans from its use on *Star Trek*, antimatter power is the ultimate form of nuclear energy, because it converts all the mass of its fuel into energy. Tiny amounts of matter combined with antimatter would result in immediate annihilation of both in a reaction releasing immense amounts of power. Aside from containing and channelling this incredibly powerful reaction, the chief problem is that antimatter doesn’t occur naturally. Civilizations can’t mine it, they must manufacture it. It may someday be used as a means of storing and transporting energy, with huge solar-powered antimatter factories in remote star systems generating antimatter by the gram for distribution to planets and starbases. Handling antimatter is extremely tricky — it requires magnetic force-fields and the like — and an accident could wipe out an entire

facility, continent, or planet. (As of May 2011, the Human record for keeping antimatter intact is a little under 17 minutes.)

Given the rubber science involved, an anti-matter reactor usually doesn't need heavy shielding in addition to the special containers for the antimatter. Early antimatter generators weight 1 ton per 20 END/20 REC; a single gram of antimatter runs the plant for a year. Technological advances can improve antimatter power substantially, eventually reducing the weight to 1 ton per 40 END/40 REC, and perhaps beyond.

SINGULARITY POWER

Singularity power sources make use of tiny black holes, either artificially created in giant particle accelerators or left over from the early days of the universe, contained in special force-fields. Feeding mass into the black hole causes the matter to release almost all its energy. This means a singularity power plant can use anything for fuel. On the other hand, all the mass remains in the singularity, which makes it gain weight over time (at the rate of 1 kg per year). Singularity power sources don't scale down well — they can provide energy for a large starship or even a whole planet, but not a car or a personal energy weapon.

The singularity inside a power plant is an extremely valuable object — salvagers and pirates may want to recover or steal it, and finding a singularity is an excellent adventure hook. However, it's also extremely dangerous. If the force-fields and other safeguards holding it "inert" are shut off, the black hole "manifests" in real space, destroying objects on an interstellar scale.

At first introduction a singularity plant generates 400 END/400 REC and masses 400 metric tons or more (plus the mass of the singularity, which starts at 1 billion metric tons). As technology progresses, the plant becomes smaller and lighter, and the power output doubles, then triples.

ZERO POINT POWER

Zero Point Energy is a theoretical method of using the energy inherent in space itself. If this could actually be accomplished, it would effectively be perpetual motion — free energy from nothing at all. It could also be a terrifying weapon if the release of energy could be triggered from a distance. This is serious "rubber science" at present, although it has a basis in real physics. Power output, costs, and weights are pure guesswork, but should eventually become better than fusion (though probably not as good as antimatter or singularity power).

TELEPORTATION

The concept of teleportation has been around for a while, but it was *Star Trek* which made "beam me up" part of everyday slang. In Science Fiction, teleportation devices work in various different ways, and each has its unique side effects.

All teleporters create the problem that everyplace is instantly "next door" to everyplace else, for good or ill. Injured patients arrive directly in a hospital in zero time, soldiers deploy to a war zone (or the enemy leader's command post) in a flash — and places like the Grand Canyon or Florence become overwhelmed with even more tourists than they already have to cope with. Larry Niven suggested teleportation might create "flash crowds" at major events, a prediction supported by the way Internet users crowd popular Web sites at times.

Most forms of technological teleportation also create a host of other problems. Can a character's "teleportation pattern" be stored, thus leading to effective immortality, and possibly instant healing? Can multiple "copies" of a person or object be created, on purpose or by accident? Could teleportation cause physical or brain injuries over repeated use? Could two people be "merged," accidentally or on purpose, via teleportation? Gamemasters should consider these issues carefully before allowing teleportation technology into their Star Hero campaigns, or else they may soon find that they've unleashed a force they can't control. Players, unlike TV Science Fiction writers, aren't likely to ignore nifty new weapons and tools once they've created them.

MATTER FAXES

The most realistic form of teleportation would be a kind of "fax" system — the device scans the passenger down to the atomic level and then creates a duplicate at the receiving end. Often the scan destroys the original, which means any interruption in the process is fatal. A matter fax has interesting side effects: you can presumably beam the signal to multiple receivers, creating as many duplicates as you wish. You can also store the "blueprint" on disk, making this a convenient method of immortality. Matter faxes are by definition "replicators" capable of manufacturing anything which can fit into the scanning booth, so this kind of teleportation not only creates immortality but infinite wealth as well. Most matter faxes require a transmitter and a receiver, and realistically need insane amounts of power.

Matter Fax Booth: A standard MFB, found on many developed worlds. (Technically speaking, just building this as Teleportation wouldn't allow for the "copying" of people and objects; if necessary, add a Duplication effect.)

Teleportation 20m, x16 Increased Mass (1.6 metric tons), MegaScale (1m = 1,000 km; +1¾) (110 Active Points); OIF Immobile (-1½), Can Only Teleport To Fixed Locations (-½), Extra Time (1 Turn, -1¼) (total cost: 26 points) and 1 Floating Fixed Location (any other matter fax booth, chosen at the time of use) (5 Active Points); OIF Immobile (-1½) (total cost: 2 points). Total cost: 28 points.

In three-and-a-half centuries the transfer booths had done this to the infinite variety of Earth. They covered the world in a net of instantaneous travel. The difference between Moskva and Sidney was a moment of time and a tenth-star coin. Inevitably the cities had blended over the centuries, until placenames were only relics of the past.

—teleportation technology alters Human culture and living patterns in *Ringworld*, by Larry Niven



QUANTUM DISPLACEMENT

This is slightly more rubbery science than matter faxes. Quantum displacement somehow makes all the particles in the passenger's body “jump” to the destination. It's the closest to classic teleportation, and probably would work best over short distances. It wouldn't need a receiver, and so shouldn't have Fixed Locations. This makes quantum displacement a natural military technology: instead of launching missiles, quantum displace those warheads right into the enemy's bases. Guns might even be replaced with ranged quantum displacement devices to “pop” rounds into protected areas.

As a transport system, quantum displacement would be simplest as an individual device — put on your teleport belt and go hopping about. It would make theft ridiculously easy, and jails impossible to keep people in. The combination of social chaos and military value might keep quantum displacement a Top Secret technology until some form of barrier or countermeasure becomes available.

Quantum Displacement Transporter: A standard teleporation device found on starships, space stations, and developed worlds. It typically consists of a chamber containing one or more “teleportation pads” on which the users stand, while another character operates the controls. It's particularly handy for teleporting personnel and objects to and from a planet's surface without the need to land a starship or use shuttles (if characters want to Teleport over shorter ranges, add two non-MegaScaled slots). It requires similarly MegaScaled sensors to locate the destination (or the objects to be teleported to the device).

Cost Quantum Displacement Transporter

- 116 **Quantum Displacement Transporter:** Multi-power, 290-point reserve, all OIF Immobile (-1½)
- 5f **1) Teleporting Away:** Teleportation 20m, x8 Increased Mass, Position Shift, MegaScale (1m = 100,000 km; +2¼); OIF Immobile (-1½)
- 12f **2) Teleporting To:** Teleportation 20m, x8 Increased Mass, Position Shift, MegaScale (1m = 100,000 km; +2¼), Usable As Attack (+1¼), Ranged (+½), MegaRange (1m = 100,000 km; +2¼); OIF Immobile (-1½)

Total cost: 133 points.

FOLDED SPACE

Using essentially the same rubber science as warp drives (page 225), folded space teleporters bend the fabric of the Universe to put your current location next to your target. It needs a transmitter and a receiver, and can cover interstellar distances. If the cost is low enough, houses could have portals built into doorways, so that different rooms might be in different places, or even on different planets (as shown in, for example, Dan Simmons's *Hyperion*). Of course, if the system breaks down while you're in a room on a distant world, it might take months or years for a repairman to arrive by starship.

Teleportal Network: This is a network of standard space-folding device, connecting points on different worlds.

Teleportation 40m, x16 Increased Mass (1.6 metric tons), MegaScale (1m = 1 light-year; +4¼) (315 Active Points); OIF Immobile (-1½), Can Only Teleport To Fixed Locations (-½) (total cost: 105 points) and 1 Floating Fixed Location (any other teleportal, chosen at the time of use) (5 Active Points); OIF Immobile (-1½) (total cost: 2 points). Total cost: 107 points.

Captain Jack Harkness: *Okay, this can function as a sonic blaster, a sonic cannon, and a triple and full sonic disruptor. Doc, what you got?*

The Doctor: *I've got a sonic... errr, never mind.*

Jack: *What?*

The Doctor: *It's sonic, okay, let's leave it at that.*

Jack: *Disruptor? Cannon? What?*

The Doctor: *It's sonic, totally sonic, I am soniced up!*

Jack: *A sonic what?*

The Doctor: *Screwdriver!*

Jack: *Who has a sonic screwdriver?*

The Doctor: *I do!*

Jack: *Who looks at a screwdriver and thinks "Oooh, this could be a little more sonic"?*

The Doctor: *What? You never been bored? Never had a long night? Never had a lot of cabinets to put up?*

—from the *Doctor Who* episode
"The Doctor Dances"

MISCELLANEOUS EQUIPMENT

Here are a few items Star Hero characters might find useful that don't fit into any of the categories described above. See also HSEG 319-24 (communications and sensor devices), 327-30 (medical equipment, psionic technology), 332-35 (survival and environmental equipment), and 341-44 (tools and power devices).

Powered Exoskeleton: This bulky, powerful open-frame suit gives the wearer the strength for heavy jobs. Typically used for construction, cargo loading, rescue work, and various rough-and-tumble sports, it also serves as an effective hand-to-hand combat weapon in some instances.

Cost Powered Exoskeleton

13 **Clamps, Grips, And Servos:** +30 STR (30 Active Points); OIF Bulky (-1), Character Cannot Use Own STR (-¼)

5 **Battery:** Endurance Reserve (20 END/9 REC) (11 Active Points); OIF Bulky (-1).

Total cost: 18 points.

Sonic Multitool: This variant of the Forcebeam Multitool (HSEG 341) uses focused sound waves and other forms of electromagnetic radiation to assist with work on electronic devices.

+3 with all Electronic/High-Tech Skills (12 Active Points); OAF (-1). Total cost: 6 points.

Towel: An essential utility item for space travelers.

Cosmetic Transform 1d6 (wet things to dry things), Reduced Endurance (0 END; +½) (4 Active Points); OAF (-1), Extra Time (Full Phase; -½), No Range (-½). Total cost: 1 point.

ACQUIRING EQUIPMENT

"I have a variable-sword," said Speaker-To-Animals. "I urge calm. ... I would have preferred a more merciful weapon," [he said]. "A stunner would have been ideal. I could not procure one in time."

—Speaker-To-Animals attempts to steal a highly valuable starship in *Ringworld*, by Larry Niven

Since Star Hero is a Heroic-level game, characters typically obtain equipment by purchasing it with money instead of spending Character Points. Common exceptions to this include cyberware (which gives the character innate powers), and Vehicles/Bases in some campaigns (see page 70). However, some Star Hero GMs allow character to purchase even those technologies with money. (See page 164 for more on money and economics in Star Hero.)

ESTABLISHING PRICES

It's up to the GM to determine the prices of goods in his Star Hero setting, since Science Fiction universes can vary tremendously. He should establish price lists for his campaign for the goods PCs are most likely to want. To do that, he needs to know how to set prices. Obviously, the price of an item depends on such factors as:

- the cost to make/raise the item
- the materials the item is made from
- the rarity of the item (*i.e.*, supply and demand)
- the legal restrictions on the item (if any)
- the condition of the item

There are no rules for determining these things; you have to judge them for yourself and make an educated guess. But you still have to start from a fair basis. Just writing down in your list that a blaster costs "1,000 credits" is largely meaningless. How did you arrive at that figure, and how does it compare to other things a character might buy with his hard-earned money?

In most cases, the best way to create a pricing structure in your campaign is to establish a baseline amount from which you can derive other prices. Typically the best way to do that is to establish the monetary value of *one day's unskilled manual labor*. That in turn tells you what skilled labor is worth, and by knowing those two things you can judge what prices should be by estimating how long a person should have to work to buy them. For example, if the average unskilled wage is 100 credits per day, and you think blasters should have a high price so that few people can afford them, you might set the price at 3,000 credits

— an entire month's wages for a typical laborer! A skilled worker or craftsman could afford a blaster more quickly, perhaps in only a week or two.

If you don't like the idea of basing prices on unskilled labor, or on that one factor alone, you can use other or additional factors. Some possibilities include: how much money it takes to support a family of four for a year; the cost of some basic good (an average meal at a restaurant, a bushel of wheat, a ton of iron ore); or average annual taxes.

If you prefer to use game considerations when establishing your economy, you could instead base prices on the amount of Damage Classes, Active Points, or the like in an item that can be written up in *HERO System* terms. Examples include "100 credits per DC" for weapons, or "10 credits per Active Point" for other items. From that, you can derive the prices of other goods by comparison.

VARYING PRICES

Prices probably don't stay the same in every place throughout your Science Fiction universe, or in one place year after year. Many factors affect prices: a drought or flood might drive up the price of food on Hobson's Planet; a depression may lower prices throughout the Galactic Empire; a major new mining find may reduce the cost of a particular type of mineral. Similarly, the fact that a good is rare and valuable in one place doesn't mean it's not common and cheap far away; traders make their money exploiting such differences. For example, on Peldara IV, a planet of heavy industry, many manufactured items come comparatively cheap. But on the distant colony world of Haven, adventurers who need to equip themselves may find that even the most basic manufactured goods cost ten times what they do on Peldara IV (assuming they're available at all; see below). Additionally, a Tech Level difference between the item and the place you try to buy it can seriously affect prices. Supply and demand are powerful forces in the marketplace.

During the course of your campaign, you may also have to take into account the effect of PCs' actions on local economies. If the characters return from a raid on the local space pirate hideout with millions of credits' worth of loot, the local economy may not be able to stand the strain.



The ready availability of so much money means more people have money to spend, increasing the demand for goods, which causes prices to rise (thus inflicting significant hardship on everyone who hasn't beaten up any pirates and taken their stuff lately). In most cases in most games, you can probably get by without worrying about such matters; this is Star Hero, not Econ 101. But you should keep them in mind in case they add something to the story or make the PCs think twice about the consequences of their actions.

When you establish a price list, you should usually include the *average* price for an item throughout the region the list applies to. If necessary, you can apply a multiplier from the accompanying Price Modifiers Table. As always, the GM may ignore the table or change it to suit his campaign.

PRICE MODIFIERS TABLE

Item Is...	Price Modifier
Very common/supply greatly exceeds demand	x.5 (or less)
Common/supply equals or exceeds demand	x1
Rare/demand exceeds supply	x2
Very rare/demand greatly exceeds supply	x4 (or more)
High quality	x2 (or more)
Highly decorated	x3 (or more)
Tech Level difference	
Item is higher Level than place	x10 per point of difference
Item is lower Level than place	x1 (or less)

All price modifiers are cumulative.

A rare item that's of high quality costs x4 the standard price.

MORE THINGS TO CONSIDER

Just because an item's on the GM's price list doesn't mean the characters can quickly and easily buy it. The authorities control the sale of many things. Weapons and defensive gear are likely to be strictly controlled, especially in societies which are more interested in order than the right to bear arms. As a general rule, nonlethal weapons (like polymer guns or sonic stunners) are available in all but the most repressive societies. Armor allowed to civilians includes expedition suits and possibly ablative foam.

Civilian weapons for hunting or personal protection (like a defensive rocket pistol, stun rod, alien blades, ordinary shotgun, inertial gloves, and possibly an electron pistol) are allowed with a permit and background check — how easy it is to get the permit and what background information disqualifies a buyer depends on the society. In a repressive state anyone who isn't an active supporter of the regime may be denied a permit. These rules also apply to most protective suits (except battle armor or battlesuits), and items like stealth suits, teleporters, medical equipment, and any power plant over 60 END/60 REC output. Force tools may also be controlled because they can do lethal damage.

Actual military gear (any of the weapons or armor not already listed, plus most of the firearms in the *HERO System* rulebook) is closely controlled even in open societies. Anyone buying gear like that — or trying to buy it — attracts official attention and should have a legitimate need for the items. The nature of a legitimate need varies, of



course. If the campaign has interstellar mercenaries, then being a licensed merc is probably sufficient. Some societies may allow export of military gear, but again, only if the buyer has a legitimate purpose. Selling guns to criminals or rebels in another country is a good way to get into a war with that country's government. Characters may be able to bluff or con their way around these rules by means of Bureaucrats, Bribery, or Forgery.

OTHER PEOPLE'S STUFF

Often the characters get their gear from other people, either directly or by borrowing money.

Patrons sometimes issue special equipment to adventurers for a specific job — heavy weapons for a military operation, or specialized netrunning software for a Cyberpunk scenario. Usually the gear is expensive, and often the boss wants it back after the job is done. If the heroes make keeping the equipment part of their terms of employment, they may well discover their pay gets cut in proportion. Heroes who “lose” or “break” stuff because they want to keep it may find themselves gaining a poor reputation as sticky-fingered weasels. Gamemasters need to be sure both sides understand the conditions of the deal and what's supposed to happen to the gear afterwards.

For big-ticket items like spaceships, characters may wind up having to borrow money. This is a Complication for the vehicle — Hunted (Watched) by the bank. The temptation to skip out on payments can be strong. After all, the bank is only on one planet, and there are so many planets out there. The GM can discourage this kind of behavior with social sanctions in the campaign: deadbeats can be pursued by bounty hunters and repo men, they can lose their licenses and permits (and who will hire them or take passage on their ship then?) — they may even find themselves pursued by the Interstellar Navy.

STAR HERO PRICING GUIDE

Since Star Hero is a genre sourcebook rather than a specific campaign setting, it can't give a definite price list for every technological item. Instead, here's a meta-system. Gamemasters can allow it into their campaigns as-is, modify it as desired, or come up with their own.

To use this price guide, first determine the base price of the desired item. If a device has multiple powers or functions (like a weapon defined as a Multipower), add the Active Costs of all Powers together. (If the Power Framework has Advantages on its reserve or base cost, apply those to the most expensive slot when determining its Active Points.) If the device combines powers or functions from different classes, like a weapon that also provides defense, use the most expensive credit value for any of its categories to calculate the base price. Then apply any appropriate modifiers. If two or more modifiers apply, use them all; for example, cutting-edge military technology would be (x5 x x10) 50 times base price.

Most of the base price calculations derive from an item's Active Point cost. However, GMs should keep in mind that Active Points may not always tell the whole story. Sometimes a more sophisticated or advanced device has the same Active Points as an earlier, cruder model — the difference is that the earlier version has more Limitations. Similarly, sometimes a powerful effect doesn't end up costing many Active Points. In these cases, the GM may want to adjust the price to reflect the circumstances and/or utility of the equipment. For example, many starship defenses base their cost partly on the size of the ship, and some equipment designed to affect a large area bases its cost partly on the size of that area.

Class Of Item	Base Price
Communications	10 credits x Active Points
Computers	20 credits x Active Points
Defenses	15 credits x Active Points
Electronics	20 credits x Active Points
Medical	20 credits x Active Points
Robots	200 credits x total Character Points
Sensors	20 credits x Active Points
Tools, general	10 credits x Active Points
Vehicles	1,000 (or more) credits x total Character Points
Weapons	30 credits x Active Point
Modifier	Multiplier
Cutting-edge technology	x10 base price
Demand for item exceeds supply	x2 base price, or more
Illegal items	x2 base price, or more
Luxury or high-quality	x4 base price
Military or military-grade	x5 base price, or more
Rare or handmade items	x2 base price
Supply of item exceeds demand	x½ base price, or less
Tech Level difference	x10 per level (see text)
Vehicle/base technology other than weapons and defenses	x2 base price, or more

CHAPTER EIGHT



***TO SOAR AMONG THE STARS:
STARSHIPS AND SPACE STATIONS***



STARSHIP CREATION

The construction of any new starship is said to begin, as in the days of sailing ships, with the laying of the keel in the shipbuilding yard. While the wooden hull of old has been replaced by metal alloys and ultrastrong synthetic compounds, the significance of laying the keel has survived undiminished.

—from *The Star Trek: The Next Generation Technical Manual*, by Rick Sternbach and Michael Okuda

When many people think of “Science Fiction,” the first thing they think of is starships. From the gleaming super-science vessels of *Star Trek* to the grimy, oddly-shaped, clunky-looking STL craft of *Aliens*, starships are an integral part of the genre. They provide not only a way for characters to cross the vast reaches of space, but for many characters, a home. Space travel is a central concept in Science Fiction; writers have been telling tales about voyages to other worlds since Jules Verne sent a trio of explorers around the Moon by means of a huge cannon. Space hardware has improved since then, but the dream remains the same.

In Science Fiction stories, starships range from tiny, one-person vessels to planet-sized ships capable of devastating entire solar systems. The types of ships available to characters are virtually unlimited; the only restrictions are the technology available in the campaign and the GM’s limits on what’s allowed.

GENERAL STARSHIP CONSIDERATIONS

Designing a starship can be a difficult process, since such complicated vessels require a lot of different systems (and thus a lot of Character Points!). Here are a few things to consider and keep in mind.

A Brief History Of Human Space Travel

Space travel was Science Fiction until October of 1957. That’s when the Soviet Union placed the satellite Sputnik I in orbit about the Earth. The first living being in space was the dog Laika, launched a month later. The first Human to leave Earth was Yuri Gagarin in 1961, aboard Vostok I. The first Human to reach another celestial body was Neil Armstrong, who set foot on the Moon in 1969. Since then, Humans have mostly confined their activities to low Earth orbit, aboard a series of space stations (Skylab, Salyut, Mir, and the International Space Station) and the Space Shuttle.

On the other hand, robot space probes have ventured to the farthest reaches of the Solar System. The Soviet Luna 3 probe returned the first pictures of the Moon’s far side in 1959, Venera 2 reached Venus in 1966, and Mariner 10 surveyed Mercury in 1974. Mars has been a frequent target of space probes, though more than half of them have failed for various reasons (space engineers half-joke about the “Great Galactic Ghoul” that lurks between Earth and Mars). The first successful Mars probe was NASA’s Mariner 4 in 1964, and the Russian Mars 3 probe landed on the surface successfully (though the lander failed soon after). In 1976 the Viking probes analyzed Martian soil for signs of life, and in 1996 the Pathfinder probe and Sojourner rover expanded on the Viking discoveries. Meanwhile the Mars Global Surveyor mapped the planet with spy-satellite precision.

The outer Solar System was explored by a series of probes launched in the late 1970s to take advantage of a rare alignment of the planets. Pioneer 11 flew by Jupiter in 1973 and Saturn in 1979. Its bigger cousins Voyager 1 and Voyager 2 followed. Voyager 1 reached Jupiter in 1979 and Saturn in 1980, before swinging out into deep space. Voyager 2 reached Jupiter just four months after its twin, encountered Saturn in 1981, and went on to study Uranus in 1986 and Neptune in 1989, making it far and away the most successful space mission ever. Those probes dramatically changed Humans’ knowledge of the outer solar system. Following in the footsteps of the Voyagers, specialized probes were launched to the two largest planets — Galileo to study Jupiter and Cassini to Saturn.

HUMAN SPACE TRAVEL IN THE FUTURE

The near future of Human space travel depends a great deal on the willingness of Earth’s governments to pay for projects. The technology to send Humans to Mars exists as of the early twenty-first century; the political willpower remains absent. Plans currently on the drawing board envision missions to Mars which would rely heavily on “In-Situ Resource Utilization” — living off the land, so to speak, by producing rocket fuel and oxygen from Martian resources. Apollo astronaut Buzz Aldrin has proposed a permanent “cycler” spaceship to provide regular service between Earth and Mars, thus saving the cost of launching an interplanetary spacecraft for each trip.

Other space planners have proposed a return to the Moon, using it as the site for radio observatories or mining operations to extract Helium-3 (an isotope with great potential value as a fuel for nuclear fusion power plants).

Lunar mines could also support the construction of permanent habitats in high Earth orbit or located at the Lagrange positions (see page 133). The engineer Gerard K. O’Neill envisioned huge self-sufficient space colonies at L-4 and L-5, providing homes for millions of permanent citizens of space. (The Babylon series of space stations in the television series *Babylon 5* are essentially O’Neill colonies in another solar system.)

The biggest technical hurdles to overcome in near-future space travel are propulsion and life support. Engineers are trying to develop compact and powerful rocket engines which can cut down the travel time for interplanetary voyages. So far the best candidates are nuclear-thermal rockets, which use a small nuclear reactor to superheat hydrogen fuel; and the VASIMR drive, which heats hydrogen to plasma with microwaves and can switch between a high-thrust mode and a more fuel-efficient setting.

Life support is a bigger problem than space visionaries once realized. It’s prohibitively expensive to launch all the food and oxygen a crew would use on a five-year Mars mission, so nowadays NASA scientists are trying to develop “regenerative life support systems” using compact greenhouses or hydroponic farms to recycle wastes into food and oxygen.

Radiation levels in space also pose a problem. Current methods of reducing the radiation hazard focus on either minimizing the exposure time (by building faster rockets) or fitting spacecraft with small “storm shelters” where the crew can wait during radiation storms.

Many other obstacles face space explorers and the designers of spaceships. For example, lunar and Martian dust can be extremely hazardous in a variety of ways, so special steps have to be taken to keep it out of vessels and ground-based habitats.

Space Vehicle Types

Spaceships in Science Fiction are usually classified by size, range, purpose, or a combination of the three. In this book, “starship” refers specifically to ships capable of interstellar travel while “spacecraft” or “space vehicle” means anything that can travel in space. Some settings distinguish between “ship” (starship) and “boat” (spaceship). A vehicle’s prefix may tell what it can do: starships may be called “I.S.” (for interstellar ship) or “S.V.” (star vehicle), while spaceships are “S.S.” (space ship) or “P.V.” (planetary vehicle).

Size is of course a relative term — one setting’s giant spaceship may be middle-sized or small in a different Star Hero campaign. In general, larger vehicles are more durable and self-sufficient than small ones, allowing them to go on longer voyages.

Range often relates to size; larger vehicles can travel further and stay in space longer. Range classification is particularly important if interstellar travel requires a different drive system than interplanetary voyages.

Purpose is considerably broader than size. There are dozens of potential roles for spacecraft. People mostly use civilian ships to move things (or themselves) from place to place. Freighters are ships carrying general freight, often in large container modules. Bulk carriers are freighters carrying homogeneous cargoes like grain or hydrogen in large quantities. Passenger liners transport passengers in varying degrees of comfort, ranging from luxury liners to tightly-packed colony transports or refugee ships. Tugs are ships with powerful motors designed to move other spacecraft, unpowered barges, or similar massive objects.

Science and exploration ships learn things in space. Scout ships venture into unknown space, often spending years on a mission. Research vessels come equipped with laboratories to study specific planets or phenomena. Support vessels are mobile repair and resupply ships. A few long-range exploration ships (such as the various U.S.S. *Enterprises* of *Star Trek*) combine aspects of all three.

Warships are any kind of spaceship designed for combat. They can be broadly categorized into battle craft (which fight other space vehicles) and attack craft (which attack planets and similar targets). Large warships (battleships or dreadnoughts) carry massive armor and powerful defenses, along with weapons which can blast through the protection of enemy ships. Smaller ones (destroyers or frigates) tend to rely on speed and stealth for defense, and mount the most powerful weapons they can fit on board. Fighters are small ships, often with a single pilot and no passengers, designed to harass and attack larger ships or dogfight with enemy fighters. Carriers are a way to combine these concepts: a big, well-protected mother ship and a squadron of fast, expendable combat units. Cruisers or patrol ships are warships not designed to fight other combat units — they tend to be fast, long-range vessels intended for commerce raiding and peacetime law enforcement.

In game universes with “hyperspace” or some other dimension accessible from our own, there may be the equivalent of submarines — spacecraft that lurk “outside space” and appear suddenly to attack. Cloaking devices or other invisibility gadgets allow the same style of operation.

Military ships also include equivalents of various civilian ship types. Tenders are a kind of support ship, usually supporting small independent warships like cruisers or a destroyer squadron. Assault transports are military passenger liners, carrying troops and landing craft for planetary assault operations. Spy ships are military versions of scouts or research vessels, dedicated to gathering information about enemy operations and capabilities.



IMPERIAL SHIP CLASSIFICATION

Here's an example of a space vehicle classification system — the one used by the Terran Empire (described in the book of the same name). Since the Empire is large and has lots of specialized vehicles, the system is fairly detailed. The tone is intended to echo modern naval ship designations. It uses three letters to denote ship types: the first denotes range, the second role, and the third size.

First Letter	Type	Notes
O	Orbiter	Vehicles limited to planetary orbit
S	Spaceship	Vehicles capable of interplanetary flight
I	Starship	Vehicles capable of interstellar travel
Second Letter	Type	Notes
A	Attack	Warship to attack planets or bases
B	Battle	Warship to attack other space vehicles
C	Carrier	Vessel carrying smaller ships
E	Exploration	Scout or explorer ships
F	Freighter	Freighter or containership
H	Heavy Lift	Tugs or boosters
I	Intelligence	Espionage or intelligence-gathering
L	Lander	Surface-to-orbit transport
M	Merchant	Passenger liner or passenger-cargo ship
P	Patrol	Patrol ship or cruiser
Q	Covert	Covert-operations or decoy ship
R	Research	Scientific ships
S	Support	Support ships or tenders
T	Transport	Bulk transport or tanker
U	Utility	General-purpose vehicle
X	Experimental	Experimental ship
Y	Yacht	Personal vehicle
Third Letter	Type	Notes
P	Personal	Approximately 100 cubic meters; single pilot
S	Small	Approximately 1000 cubic meters; 10 crew
M	Medium	Approximately 10,000 cubic meters; 50 crew
L	Large	Approximately 100,000 cubic meters; 500 crew
V	Very Large	One million cubic meters, or more

Thus, an IMS is a small merchant starship, an SBL is a system-defense monitor, and an OBP is a space fighter. Other common ship types are OHS (orbital tugs), OLS (standard orbital shuttles), SMM (common interplanetary liners), SPS (in-system Customs cutters), STL (large interplanetary tankers), IBS (commerce escorts), IBV (super-battleships), ICL (carrier starships), IES (scouts), and so on. Individual vessels follow this prefix with a unique registry or hull number. Often a class of ships gets numbers in series.

Combining size and role produces a dazzling variety of ship types, which can be as broad or narrow as the GM wishes. In campaigns with lots of specialized ship types, the classifications will be precise and detailed; in worlds where all spacecraft can do a little of everything, classifications will be simpler. Space Opera campaigns sometimes borrow terms from the Age of Sail for the proper swashbuckling feel: “Star Galleons” for the big ships, “Clippers” for rapid passenger liners, and “Caravels” for smaller vessels. If ships come in a few distinct classes, they may simply be named for the prototype ship (as the British battleship “Dreadnought” gave her name to an entire type of warship).

Obtaining A Space Vehicle

Luke Skywalker: *Ten thousand! We could almost buy our own ship for that.*

Han Solo: *But who's going to fly it, kid, you?*

—negotiations get off to a rocky start in *Star Wars*

Gamemasters and players need to consider both campaign and rules matters when deciding how to acquire a vessel.

Setting considerations include things like the monetary cost of a space vehicle, the availability of the type of ship the character wants, and governmental restrictions on spacecraft ownership. Space vehicles are large, powerful, important things; it's unlikely the characters can simply walk into a dealership and buy one the way modern Humans buy automobiles. This is even more true if the PCs want a ship that's armed. While many ships probably have “blasters” with which to destroy space debris and the like, few come with military-grade weaponry. The authorities probably take a dim view of private citizens flying around with enough firepower to ravage planets. Unless the characters have some sort of governmental authorization (maybe they're special government operatives, or privateers), there are probably going to be some restrictions on what space vehicles they can and cannot own, and how those vessels are equipped. Whether they try to evade those restrictions, and whether they succeed, are great plot hooks for the GM.

In game terms, characters can acquire a ship in one of three ways. First, since Star Hero games are Heroic campaigns, they can buy them with money. However, even the cheapest space vehicle is likely to cost millions, if not billions, of credits, and a high-end vessel outfitted with military-grade systems and luxury appointments could cost even more. That means it's unlikely PCs will have the wherewithal to buy a ship outright (unless they've spent a lot of points on the *Money Perk*). Instead, they may have to do a favor for someone who rewards them by giving them a space vehicle, steal one, or find some other way to get the credits they need.

Second, characters can spend Character Points, buying spacecraft as Vehicles as described on 6E1 107. This neatly avoids the whole “Where do I get the money?” problem, but comes with problems of its own. Since spacecraft need all sorts of systems to function, and PCs are likely to want to add a lot more things that aren’t necessary but sure are fun (mega-blasters, cloaking devices, teleporters...), these Vehicles can end up costing a *lot* of Character Points, even after you divide the Vehicle’s total cost by 5. In fact, they may cost so many points a starting character can’t afford them. In this case, the GM has several options. First, he can follow the rules as-is, forcing the characters to skrimp and save Character Points until they can afford the ship they want. Second, he can make it easier on them some way. Maybe he changes the divisor to 10 or 20, thus substantially reducing the cost, or he could include only some of the ship’s systems in the cost of what the PCs have to pay for (maybe they get basics, like artificial gravity and communications systems, for free as “Everyvehicle Equipment”). Or he could let the characters buy the Vehicle “on credit” and require them to spend 50% of their Experience Points on the ship until it’s paid off.

Third, the GM can simply give the characters the ship. Maybe he wants to ensure they remain together as a group, and uses the ship as the “glue” binding the team together. Or perhaps he arranges the campaign so that sometime within the first few adventures, the PCs have the chance to find, steal, or otherwise acquire their own ship. However he explains or justifies giving the PCs a ship, the GM can then use the ship as the basis for all sorts of stories.

BASIC SPACECRAFT DESIGN

Designing Vehicles in the *HERO System* is a matter of purchasing the effects you desire, rather than stuffing components into a box until it’s full. Consequently the design rules in this chapter describe the sorts of effects (equipment) characters might want for space vehicles (with notes about making them “realistic,” if desired), and then discuss how to create that effect in rules terms. The listing of equipment and systems isn’t comprehensive, of course; no listing could be. But it covers most of the things commonly seen in different types of Science Fiction.

It’s important to remember that the *HERO*

System rules don’t impose specific requirements of “realism,” or use “realistic” guidelines for things like space vessel equipment. The size and weight of a system isn’t relevant; depending on the technology level, a given system might be huge or tiny. Where this book lists dimensions or other such “realistic” information for equipment, *that information is just a guideline*. Feel free to ignore it or change it, as desired and appropriate for the campaign.

STARSHIP DESIGN AND FOCUS

Most equipment aboard a starship is built with the *Focus* Limitation (plus *Bulky*, as usual for vehicular equipment). If the *Focus* is *Inaccessible*, that means it’s not only difficult to move, but difficult to disable — just shutting it off at one point on the ship isn’t necessarily going to stop it from functioning throughout the ship, because the ship has backup systems or some other method of maintaining that system even if a particular part of the ship gets damaged or disabled. It takes 1 Turn of effort to disable/break such a system throughout the ship.

An *Accessible* starship system also probably isn’t easy to move (though it may be, depending upon the nature of technology in the setting). However, it’s easy to deprive the ship (and its crew) of the use of that system, whether by reprogramming it, damaging it, or some other method.

Unless the GM prefers otherwise, starship equipment uses the standard rules for *Durability* (6E1 378) to determine whether a particular attack stops a system from functioning. At the GM’s option, characters may define a particular system as *Unbreakable*, with the special effect being not that it’s totally undamageable, but that it’s so diffused throughout the ship, has so many backup systems, or is otherwise so protected that only massive amounts of damage to the ship as a whole can destroy or disable it.

Starship systems built without *Focus* are usually so diffuse (as described above), or so intrinsically a part of the Vehicle, that they don’t qualify for the *Limitation* — characters cannot normally destroy or disable them without doing the same to the entire Vehicle. A spacecraft’s *Movement* is the most common example. But don’t forget the special effects involved; even without a *Focus* Limitation on a system, an invader or crazed crewmember may be able to damage or disable a system by attacking its access panels, causing it to overload, or the like.



EXPANDED VEHICLE SIZE TABLE

Cost	Size	Length	Width	Height	Volume	Mass	OCV+	STR	KB	BODY	Example
0	0	2m	1m	1m	2m ³	100 kg	+0	10	0	-0	Bicycle
5	1	2.5m	1.25m	1.25m	4m ³	200 kg	+0	15	-1	11	Motorcycle
10	2	3.2m	1.6m	1.6m	8m ³	400 kg	+1	20	-2	12	Chariot
15	3	4m	2m	2m	16m ³	800 kg	+2	25	-3	13	Sportscar, stagecoach
20	4	5m	2.5m	2.5m	32m ³	1.6 ton	+2	30	-4	14	Four-door automobile
25	5	6.4m	3.2m	3.2m	64m ³	3.2 ton	+3	35	-5	15	Limousine, IFV
30	6	8m	4m	4m	125m ³	6.4 ton	+4	40	-6	16	Tank
35	7	10m	5m	5m	250m ³	12.5 ton	+4	45	-7	17	School bus
40	8	12.5m	6.4m	6.4m	500m ³	25 ton	+5	50	-8	18	Attack helicopter, Lear jet
45	9	16m	8m	8m	1000m ³	50 ton	+6	55	-9	19	Locomotive, jet fighter
50	10	20m	10m	10m	2000m ³	100 ton	+6	60	-10	20	Large cargo plane
55	11	25m	12.5m	12.5m	4000m ³	200 ton	+7	65	-11	21	ICBM
60	12	32m	16m	16m	8000m ³	400 ton	+8	70	-12	22	Trawler, trireme
65	13	40m	20m	20m	16000m ³	800 ton	+8	75	-13	23	Cutter, longship
70	14	50m	25m	25m	32000m ³	1.6 kton	+9	80	-14	24	Freighter, Space Shuttle
75	15	64m	32m	32m	64000m ³	3.2 kton	+10	85	-15	25	Jetliner (e.g., Boeing 747)
80	16	80m	40m	40m	125000m ³	6.4 kton	+10	90	-16	26	
85	17	100m	50m	50m	250000m ³	12.5 kton	+11	95	-17	27	
90	18	125m	64m	64m	500000m ³	25 kton	+12	100	-18	28	
95	19	160m	80m	80m	1 mil m ³	50 kton	+12	105	-19	29	
100	20	200m	100m	100m	2 mil m ³	100 kton	+13	110	-20	30	
105	21	250m	125m	125m	4 mil m ³	200 kton	+14	115	-21	31	
110	22	320m	160m	160m	8 mil m ³	400 kton	+14	120	-22	32	
115	23	400m	200m	200m	16 mil m ³	800 kton	+15	125	-23	33	
120	24	500m	250m	250m	32 mil m ³	1.6 mton	+16	130	-24	34	
125	25	640m	320m	320m	64 mil m ³	3.2 mton	+16	135	-25	35	
130	26	800m	400m	400m	125 mil m ³	6.4 mton	+17	140	-26	36	
135	27	1 km	500m	500m	250 mil m ³	12.5 mton	+18	145	-27	37	
140	28	1.25 km	640m	640m	500 mil m ³	25 mton	+18	150	-28	38	
145	29	1.6 km	800m	800m	1 bil m ³	50 mton	+19	155	-29	39	
150	30	2 km	1 km	1 km	2 bil m ³	100 mton	+20	160	-30	40	
155	31	2.5 km	1.25 km	1.25 km	4 bil m ³	200 mton	+20	165	-31	41	
160	32	3.2 km	1.6 km	1.6 km	8 bil m ³	400 mton	+21	170	-32	42	
165	33	4 km	2 km	2 km	16 bil m ³	800 mton	+22	175	-33	43	
170	34	5 km	2.5 km	2.5 km	32 bil m ³	1.6 gton	+22	180	-34	44	
175	35	6 km	3 km	3 km	64 bil m ³	3.2 gton	+23	185	-35	45	
180	36	8 km	4 km	4 km	125 bil m ³	6.4 gton	+24	190	-36	46	
185	37	10 km	5 km	5 km	250 bil m ³	12.5 gton	+24	195	-37	47	
190	38	12.5 km	6.4 km	6.4 km	500 bil m ³	25 gton	+25	200	-38	48	
195	39	16 km	8 km	8 km	1 tril m ³	50 gton	+26	205	-39	49	
200	40	20 km	10 km	10 km	2 tril m ³	100 gton	+26	210	-40	50	
205	41	25 km	12.5 km	12.5 km	4 tril m ³	200 gton	+27	215	-41	51	Phobos-sized starship
210	42	32 km	16 km	16 km	8 tril m ³	400 gton	+28	220	-42	52	
215	43	40 km	20 km	20 km	16 tril m ³	800 gton	+28	225	-43	53	
220	44	50 km	25 km	25 km	32 tril m ³	1.6 gton	+29	230	-44	54	
225	45	64 km	32 km	32 km	64 tril m ³	3.2 gton	+30	235	-45	55	
230	46	80 km	40 km	40 km	125 tril m ³	6.4 gton	+30	240	-46	56	
235	47	100 km	50 km	50 km	250 tril m ³	12.5 gton	+31	245	-47	57	
240	48	125 km	64 km	64 km	500 tril m ³	25 gton	+32	250	-48	58	



Cost	Size	Length	Width	Height	Volume	Mass	OCV+	STR	KB	BODY	Example
245	49	160 km	80 km	80 km	1 quadril m ³	50 gton	+32	255	-49	59	
250	50	200 km	100 km	100 km	2 quadril m ³	100 gton	+33	260	-50	60	
255	51	250 km	125 km	125 km	4 quadril m ³	200 gton	+34	265	-51	61	
260	52	320 km	160 km	160 km	8 quadril m ³	400 gton	+34	270	-52	62	
265	53	400 km	200 km	200 km	16 quadril m ³	800 gton	+35	275	-53	63	
270	54	500 km	250 km	250 km	32 quadril m ³	1.6 tton	+36	280	-54	64	Ceres-sized starship
275	55	640 km	320 km	320 km	64 quadril m ³	3.2 tton	+36	285	-55	65	
280	56	800 km	400 km	400 km	125 quadril m ³	6.4 tton	+37	290	-56	66	
285	57	1000 km	500 km	500 km	250 quadril m ³	12.5 tton	+38	295	-57	67	
290	58	1250 km	640 km	640 km	500 quadril m ³	25 tton	+38	300	-58	68	Pluto-sized starship
295	59	1600 km	800 km	800 km	1 quintil m ³	50 tton	+39	305	-59	69	Moon-sized starship
300	60	2000 km	1k km	1k km	2 quintil m ³	100 tton	+40	310	-60	70	
305	61	2500 km	1.25k km	1.25k km	4 quintil m ³	200 tton	+40	315	-61	71	
310	62	3200 km	1.6k km	1.6k km	8 quintil m ³	400 tton	+41	320	-62	72	Mars-sized starship
315	63	4000 km	2k km	2k km	16 quintil m ³	800 tton	+42	325	-63	73	
320	64	5000 km	2.5k km	2.5k km	32 quintil m ³	1.6 pton	+42	330	-64	74	
325	65	6400 km	3.2k k	3.2k km	64 quintil m ³	3.2 pton	+43	335	-65	75	Earth-sized starship

kton: kiloton (1,000 metric tons)

mton: megaton (1 million metric tons)

gton: gigaton (1 billion metric tons)

tton: teraton (1 trillion metric tons)

pton: petaton (1 quadrillion metric tons)

SIZE

The Vehicle Size Table on 6E2 187 covers Vehicles up to the size of a jetliner — but in Science Fiction, spacecraft are often *much* larger than that. The accompanying Expanded Vehicle Size Table provides the cost and game attributes for *really* large vessels.

OTHER VEHICLE CHARACTERISTICS

The STR and BODY of a spacecraft usually depend solely on its Size, but this varies. Spacecraft in general often have more BODY than listed, since they have to survive the rigors of space. Tugs, freighters, carriers, and the like usually have much greater STR than normal, because their whole *raison d'être* is to haul large, heavy things around.

Spacecraft usually need lots of PD and ED (5 points or more) because of those same rigors of space. Military vessels usually have even more. In many cases the GM and players will want to set the defenses (and BODY) based on the effectiveness of the average ship's weapons, taking into account how long the GM thinks a starship battle should last in his setting. For quick battles, high-powered weapons and low defenses do the trick — though that may not be much fun in a gaming context, if the PCs' ship can get blown out of the sky by a single lucky shot from an enemy vessel. It may be more fun to decide that you want Ship X to be able to withstand Y number of average-damage hits before becoming incapacitated (or destroyed), so that the PCs have some chance to strike back (or make emergency repairs and keep fighting).

SPACE VEHICLE EQUIPMENT

Typically, Vehicle equipment automatically counts as Bulky, as described on 6E2 193. Given the enormous size of many space vehicles, some of their equipment may qualify as Immobile instead. It moves with the Vehicle, of course, but within the Vehicle it stays put. A Teleportation Platform located on Deck 37 Aft remains there all the time; it can't show up on Deck 15 Starboard, even if the characters desperately need it there. The GM determines when Immobile applies; the equipment described in this book provides some guidelines. Typically only Vehicles that are large enough to have crews in the dozens or hundreds should have Immobile equipment; smaller ships are sufficiently maneuverable and traversable that their equipment remains simply Bulky. And of course, the equipment/system itself must be both large and firmly attached to the ship to qualify as Immobile.

In some cases, a space Vehicle's equipment only affects its crew, not the Vehicle itself. Often, Vehicle powers affect the vehicle itself, and anyone inside it. For example, a Vehicle with Teleportation can Teleport itself and all its passengers, equipment, and cargo, without having to pay for the *Increased Mass Adder*. However, a Vehicle might have a Teleportation Platform for use by the crew. Obviously, this sort of system does *not* allow the Vehicle itself to Teleport. In most cases GMs can control this situation through the simple application of common sense, but if necessary, they may apply a -0 Limitation, *Only Affects Passengers/Crew*, to any such abilities.





Captain James T. Kirk: Go to auxiliary power!

Captain Spock: Auxiliary circuits destroyed, Captain.

—the *Enterprise-A* is in a tight spot in *Star Trek VI: The Undiscovered Country*

POWER SYSTEMS

The first thing to consider when building a spacecraft is *power*. Space vehicles need a lot of power — to run the drives, maintain life support, operate the sensors and control panels, fire weapons, and so forth. The bigger the ship, the

more power it needs.

Chapter Seven provides some information on possible Star Hero power sources. Realistically, solar power, radiothermal generators, and fuel cells are most likely for present-day and near-future spaceships. Nuclear fission power would be used on near-future missions to the outer Solar System. Fusion or cold fusion takes over in the next century, to be supplanted by antimatter or singularity power. Zero-point energy is the ultimate “rubber science” power source — it requires no fuel and runs indefinitely.

There are two primary ways to represent spacecraft power in *HERO System* terms: Endurance Reserves and equipment bought to cost no END.

ENDURANCE RESERVES

The first, and most common, way to simulate ship’s power is for the ship to have an Endurance Reserve. Virtually every system on the ship, even basics like artificial gravity and life support, runs off this power. Therefore, when determining the END and REC of the Endurance Reserve, you need to take into account both the “basic” systems (things the ship needs to run all the time, like life support) and things that aren’t always in use (defensive shields, weapons, propulsion, and so forth). For story purposes, ideally the ship should

have enough power to run its basic and a few military systems at normal strength without difficulty. But if it starts Pushing weapons, using lots of weapons, or the like, it has to dip into “power reserves” (smaller, backup Endurance Reserves), or conserve power, lest it risk running out of energy.

For “basics” the spacecraft needs to maintain constantly (like gravity and life support), and which affect the entire spacecraft (or a significant part of it), consider them the equivalent of Constant Area Of Effect attacks. They affect the entire “area” (the ship), and remain in existence on the Segments between the ship’s Phases. However, the ship only pays END for them on its Phases. For equipment not in constant use, like weapons and cloaking devices, END expenditure depends on the SPD of the computer or character operating them.

Ordinarily, a character with an Endurance Reserve specifies whether a power uses personal END or Reserve END. A spacecraft (or starbase) has no personal END, so it always uses Reserve END. If a Vehicle or Base has multiple Endurance Reserves (typically defined as “auxiliary” power or the like; see below), it may draw END from any of them without paying for an Advantage or the like. (Sometimes, Limitations on the Reserve restrict which systems can draw END from it.)

Pages 200-03 have numerous examples of Endurance Reserve-based power systems for Star Hero campaigns, many of them suitable for spacecraft. If none of those work for the ship you have in mind, you can easily use them as examples for designing your own.

NO ENDURANCE

Alternately, characters can buy all the equipment on their spacecraft as costing no END. The advantage to this is it's simpler; it eliminates END bookkeeping. The drawbacks are that (a) it increases the expense of the ship, and (b) it removes the potential drama and fun of the ship running out of power in crucial situations. However, if the GM and players are willing to role-play “we’re runnin’ outta power, Cap’n!” situations without regard for the rules, this option may work best for the campaign.

“I NEED MORE POWER!”

A common trope in many Science Fiction stories is for characters to increase the power to a system on their spacecraft to improve that system’s performance — they boost the sensors to detect something at greater range, increase the strength of their ship’s weapons to punch through an enemy’s defenses, or enhance the shields to withstand the effects of a radiation storm.

In *HERO System* terms, increasing equipment performance by pumping in more power is best reflected by Pushing. Pushing in Heroic campaigns is normally limited to 5 Character Points’ worth of effect (plus bonuses based on the EGO Roll). That rule works fine for characters, but for spacecraft, GMs should normally allow at least 10 Character Points’ worth of Pushing, with no need for an EGO Roll. However, the GM may require a character to succeed with a Systems Operation roll to route the power successfully, and/or an Electronics or Mechanics roll to keep from damaging the system with the pulse of extra power.

Gamemasters may even want to consider allowing spacecraft equipment to be Pushed for *more* than 10 points’ worth of effect. There are several ways to approach this. First, GMs can require spacecraft to pay for the privilege — they buy extra points’ worth of effect for their equipment, with the Limitations *Only When Pushing* (-1) and *Increased Endurance Cost* (x10 END; -4). However, that can get expensive, and clutters up the spacecraft’s character sheet. Second, GMs can simply increase the Pushing threshold — perhaps to 20 points, or maybe varying from system to system (“In this campaign, you can Push sensors for 10 points’ worth of effect, weapons for 20 points, and defenses for 30 points, at the standard END cost for Pushing”). Alternately, the effect may depend on the appropriate roll: a character who makes the necessary Skill Roll (typically Systems Operation, Electronics, Mechanics, or Computer Programming) exactly can Push for 10 points of effect, with +5 points per point the roll is made by, to a predefined maximum. The exact parameters depend on the dramatic effect the GM wants to achieve — some campaigns benefit from the dramatic scenes where a character says, “More power to the shields!”, others don’t.

RESERVE AND AUXILIARY POWER

Many spacecraft have one or more backup power sources, usually referred to as reserve power, auxiliary power, batteries, or the like. Some also have specific power sources dedicated to one system or weapon, to keep it functioning when the rest of the ship’s power has dwindled or been exhausted. In *HERO System* terms, these are just other Endurance Reserves, with much less END and REC than the ship’s main power system, and sometimes other Limitations (such as *Only Powers Specific System*, typically a -¼).

REALISTIC MOVEMENT ENDURANCE

The *HERO System* does not base the END cost for Movement Powers on the weight of the object being moved — but “realistically,” the greater a ship’s mass, the more END it should require to fly through space. If you want to simulate this in your game, divide the cost of the spacecraft’s Size by 5 and add the result to the END cost for Movement Powers. (This would also apply to Bases, if they have thrusters or the like.)

PROPULSION SYSTEMS

Propulsion systems are the devices used to move spacecraft around, whether pattering along between a planet and its moon or zipping across the Galaxy at many times the speed of light. Moving through space typically involves the Powers *Flight* or *Faster-Than-Light Travel*, though in some rare cases Teleportation or Extra-Dimensional Movement may be involved (with their special effect being “really fast flight,” dimensional portals, or the like).

Under the standard *HERO System* rules, Vehicles’ movement automatically does not cost END. Since many spacecraft do have to “power” their movement through fuel, a power plant, or the like, they often take the *Costs Endurance* Limitation for it.

Lieutenant Commander Data:

A resumption of our present course at warp six will place us in the T’Ili Beta system in six days, thirteen hours, forty-seven minutes.

Commander William Riker: *What, no seconds?*

—the *Enterprise-D* travels fast in the *Star Trek: The Next Generation* episode “The Loss”

LIGHT DISTANCES

Here’s a quick reference to distances traveled by light in given time periods.

- One *light-second* (or light-Segment) is 300,000 kilometers (186,000 miles).
- One *light-Turn* is 3,600,000 kilometers.
- One *light-minute* is 18,000,000 kilometers.
- One *light-hour* is a little over 1 billion kilometers.
- One *light-day* is about 26 billion kilometers.
- One *light-year* is 9,467,000,000,000 kilometers.

Acceleration

[H]e shot forward to controls, tripped the release lever, and as the yawl started to float up the anti-grav beam, threw on full 10-G propulsion. He was not strapped into the pilot chair. The effect of the 10-G drive on his... unprotected body was monstrous. ... The mounting pressure became agonizing. ... As they yawl tore up into the blue-black of outer space, he began to scream in a bat screech before he mercifully lost consciousness.

—Gully Foyle suffers from the power of acceleration in *The Stars My Destination*, by Alfred Bester

Given the incredibly high velocities at which spacecraft move, acceleration and its effects could become an issue in your Star Hero game. Many GMs prefer not to clutter a game session with these concerns; they assume ship technology and/or the crew automatically takes care of any problems. On the other hand, some Hard Science Fiction gamers like to pay close attention to these issues and devise realistic solutions to them.

In game terms, 1 G (one gravity) of acceleration equals 10m of Flight... roughly speaking. Since the *HERO System* uses SPD and Phases to determine when vehicles move, what really matters is a vehicle's velocity *per Turn*. One G of acceleration actually amounts to 120m Flight per Turn. For a vehicle with SPD 12, or for the natural force of gravity which acts every Segment, 1 G therefore does equal 10m Flight. On the other hand, a ship with SPD 3 needs to fly 40m per Phase (either 40m Combat Movement, or 20m with a standard Noncombat Multiple) to achieve 1 G acceleration.

As the text below describes the different methods of normal propulsion used in Science Fiction settings, it offers suggestions for the maximum speeds attainable with various engines. These represent "average" figures for "average-sized" engines and spacecraft with "average" SPDs. In reality, the amount of thrust an engine can generate, and thus the maximum speed it can attain, depends not only on the type of engine, but on the relationship of the power/size of the engine to the size/mass of the spacecraft.

Engine ratings are also chosen to reflect their usefulness in combat. That's the main situation in which gamers need to determine precisely how fast and maneuverable a ship is; the rest of the time, knowing a ship's exact velocity is usually unimportant. Typically, the more advanced an engine, the more efficient it should be at moving a spacecraft around in combat, and the more maneuverability it should provide. Therefore, more advanced engines, such as fusion drives and antimatter drives, allow for faster normal Flight relative to engines like chemical rockets.

LIMITED MANEUVERABILITY

As dramatically portrayed in Arthur C. Clarke's short story "Hide and Seek," some starships, particularly those using rocket propulsion, can be difficult to maneuver. You can simulate this with the *Limited Maneuverability Limitation* (6E2 188). The GM could even expand the Limitation, making maneuverability worse in $-\frac{1}{4}$ increments (only one turn per Phase for $-\frac{1}{2}$, 1 turn per Turn for $-\frac{3}{4}$, and so forth down the Time Chart).

8

G FORCES

High rates of acceleration or deceleration, or abruptly sharp turns, can put a lot of extra gravitational or centrifugal force on a character in a vehicle. This doesn't happen very often in everyday life, but when space travel or vehicular combat are involved, it can happen repeatedly.

Forces greater than normal Earth gravity (1G, or 120m per Turn) can cause characters to suffer momentary blackouts (not enough blood to the brain) and redouts (too much blood to the brain). The greater the acceleration (or deceleration, or centrifugal force), the greater the G forces on the character, and the greater his chances of experiencing problems or suffering injury.

To determine the effects of G force on the characters in a vehicle, determine the vehicle's rate of movement per Turn (don't forget to account for moving straight "up" or "down" compared to the local gravity; see page 306). Then consult the accompanying G Forces Table.

In the G-Forces Table, the STR column provides a STR rating for the pull of gravity. If a character tries to move in the increased gravity, he has to succeed with a STR Versus STR Roll against the force of the gravity. If he fails, he can't move. (For "realism" purposes, the GM may not want to allow characters to use STR gained from Density Increase or Growth when making the STR Versus STR Roll.)

The Damage done to the character is Attack Versus Alternate Defense damage; the defense is one of the methods of protection from G forces (see below). The character takes this damage on each of his Phases that the increased "gravity" remains in effect.

If the damage would cause the character to lose consciousness, he may attempt a CON Roll at the indicated modifier to maintain quasi-consciousness. The Roll may only be attempted if the character would be at -0 STUN or worse. If it succeeds, the character can stay conscious enough to operate his controls (he can take no other actions), though at -1 to Skill Rolls per -2 STUN below 0 he is at. A character may only attempt this Roll to overcome damage from G forces; it must be the most recent damage done, and the only damage that's put the character below 0 STUN.

Any Skills requiring physical movement (including Control Rolls) are at the same penalty as the CON Roll; this is *in addition to* overcoming the STR of the gravity (see above).

G FORCES TABLE

Movement	G	STR	CON Roll	AVAD Damage
120m per Turn	1	5	-0	None
121-240m per Turn	2	10	-1	1d6
241-360m per Turn	3	15	-2	2d6
361-480m per Turn	4	20	-3	3d6
481-600m per Turn	5	25	-4	4d6
601-720m per Turn	6	30	-5	5d6

...and so on

PROTECTION FROM G FORCES

Obviously, it's better for the characters in a fast-moving vehicle if they don't suffer any damage from acceleration — especially when FTL travel becomes possible, since rapid acceleration to velocities of that magnitude reduces characters to pulp (as shown in Dan Simmons's novel *Endymion*, where characters must be resurrected after each FTL journey).

In most cases, it's easiest to simply assume that spacecraft come with "G Force Dampers" as part of their "Everyvehicle Equipment," and that a vehicle's Damper suffices to protect its occupants from movement-related G force damage. That way characters only have to worry about acceleration-related issues when the Damper malfunctions or is destroyed. (The example ships later in this chapter use this method.)

If the GM prefers that each spacecraft pay Character Points for its G Force Damper, you can build one in several different ways. The simplest is to buy PD Resistant Protection that provides 2 points of PD per dice of AVAD damage the acceleration could cause. The Resistant Protection takes the Limitation *Only To Protect Occupants Against G Force Damage* (-2). Thus, a ship capable of 5 G acceleration (5d6 damage) can protect all the occupants from G forces with 10 PD Resistant Protection costing 5 Real Points. (Of course, a ship could have a Damper providing less than full protection for its maximum acceleration.)

Alternately, the GM might prefer that spacecraft use some other Defense Power for their Dampers. For example, Damage Reduction would counteract some of the acceleration, but not all; Power Defense might be more appropriate than Resistant Protection in some settings or for some types of technology.

OPTIONAL REALISTIC SPACE ACCELERATION RULES

In space, acceleration is constant — as long as a vessel keeps generating thrust in some fashion, it keeps moving faster and faster. That doesn't work well in the *HERO System*, where movement rates are fixed. A *HERO System* Vehicle with Flight 20m moves at Flight 20m every Phase, not Flight 20m the first Phase, Flight 40m the second Phase, and so on. While not realistic, this is much easier for gaming purposes.

If you want to more closely simulate realistic (Newtonian) acceleration with rules, you can use a variant of the *Cumulative Advantage*. Instead of buying up the total effect, you buy up the meters of Flight — each $+1/4$ Advantage after the first doubles the number of meters of Flight the Vehicle can attain (see the accompanying sidebar for Cumulative multipliers). The upper limit of the Cumulative is as fast as the ship can go; this may represent a limit on its fuel supply, its equipment,

its structural integrity, or the like. (For even greater realism, establish a flat cost for the *Cumulative Advantage* for Flight, but impose *no* upper limit, other than just under the speed of light. The only other restriction would be how much fuel the ship had; it has to stop accelerating when it runs out of fuel.)

The acceleration for a ship using Cumulative Flight increases constantly — it adds its meters of Flight each Phase until it reaches the maximum. In the example above, the ship would fly as a rate of 20m the first Phase, 40m its second Phase, 60m its third Phase, and so on until it reaches 4,000m. The GM may rule that a ship adds velocity at a slower rate, such as meters per Turn.

The drawback to this is that the ship can't decelerate any more quickly. It can only remove velocity at the same rate it adds velocity. That usually means ships have to start braking at roughly the halfway point to their destination. Vehicles using these optional rules cannot apply the *Increased Acceleration/Deceleration Advantage* to their Flight. This form of acceleration only works in the vacuum of space; if a ship can enter atmospheres, it uses normal movement rules in them.

None of the propulsion systems described in this book use these optional rules.

ESCAPE VELOCITY

Planets exert gravity on objects on or near them, including spacecraft. This means spacecraft that cannot continuously accelerate (such as Earth's early twenty-first century rockets) have to exceed the force of gravity to get into orbit or leave a planet. If they can't fly fast enough, they're stuck there... or they may crash into the planet!

Earth's escape velocity is 11.1 km/second. You can determine other planets' escape velocities with the following formula:

1. Determine the planet's gravity (G), relative to Earth. Thus, a planet with twice Earth's gravity has 2 G.
2. Determine the planet's radius (R), relative to Earth (Earth's radius = 6,400 km). Thus, a planet with a radius of 8,952 kilometers has 1.4 R.
3. Multiply $G \times R$.
4. Determine the square root of the result of Step 3.
5. Multiply the result of Step 4 by 11.1. That tells you the escape velocity in kilometers per second.

Thus, $VE = 11.1 \times (\text{square root of } (G \times R))$ in kilometers per second.

For the planet described above, the escape velocity would be 11.1×1.67 (the square root of 2×1.4), or 18.5 km/sec.

OPTIONAL CUMULATIVE FLIGHT MULTIPLIERS

Value	Multiplier
$+1/4$	x2
$+1/2$	x4
$+3/4$	x8
+1	x16
$+1 1/4$	x32
$+1 1/2$	x64
$+1 3/4$	x125
+2	x250
$+2 1/4$	x500
$+2 1/2$	x1,000
$+2 3/4$	x2,000
+3	x4,000
$+3 1/4$	x8,000
$+3 1/2$	x16,000
$+3 3/4$	x32,000
+4	x64,000
$+4 1/4$	x125,000
$+4 1/2$	x250,000
$+4 3/4$	x500,000
+5	x1,000,000

For multipliers not indicated on the table (such as x200), use the next highest multiplier.

Here's an example:

Flight 20m, Cumulative ($+1/2$), Increased Cumulative Multiplier (x200, or 4,000m; +2). Total cost: 70 points.



To convert kilometers per second into meters of Flight per Phase, use the following formula:

- 1. Multiply the kilometers per second rating by 12.** This tells you how many kilometers the vehicle has to move per Turn.
- 2. Divide the result of Step 1 by the Vehicle's SPD.** That tells you how many kilometers it has to move per Phase to achieve that velocity.
- 3. Multiply the result of Step 2 by 1,000;** that converts kilometers per Phase to meters per Phase. That's how fast the vehicle has to move (using Noncombat movement) to achieve escape velocity.

For example, Earth's escape velocity is 11.1 km/sec. That equals 133.2 km/Turn. For a Vehicle with SPD 3, that's 44.4 km/Phase, or 44,400m per Phase (call it 44,000m for ease of calculation). That equates to Flight 12m, x2000 Noncombat (total cost: 72 points). MegaScale might provide a cheaper way to build this in some cases (e.g., Flight 10m, MegaScale [1m = 10 km; +1¼] [total cost: 22 points]), if the GM allows it.

SPACE ELEVATORS

To overcome the energy cost and other difficulties associated with achieving escape velocity, some scientists have suggested the concept of a "space elevator." Also known, in Science Fiction terms, as a "beanstalk," a space elevator is a miles-tall structure that reaches from the planet's surface to a geostationary orbit in outer space. Passengers and cargo ferry up and down the stalk in elevators, while ships remain docked to it in outer space and never have to worry about entering the atmosphere, landing on the planet, or getting out of the planet's gravity well.

In *HERO System* terms, you can define a beanstalk as Flight Usable By Others, with the *Extra Time* Limitation to represent how long it takes to get from the surface to a docked ship. Naturally, the structure also shelters users, providing Life Support. Assuming an Earth-size planet (with a geostationary orbit of 35,880 km), it might look something like this:

Space Elevator: Flight 8m, Usable Simultaneously (up to 800 kg worth of people and cargo; +¾), MegaScale (1m = 10,000 km; +2) (30 Active Points); Extra Time (1 Hour; -3) (total cost: 7 points) **plus** Life Support (Self-Contained Breathing, Safe Environments: High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum), Usable Simultaneously (up to 800 kg worth of people and cargo; +¾) (total cost: 31 points). Total cost: 38 points.

Normal Propulsion

"Normal propulsion" refers to engines and drives which move spacecraft in normal space at STL speeds. In Star Hero there are two ways to represent normal spacecraft movement. The first is the Hard Science path, using rocket motors and following Newtonian mechanics. The second is the grand tradition of Space Opera, in which spacecraft behave like fighter planes and the objections of science purists are drowned out by the whooshing of engines in vacuum.

DELTA-V

The main currency of realistic space travel is "delta-V," or how much change in velocity a spacecraft's engines can impart to it with a given load of fuel. This is important because velocity determines what orbit a spacecraft follows, whether it can escape from a given planet's gravity well, and how fast it can make the transit to another world.

In *HERO System* terms, this is best represented by using the ship's movement as its delta-V: if a spacecraft has Flight 24m, it can change its velocity by 24m per Phase. This assumes rockets use Noncombat Movement whenever possible, throttling down to "battle speed" only when maneuvering and evading becomes important. This converts to kilometers per second by dividing total Move per Turn by 6000. For really high-speed rockets, the *MegaScale* Advantage simplifies calculation — buy the final delta-V as MegaScale Flight and then apply the *Extra Time* Limitation to get the time needed for a "full burn" (i.e., to burn the fuel and accelerate the vessel to full speed).

ROCKETS

For long trips in space, you use an ion jet giving low thrust over long periods of time. The ion motor on our own craft had been decades in use. Where gravity is materially lower than Earth's, you land on dependable chemical rockets. For landings on Earth and Venus, you use heat shields and the braking power of the atmosphere. For landing on the gas giants — but who would want to? The Nerva-class fission rockets are used only for takeoff from Earth, where thrust and efficiency count.

—a discussion of early spacefaring-era propulsion from "Wait It Out," by Larry Niven

In the real world, the only way to make yourself move in space is by Newton's Third Law: for every action there is an equal and opposite reaction. Rockets make use of this by throwing their exhaust away at high speed, imparting an equal momentum to the rocket in the opposite direction. Solar sails take the opposite approach — they catch fast-moving particles streaming out from the Sun, and thereby gain momentum in the same direction.

Realistically, rockets are likely to remain the most popular method of getting around in normal space: they're compact, powerful, and allow people to move relatively heavy loads. They come in several types.

CHEMICAL ROCKETS

These are the oldest, and still the most common, form of normal space propulsion. They burn chemicals in energetic reactions to produce thrust. Chemical rockets come in two main types: solid-fuel and liquid-fuel. Solid-fuel rockets contain energetic solid compounds like gunpowder, which burn once ignited. They are simple and dependable, but can't be turned off once lit. This makes them most suitable as boosters or missiles. In *HERO System* terms, you can represent a solid-fuel rocket as Flight with 1 Continuing Charge; typically the Charge Never Recovers.

Liquid-fuel rockets combine chemicals like liquid hydrogen and oxygen, or kerosene and oxygen. Unlike solid rockets, pilots can throttle them down, or switch them on and off. In *HERO System* terms, you can simulate liquid-fuel rockets with Fuel Charges.

Chemical rockets intended for manned spaceflights usually cannot exceed 360m per Turn (3 G), since more would endanger the passengers. Chemical rockets for unmanned craft can attain velocities of 840m per Turn (7 G).

A rough guideline for the size of chemical rockets depends on acceleration. High-acceleration rockets (like the ones used to boost off Earth or other planets) take up about 1 cubic meter times the required delta-V in kilometers per second, per cubic meter (5 tons) of payload (defined as everything that isn't the rocket motor or fuel). This means chemical boosters are really big — a Saturn moon rocket was as tall as a skyscraper, for example.

THERMAL ROCKETS

Thermal rockets take a fluid fuel (usually hydrogen gas) and superheat it. As the fuel gets hot it expands, and this produces thrust. Thermal thrust usually isn't enough to lift a rocket off a planet, but the rocket has good fuel efficiency, making this a favored choice for future interplanetary missions. Of course, thermal rockets need a heat source.

Nuclear thermal rockets direct the fuel through a compact nuclear fission reactor. This provides a lot of heat, but unfortunately both the reactor and the exhaust pose a radiation hazard. In *HERO System* terms, Nuclear Thermal rockets have up to 120m Flight per Turn with a Side Effect (automatic Change Environment to increase radiation levels; -¼).

Solar thermal rockets focus sunlight directly onto the fuel heating chamber with giant mirrors. This is more efficient than a solar-powered electrothermal rocket, but it drops off in effectiveness as the intensity of sunlight decreases. The large

mirrors are also fragile and bulky. Solar thermal propulsion is up to 12m per Turn Flight (0.1 G) bought with the Limitations *OAF Bulky Fragile* and *Requires Solar Proximity* (use full meters within 1 AU of a star, halve the meters of Flight for each AU beyond that; -½).

All thermal rockets are bulky, taking up at least 2 cubic meters each, and use about ½ cubic meter of fuel per cubic meter of payload per kilometer per second of delta-V. Low-thrust rockets either buy Flight at low velocities to simulate a long slow burn, or else buy MegaScale Flight with a lot of Extra Time.

ION AND PLASMA ROCKETS

These highly efficient rocket motors use extremely tiny amounts of fuel, but accelerate it to tremendous speeds using electrical or magnetic fields. The motors are fairly compact, but they do need lots of power. Ion motors can only manage very low accelerations — no more than 2m Flight per Turn (0.017 G). Plasma rockets can get up to 60m Flight per Turn (0.5 G). Fuel use for ion motors is very efficient; they need about 1 cubic meter of fuel for up to 20 cubic meters of vehicle. Plasma rockets need more: about 1/5 of the vehicle cubic meters per kilometer per second of delta-V.

RUBBER SCIENCE ROCKETS

Science Fiction writers have come up with a variety of space propulsion systems using technology that doesn't exist yet. They range from things which may fly in a few years to completely imaginary technologies.

FUSION ROCKETS

If you have fusion power, then a fusion reactor with a nozzle on one end is a pretty effective rocket. Thrust would be high, at least as good as nuclear-thermal rockets and probably better. Fuel consumption would rival VASIMR or ion drives. Fusion rockets are extremely common in Science Fiction.

Realistically, a fusion rocket can reach velocities of 360m per Turn for manned flights and 440m per Turn for unmanned ships; in *Space Opera* and the like, they can go much faster. Fuel requirement is 1/100 of the ship's cubic meters per kilometer per second of delta-V.

ANTIMATTER ROCKETS

For real oomph, drop a pellet of antimatter in your fuel and stand back. Since antimatter releases staggering amounts of energy, exhaust velocities are very high and so thrust and fuel economy reach amazing levels. This is probably the most powerful rocket possible. However, the drive itself may be fairly large because of shielding requirements (assume ¼ of vehicle cubic meters), not to mention expensive to run. In game terms it can reach just about any level of STL acceleration; the issue is how much G force the crew and contents of the ship can withstand.

VASIMR ROCKET

This is a real-world space propulsion system, developed for near-future Mars missions. It's popular among space engineers because it combines the relatively high thrust of a thermal rocket with the efficiency of an ion drive. It can't do both at once, but can switch between modes.

Flight 60m (60 Active Points); 1 Continuing Fuel Charge (easily-obtained fuel; 1 Month; -0). Total cost: 60 points.





REACTIONLESS DRIVES

These completely blow the laws of conservation of energy out of the water, and are entirely Rubber Science. A reactionless drive moves the ship in a given direction without squirting anything out the back. Their convenience makes them popular in Science Fiction games — no worrying about fuel consumption. Reactionless drives are pretty compact (1/10 of vehicle cubic meters), but do use a lot of power. They can have as many meters of Flight per Turn as you want.

SPACE SAILS

Rockets need so much fuel because they accelerate by shooting stuff out the back. But instead of shooting stuff out at high speeds, a spacecraft can try catching stuff that's already moving fast. That's what a sail does.

Space sails come in three varieties. Solar sails ride the *solar wind* — the pressure of light and particles streaming out from the Sun. Obviously this wind isn't very strong, so sails must be huge and delicate to carry even a small payload. The advantage is that they can accelerate indefinitely, building up speed over long periods. Solar sails could be used for unmanned cargo hauling within the Solar System, especially on trips out to the giant planets. A sail ship could also keep going, aiming for Proxima Centauri or some other nearby star. It would take a while — top speed for a solar sail would be around 300 kilometers per second (3.6 million meters per Turn), or 1,000 years per light-year. Sails have about 1 cubic meter of payload per square kilometer of sail.

A second sail design starts with the basic solar sail and adds a huge laser built on Mercury or the Moon. The laser shines on the sail, boosting it as it flies outward. The laser would have to be gigantic, but it doesn't have to be mobile and is entirely re-usable. Laser-boosted sails could reach 1 percent of the speed of light, making star probes or trips to the Oort Cloud possible.

The final type of sail is a "plasma sail." Instead of a thin sheet of silvery plastic, a plasma sail is a web of wires and a bubble of hydrogen. The wires carry power to turn the hydrogen into a plasma, which is contained by the magnetic field generated by current flowing through the wires. The advantage is that the sail itself is lighter, and can interact with the Sun's magnetic field for extra thrust and maneuverability — but at the cost of requiring an on-board source of power.

ROCKETS TO THE STARS

To reach other stars, you don't need a faster-than-light starship; all you really need is one of the rockets described above and a whole lot of fuel. It may take a while, though. Chemical and thermal rockets can't really power a ship to anything above 1 percent of the speed of light (3,000 kilometers per second [36 million meters per Turn]). Even that would take a gargantuan ship and a long time to accelerate a tiny payload on its way. At 1 percent of the speed of light, a probe to Alpha Centauri would take more than 400 years to make the trip — which suggests it would be better to wait for someone to invent a faster rocket.

SOLAR SAIL

This is a typical solar sail, built using the optional space acceleration rules

(the vehicle with the sail is assumed to have SPD 2).

Flight 2m, Cumulative (+½), Increased Cumulative Meters (x900,000, or 1,800,000; +5) (13 Active Points); OIF Bulky Fragile (-1¼), Requires Solar Proximity (use full meters within 1 AU of a star, halve the meters of Flight for each AU beyond that; -½). Total cost: 5 points.

8

Fusion and antimatter rockets would be able to reach speeds on the order of 10 percent of lightspeed (30,000 kilometers per second [360 million meters per Turn]). That would put Alpha Centauri within reach for an unmanned probe. Humans traveling at those speeds would need some way to pass the decades in flight. There are two possibilities:

GENERATION SHIPS

Who cares how long it takes? Launch a large self-contained space colony at the stars, and entire generations can grow up and grow old before the ship reaches its destination. By the time Humans can launch something big at thousands of kilometers per second, they should have solved the problems of maintaining a self-contained environment for decades. Generation ships would carry populations of hundreds or thousands (carefully chosen for genetic diversity), and everything a colony might need, because it's going to be a one-way trip.

The two main problems with generation ships are: why go, and why stop? Why go — why expend the unimaginable sums to build and launch a generation starship when nobody alive at the launch lives to see its arrival? One possible reason is a terrible calamity which promises to make the home planet uninhabitable. It has to be a calamity which can't be solved by the kind of effort needed to launch a starship. Perhaps a black hole or neutron star is due to pass through the Solar System, disrupting orbits and flinging homeworld into its sun or deep space.

BUSSARD RAMJETS

For a time in the 1960s it seemed the stars might be easy to reach after all. Aerospace engineer Robert Bussard envisioned a fusion rocket which would use magnetic “scoops” to collect interstellar hydrogen for fuel. A Bussard ramjet would thus be a slower-than-light starship with no need for fuel tanks, and could accelerate almost arbitrarily close to lightspeed. Time dilation would make voyages seem quick to the people on board, allowing expeditions to nearby stars.

Only it doesn't really work that way. Scooping up even the thin hydrogen of interstellar space means friction, and the friction goes up with speed. The maximum velocity for a ramjet would be about 12 percent of the speed of light — not bad, certainly, but not fast enough for easy interstellar travel. If some rubber science method could be devised to negate friction, the Bussard ramjet is the way to go.

In *HERO System* terms, a Bussard drive is FTL Travel at the speed of light, with the *Extra Time* Limitation to reflect the time required to boost up to full speed (at least a year, assuming acceleration is limited to 1 G).

Why stop — if the starship is comfortable and has everything the crew needs for long-term survival, why should they bother stopping at the target system for the tedious job of colonizing a planet? After generations in space, they might prefer life aboard ship. Of course, the crew may not have any say in the matter, if the ship is controlled by a computer system following instructions programmed by the ship's builders. Or the natural Human (Venusian, Denebian...) inclination to explore new places might make the inhabitants *want* to get off the ship.

HIBERNATION

Bears do it, brine shrimp do it, why not Humans? If a way could be found to put the crew into stasis, the whole project of interstellar travel is greatly simplified. Crew in hibernation (sometimes referred to as “cold sleep”) use less life support, don't get bored, don't die of old age before the trip is over, and don't care how long the journey takes. With hibernation equipment and a sufficiently long-lived power supply, ships could take decades or centuries to travel between stars. Hibernation is a fairly common means of interstellar flight in Low Science Fiction settings.

Hibernation Unit: This is a one-person “cold sleep pod.” It requires external power, but so little that it can run for decades without maintenance — the need for power is a special effect, not an END cost.

Life Support (Longevity: age at one-eighth normal rate) (5 Active Points); OIF Immobile (-1½). Total cost: 2 points.

Faster-Than-Light Propulsion

All faster-than-light (FTL) travel is currently beyond the laws of physics as we understand them. This means GMs are free to select their FTL drives on the basis of how they affect the campaign structure, rather than strict realism (though once a method is chosen, the GM should try to discern, make clear to the players, and follow its “realistic” implications). Factors to consider are the speed of interstellar travel, the cost and reliability of FTL flight, what constraints on operation exist, and how ships interact with the universe while traveling.

SPEED

Speed of FTL flight in a star-spanning campaign is a relative matter. The question is how quickly characters can go from one inhabited star system to another. If inhabited systems are close together, on the order of 10 light-years or so, then a drive capable of 100 to 1000 times the speed of light makes them easy to reach. Greater distances require faster drives.

The conical ship showed no exhaust. Its drive must be either a reactionless drive, like his own, or a kzin-style induced-gravity drive. Both were neat and clean, silent, safe to bystanders, and highly advanced.

—Louis Wu considers a Trinoc ship in “There Is A Tide,” by Larry Niven

Speed of travel affects the structure of interstellar governments, the conduct of trade, and a host of other issues. If star travel is as rapid as, say, modern air transport, then interstellar society can be fairly uniform — the same fast food outlets on every planet. Quick starflight also allows highly centralized government, efficient interstellar law enforcement, and a well-integrated web of commerce.

Slow FTL travel creates a situation more like the Age of Sail. Interstellar empires are possible, but the local rulers or governors have a lot of autonomy because they can't wait for instructions from home in a crisis. Military forces can't react quickly, either. Trade is possible, but becomes much more speculative and risky, since market conditions can change during the voyage.

Another point to consider is how fast ships are compared to each other. Can a ship with bigger engines go faster in FTL mode than an underpowered one... or is there a set FTL speed, with the engine size varying only to match the size of the ship? If big ships can go faster, then they may act as "carriers" for smaller vessels. If crowding the ship with engines and power makes it faster, then governments and businesses can build dedicated courier ships to carry messages and important passengers. Warships will be either fast and lightly-armored or slow and well-protected.

As a useful guideline, the GM should look at the astrographical scope of his campaign and decide how quickly he wants characters to travel across it. If, for example, a campaign uses the entire Milky Way Galaxy (100,000 light-years in diameter), and the GM wants characters to have the ability to cross from one edge of the Galaxy to the other in one year, then the fastest FTL drives have to be 100,000 times the speed of light.

BREAKING THE FTL MONOPOLY

A very interesting campaign hook is to establish the society with one set of rules for FTL travel... and then introduce a technology which changes them. Suppose interstellar travel has been the monopoly of psionic star pilots for centuries; now some genius has found a way to let anyone pilot a ship. Suddenly the long peace enforced by the Guild is over: the wealthy industrial planets are building space fleets to conquer their neighbors. But the economic malaise has ended, too: traders are venturing out in search of markets, and explorers are finding new worlds. The characters could rediscover lost colonies forgotten by the Guild, and there are great opportunities for anyone with a ship, a trusty blaster, and an adventurous spirit.

COST AND DIFFICULTY

If star flight is expensive or dangerous, it becomes a lot less common, even if travel is fairly rapid. The best modern-day analogy is orbital spaceflight — a Space Shuttle reaches orbit in less than an hour, but the cost is astronomical and the danger is real. Instead of interstellar tourism, star travel becomes the province of highly-trained and dedicated explorers like modern astronauts. Colonies in other star systems are smaller, without a flow of poor immigrants looking for a better life. Instead, colonies begin with small but well-equipped groups, and grow by their own efforts. This tends to create highly diverse colony worlds after a few centuries, since difficult star travel makes it hard for the mother world to retain control. Trade is limited to extremely high-value items worth the risk and expense.

Expensive and dangerous interstellar travel also encourages the development of less-than-habitable planets in colonized star systems. It may be easier, and cheaper, to terraform a difficult planet (like Venus) than try to establish colonies on Earth-like worlds that are too far away to travel to easily. Campaigns in such a setting may spend long periods in one system.

On the other hand, if star flight is cheap and easy, it's more like air travel on twenty-first century Earth: it takes place constantly; even relatively low-income people can afford to fly occasionally; many companies or institutions compete for travelers' credits; trade and contact between worlds is commonplace. That makes for a very different campaign setting, one in which the PCs can flit from one planet to another without trouble.

CONSTRAINTS

"Have you any idea, Rabban, how much we spent to bring such military force to bear on the Atrides? Do you have even the first inkling of how much the Guild charges for military transport? ... The damnable Guild monopoly on space would've ruined us if I hadn't planned for this expense long ago."

—Baron Harkonnen complains about the Spacing Guild's total control over interstellar travel in *Dune*, by Frank Herbert

Gamemasters can make FTL travel subject to whatever limits they desire. Many drives in fiction don't work near a planetary mass (or within the gravity well of a star), requiring a voyage in normal space to the "jump point" or "warp limit" before activating the FTL drive. This has useful dramatic effects: space pirates can waylay ships in normal space, an invading armada can't materialize directly above a planet, and star travelers can't just jump away from problems.

Some drives require a living pilot, possibly with a psionic talent or cybernetic modifications. This has two effects: designers cannot build automated starships, which makes interstellar message drones and FTL missiles impossible; and it gives the pilots a great deal of leverage. Pilots' organizations (like the Spacing Guild of Frank Herbert's *Dune*) become major players in interstellar politics if star travel is a limited monopoly. Characters with the right Talent (see page 72) can always find work, even if they have serious personality flaws or a checkered past.

Alternately, the interstellar drive may depend on a very rare substance, like *Star Trek*'s dilithium crystals or the psychoactive spice melange in *Dune*. Whoever controls this resource controls the Galaxy, or at least travel between planets. Sources of "unobtainium" become the galactic equivalent of oil fields or gold mines. A remote frontier world can boom overnight if prospectors find a useful lode. If only one civilization or species knows about the magic ingredient, all the others will try as hard as they can to learn the secret and break the monopoly.

Some methods of star travel rely on natural features of the Galaxy — wormholes connecting distant star systems, stargates (either natural or left by an ancient civilization), or just regions where light moves faster. This kind of "geography" determines how colonies spread and where an interstellar empire's fleets can conquer. Star systems on wormhole routes are "valuable real estate" and will be settled even if they aren't especially inviting. Remote systems without stargates may be home to weird and isolated societies.

INTERACTIONS

Some FTL drives evade Einstein's speed limit by taking short cuts through other universes or dimensions. A ship in hyperspace or jumpspace is completely cut off from the normal universe. This has a number of interesting implications. Enemy fleets may be able to travel undetected to the heart of an interstellar empire; this means each planet has heavy defenses, creating a situation like castle-studded feudal Europe or Japan.

Ships in hyperspace may also be cut off from communication or help, which means the passengers and crew are entirely on their own if something goes wrong. This makes a ship in jumpspace a great location for a "whodunit" style mystery or a "mad slasher" horror scenario.

An interstellar civilization linked by ships jumping through hyperspace is like a group of islands connected by air routes. The empty expanses of space between the stars can hold all kinds of surprises — brown dwarf stars too dim to see, drifting relics of ancient alien cultures, or space-dwelling life forms. Hyperspace may have similar features, or be home to even stranger things....

SLINGSHOTTING

"Slingshotting" is a spaceflight term for flying in a close arc around a star or planet to increase the ship's velocity. The downside is that if the ship gets *too* close, it could damage itself... or even crash.

To slingshot, a character must plot a "close arc" flight course around a nearby star or planet, with a defined "exit" point (the point at which he wants to break his ship free from the body's gravity and slingshot in the direction he wants to go). Then make a Skill Roll. He suffers a penalty of -1 for every 10m Flight he uses in this maneuver (plus an additional -2 if he uses Mega-Scaled movement). He only has to make one roll, even though his flight course requires multiple Phases of movement. If he succeeds, he increases his ship's velocity — multiply his meters of movement per Phase by the planet's gravity relative to Earth's. (Thus, a ship that slingshots around a 2 G world multiplies its movement by 2.) This effect lasts for 1d6 Phases (+1 Phase per 2 points by which the character made his Combat Piloting roll), and does not cost extra END or use up fuel.

If the roll fails by 1 to 4 points, the ship enters the star's photosphere (see *Visiting The Sun*, page 130) or the planet's upper atmosphere (see page 310). If the roll fails by 5 or more points, the ship crashes into the body (taking damage as indicated on page 130 for a star, or Move Through damage for entering an atmosphere/hitting a planet).

FICTIONAL STARDRIVES

Over time, Science Fiction stories and films have created a suite of fictional star drives with interesting properties.

WARP DRIVE

The FTL drive made famous by *Star Trek*, a warp drive works by distorting ("warping," so to speak) the space-time continuum in ways that allow the ship to propel itself at superluminal speeds. Similar to warp drives are "folded space drives," which compress the distance the ship travels as it moves. The ship moves at a modest speed, but covers great distances because the drive "shrinks" the space in front of it.

Warp drives usually allow starships to interact with the rest of the universe, though slower-than-light weapons aren't very useful against a ship in warp drive. Warp drives aren't usually limited by natural conditions, but sometimes depend on rare elements. Distorting space requires a *lot* of energy (and the faster you go, the more energy you need). This means warp travel is fairly expensive for all but the most advanced and affluent Space Opera civilizations.

As installed in the Galaxy class, the warp propulsion system consists of three major assemblies: the matter/antimatter reaction assembly, power transfer conduits, and warp engine nacelles. The total system provides energy for its primary application, propelling the USS Enterprise through space, as well as its secondary application, powering such essential high-capacity systems as the defensive shields, phaser arrays, tractor beam, main deflector, and computer cores.

—a basic description of the Enterprise-D's warp drive from *The Star Trek: The Next Generation Technical Manual*, by Rick Sternbach and Michael Okuda

Movement with a warp drive is non-Newtonian — the ship moves forward while the drive is on, and stops when the drive is shut off. Navigation is fairly simple: the crew can look out of the cockpit window and see where it's going. Warp drive units in fiction are bulky, requiring as much as half the total cubic meters of the ship.

Warp Drive: This is a typical warp drive engine, able to drive its ship at the rate of one light-year per day.

FTL Travel (1 LY per day) (28 Active Points); Costs Endurance (-½), Increased Endurance Cost (x10; -4). Total cost: 5 points.

Obi-Wan Kenobi: How long before you can make the jump to light speed?

Han Solo: It'll take a few moments to get some coordinates from the navi-computer. I could override all that and smoke the jump, but the hyperdrive might shred itself and give us a belly full of scrap metal.

Luke Skywalker: A few moments? At the rate they're gaining...?

Han Solo: Traveling through hyperspace ain't like dusting crops, farm boy! Ever try navigating a jump? Well, it's no mean trick. Without precise calculations we could fly right through a star, or bounce too close to a black hole; that'd end your trip real quick, wouldn't it?

Luke [notices a flashing light]: What does that mean? What's happening?

Han Solo: Uh-oh, we're losing a deflector shield. Everybody get strapped in, we're ready to make the jump!

—our heroes escape unwanted Imperial attention in *Star Wars*

8

HYPERDRIVE

Hyperdrive works by going “around” normal space, through another universe or dimension where distances are shorter. The exact nature of “hyperspace” is up to the GM — it can be a featureless void, or a universe of its own with bizarre natural laws (and possibly inhabitants). There may be different “levels” of hyperspace allowing faster travel with greater risk or energy expenditure. Hyperspace may be easily navigable, or ships could instantly become lost without a beacon to follow (and communications equipment to follow it with). It may have no planets or inhabitants, or it could be the realm of bizarre creatures whose very appearance drives Humans insane.

Navigating in hyperspace can be tricky. Often the ship emerges only generally near the target system, and hazards in hyperspace itself may push the starship off course. Gamemasters may require characters to buy Navigation (Hyperspace) to find their way, or may forbid them to have any such Skill, forcing them to rely on established beacons or landmarks.

Hyperdrive usually requires a large pulse of energy when entering and leaving hyperspace. Some types of hyperdrive need a large fixed portal (like a star gate; see below) to enter or leave hyperspace (and usually beacons to guide ships between portals). This naturally makes the portals very important and well-protected locations, but makes it possible for any spaceship to venture into hyperspace. Movement while in hyperspace itself can be Newtonian, or subject to whatever bizarre natural laws exist in the alternate dimension.

If hyperspace is generally empty and featureless, posing few threats to ships or characters, you can build hyperdrives as MegaScaled Teleportation with the *Extra Time* Limitation. If hyperspace is a “real place,” then hyperdrive is a combination of Extra-Dimensional Movement and FTL Travel (or, in some cases, MegaScale Teleportation).

Hyperdrives are usually fairly bulky systems requiring a lot of power. Assume the hyperdrive takes up about one-fourth of the ship's total space.

Hyperdrive: This is basic hyperdrive, built on the assumption that nothing noteworthy happens to ships or people in hyperspace. It has a range of up to 10 light-years.

Teleportation 20m, MegaScale (1m = 1 light-year; +4¼) (105 Active Points); Costs Endurance (-½), Extra Time (1 Week for a full journey, or a little more than 1 LY per day; -4½), Increased Endurance Cost (x5 END; -2). Total cost: 13 points.

Hyperspace Engine: This is a form of hyperspace travel used in settings where hyperspace itself has features and possible dangers. Characters need to use Navigation (Hyperspace) to find their way while there.

Extra-Dimensional Movement (any location in hyperspace, corresponding to the location in normal space where the ship enters) (total cost: 22 points) **plus** FTL Travel (1 LY per day) (28 Active Points); Costs Endurance (-½), Increased Endurance Cost (x10; -4), Only In Hyperspace (-1) (total cost: 4 points). Total cost: 26 points.

JUMP DRIVE

A queasy wavering dizziness — a few seconds static in the mind — and the wormhole jump to Tau Verde was done. ... And where did they go, the one ship in ten thousand that jumped and was never seen again?

—Miles Vorkosigan contemplates some of the mysteries of jump drive travel in *The Warrior's Apprentice*, by Lois McMaster Bujold

The jump drive lets starships “jump” instantaneously from one star system to another, whether by quantum tunnelling, converting the ship to tachyons, or some other rubber science method. Navigating with a jump drive is very difficult — a mistake can send the ship to the wrong star system, or possibly to deep space. Really serious errors could catapult a jump ship across the Galaxy, or back in time, or into an alternate dimension. A more practical concern is fuel; if a ship jumps to a place where it cannot refuel, it may not have enough energy left to make more jumps!

You can build jump drives using MegaScaled Teleportation. Jump drives can be compact devices (about 1/10 of ship's cubic meters), but require a lot of power.

Jump Drive: A standard jump drive, suitable for most ships.

Teleportation 10m, MegaScale (1m = 10 light-years; +4½) (55 Active Points); Extra Time (1 Turn; -1¼), Increased Endurance Cost (x10 END; -4), Requires A Navigation (Space) Roll (-½). Total cost: 8 points.

STAR GATES AND WORMHOLES

Captain John Sheridan: Tell me, Commander, have you ever wondered what would happen if you opened a jump point while inside a jump gate?

Commander Susan Ivanova: No! And neither should you! EarthForce experimented with the idea during the Minbari War. They called it the Bonehead Maneuver. [to Lennier] No offense.

Lennier: [curious rather than offended] None taken.
—unconventional tactics are considered in the *Babylon 5* episode "Matters Of Honor"

These are FTL “drives” that are outside the ship itself. Star Gates are immense portals, either into hyperspace or linking distant systems through a form of Teleportation. Wormholes are as-yet-undiscovered natural holes in space connecting places light-years apart. Navigating a wormhole or star gate may be about as hard as navigating a railroad (the gate leads where it leads, and you either go through or you don’t), or it may require tricky flying through hyperspace. Gates may be the only way to travel — in which case they must be moved to other star systems aboard slower-than-light ships — or they may be only a supplement to other drives. *Babylon 5* posited gates into hyperspace for the convenience of small craft, while large starships could carry their own gate-opening technology.

However they work, stargates and wormholes instantly become places of vital importance (as ably shown on *Star Trek: Deep Space Nine*). Control of a portal means control of all traffic along that route; depending on the layout of the system, dozens of worlds could depend on a single gateway.

Star Portal: This is a gateway through a safe hyperspace; ships must go to other gates. The gates, built by some ancient civilization and not fully understood by Humans, are irreplaceable and heavily guarded. Only one ship can enter the portal at a time, and it has to be small enough to fit through. Ships themselves don’t have to pay for this “engine” at all; the gates are maintained by an appropriate authority (which taxes and regulates them as it sees fit).

Teleportation 20m, MegaScale (1m = 1 light-year; +4¼), Area Of Effect (8,000m Radius; +3), Usable As Attack (does not work on ships with incompatible drives or certain types of energy sources; works on masses of up to 800 mtons; +9½) (355 Active Points); OAF Immobile (-2), Extra Time (1 Week for a full journey, or a little more than 1 LY per day; -4½), Increased Endurance Cost (x5 END; -2), Only To Fixed Locations (-½), Gate (-½), Only One Ship Can Use Portal Per Segment (-¼) (total cost: 33 points) **plus** 1 Floating Fixed Location (any other portal, chosen at the time of use) (5 Active Points); OAF Immobile (-2) (total cost: 2 points). Total cost: 35 points.

Wormhole: This is the same as the Star Portal, but without the OAF Limitation. The Fixed Location does not “float.” Total cost: 39 points.

INERTIALESS DRIVE

The big limitation to faster-than-light travel in Einsteinian space is that mass increases with velocity. Consequently the energy to accelerate approaches infinity the closer you get to the speed of light. Novelist E. E. “Doc” Smith came up with one way around that problem: if your ship can be made “massless” or “inertialess” then it can cruise right through the speed of light and keep on accelerating. (How does that work? Good question.) Inertialess drives are simply the *FTL Travel Power*. They tend to occupy about a quarter of the ship, but can also be used as a normal Flight drive.

Cost Inertialess Drive

- 16 **Inertialess Drive:** Multipower, 55-point reserve; all Costs Endurance (-½), Increased Endurance Cost (x5 END; -2)
- 1f **1) FTL Mode:** FTL Travel (1 LY per Hour); Costs Endurance (-½), Increased Endurance Cost (x5 END; -2)
- 1f **2) Spaceflight Mode:** Flight 20m, MegaScale (1m = 1,000 km; +1¾); Costs Endurance (-½), Increased Endurance Cost (x5 END; -2), Only Works In Space (-½)

Total cost: 18 points

PROBABILITY DRIVE

First made famous in Douglas Adams’s *Hitchhiker’s Guide To The Galaxy* series, a probability drive alters the laws of chance to the point where the odds that the ship will spontaneously hop to its destination become good. Amazingly, this isn’t as crazy as it sounds; Hard Science Fiction maven David Brin used a similar drive as one method of FTL travel in his “Uplift” books. Probability drives are MegaScaled Teleportation, sometimes with a Side Effect of Unluck or Change Environment.

TIME DILATION

As objects move at speeds approaching the speed of light, weird things happen. Mass increases and time slows down. The formula for time dilation is the square root of $(1 - v^2/c^2)$, where v is the ship’s speed and c is the speed of light. So if you’re going half the speed of light, your time dilation effect is the square root of $(1 - .25/1)$, or 0.86. So for every minute a clock ticks on Earth, a clock on board your ship only ticks 52 seconds. The effect gets more pronounced at high speeds. Clever GMs can get some interesting story hooks out of this, the way Dan Simmons does in his “Hyperion” novels.

Speed	Time Dilation	Days To Go 1 Light-Year
0.5 x lightspeed	0.86	730 (objective) / 632 (crew)
0.6	0.80	608 / 487
0.7	0.71	521 / 372
0.8	0.60	456 / 274
0.9	0.44	406 / 177
0.95	0.31	384 / 120
0.99	0.14	369 / 52
0.999	0.045	365 / 16
0.9999	0.014	365 / 5

Of course, rubber science FTL travel often ignores time dilation entirely — it’s inconvenient and messy for storytelling purposes. So Star Hero GMs should feel free to ignore it as well, if they want.



WEAPON SYSTEMS

At the opening of the war our main weapons were the long-range homing torpedo, dirigible ball-lightning, and the various modifications of the Klydon beam. ... The military advisers were worried, and as usual turned to the scientists for help. Would it be possible to improve our existing weapons[?] ...

“Frankly, gentlemen,” said Norden, “I doubt it. Our existing weapons have practically reached finality. ... [D]o you realize that there has been no basic change in armaments for over a century? ... What we want are new weapons — weapons totally different from any that have been employed before. Such weapons can be made[.] ... I believe, in fact, that a revolution in warfare may soon be upon us.”

—a galactic military learns the dangers of pursuing the two birds in the bush in “Superiority,” by Arthur C. Clarke

Now comes the interesting part: blowing holes in the opposition. Spacecraft weapons come in three main classes: Missiles (which are essentially little unmanned space-ships that hunt down the target); Beams and Guns (which fire directly at the target); and Special Weapons (which do other stuff). Missiles and beams are mostly realistic weapons; Special Weapons are often deep in Rubber Science territory.

Characters often build starship weapons with the *MegaScale* Advantage, since many targets in space are a long way away. The practical limit on a weapon’s range is 300,000 km — anything faster than that and the weapon’s projectile/beam is moving faster than the speed of light. Of course, warp and inertialess starships often roar around at FTL speeds anyway, and may have weapons that can work at those speeds (or not: *Star Trek* ships have to “drop out of warp” to engage in most forms of combat).

Typically weapons occupy ½ to 1 cubic meter per 10 Active Points, but the GM may vary this as he sees fit. In addition to weapons discussed below, see *HERO System Vehicles* for a wide selection of weaponry appropriate to starships.

Captain James T. Kirk: *Where’s that damn torpedo?*

Doctor Leonard McCoy: *She’s ready, Jim — lock and load!*

Kirk: *Fire!*

—the crew customizes a photon torpedo to locate and destroy a cloaked enemy ship in *Star Trek VI: The Undiscovered Country*

8

Missiles

Missiles are warheads that propel themselves into the enemy’s ship. The simplest missiles use nothing but the force of their impact to damage the foe, while others mount explosive or atomic warheads. In most cases they’re short-range weapons, though theoretically a rubber science power source could keep one flying after its target for a long, long time.

In *HERO System* terms, most missiles are small Vehicles (or Automatons) themselves, equipped with Flight engines, sensors, whatever other systems they need, and a No Range attack with 1 Charge which Never Recovers (and destroys the Vehicle). Their guidance comes from a remote operator (which can be cut off with interference, a Physical Complication), or an onboard computer (which means the builder has to buy Senses for it). In most cases it’s not necessary to buy the computer separately (just assume the missile has INT 10), but the most sophisticated missiles have a separate computer. They have the Physical Complication, *Can Be Missile Deflected By Spacecraft* (Frequently, Greatly Impairing; 20 points), to reflect the fact that point defenses (see page 232)

can destroy them before they impact their target. They also have the Physical Complication, *Costs Firing Ship 10 END To Fire* (Frequently, Slightly Impairing; 15 points), to represent the END cost of launching them at a target.

See the *Nuclear Space Missile* in *HERO System Vehicles* for an example of a missile that space vehicles might use.

FTL MISSILES

For the ultimate in ranged attacks, starships can fire FTL missiles. These are built as Vehicles with SPD 6 and enough Flight to reach twice the speed of light. The speed of light, *c*, is 300,000 km per second, or 3.6 billion meters per Turn, which means a SPD 6 missile that can reach 2*c* needs 1.2 billion meters of Flight per Phase (call that Flight 12m, x100 Million Noncombat, costing 142 points). At that speed, doing damage based on a Move By (to avoid the horrendous Move Through OCV penalty), the missile would inflict 120 million dice of Normal Damage. (Make the missile SPD 12, and the damage becomes a mere 60 million dice.) Obviously, this requires GM permission.

Beam Weapons

“Fire phasers!”

—a command frequently heard in various episodes of the *Star Trek* franchise

Beam weapons tend to be the most common type of starship armament in *Star Hero* games, because they’re easy for gamers to use. In a setting using rubber science, they can be explained as just about any type of energy; the examples listed in the accompanying text box assume some reasonable effort to be “realistic.”

Lasers are the most likely energy weapons in near-future scenarios. They’re currently under development and have great destructive potential. Lasers use a fair amount of power, however, and are themselves rather fragile. In *Space Opera* games, generic energy beam weapons are often called “lasers” even though they don’t act like them. (If you prefer a less loaded term, just refer to generic beam weapons as “blasters.”)

Particle weapons are also near-future tech, with work on them progressing right now in various military labs. They fire streams of energetic protons at the target. Particle weapons are powerful but have limited range because the beam tends to disperse as the particles repel each other.

The accompanying text box describes a few possible beam weapons for starships, but many others are possible. See HSEG 190-97 for a discussion of Science Fiction weapon technology and principles in general, and HSV for a wide selection of weaponry appropriate to starships.

STARSHIP BEAM WEAPONS

Space Combat Laser: Designed for use against lightly-armored spaceships and satellites rather than heavily-protected warships.

RKA 6d6, Autofire (5 shots; +½), MegaRange (1m = 10 km; +1¼) (247 Active Points); OIF Bulky (-1), Real Weapon (-¼). Total cost: 110 points.

Superheavy Laser: A major military laser capable of punching through heavy armor at a range of up to one light-second.

RKA 10d6, Autofire (5 shots; +½), MegaRange (1m = 100 km; +1½) (450 Active Points); OIF Bulky (-1), Real Weapon (-¼). Total cost: 200 points.

Particle Accelerator: A huge weapon running down the center of a ship's hull. Due to its size and configuration, it can only be fired in the direction the ship's nose points, and it cannot be aimed at targets closer than a kilometer.

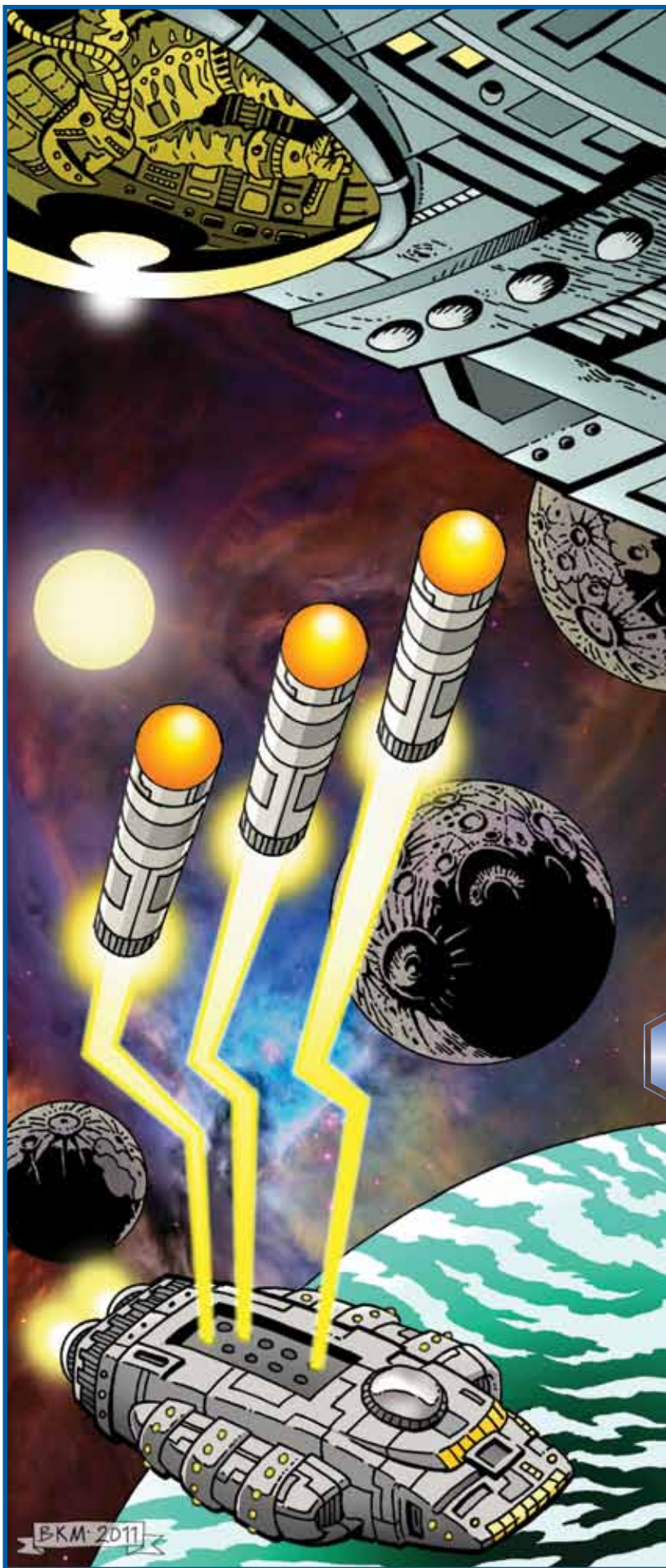
RKA 10d6, Penetrating (+½), MegaScale (1m = 1 km; +1) (375 Active Points); OIF Bulky (-1), Real Weapon (-¼), Limited Arc Of Fire (60 Degrees, Only On Same Horizontal Level; -¾). Total cost: 125 points.

Ion Cannon: Made popular by *The Empire Strikes Back*, an ion cannon fires a blast of ionized hydrogen, creating electrical effects that bypass a ship's hull defenses (but are useless against force-fields). This is of course a highly rubber science weapon.

RKA 4d6, NND (defense is ED Resistant Protection or ED Barrier, either defined as a "force-field"; +1), Does BODY (+1), MegaScale (1m = 1 km; +1) (240 Active Points); OIF Bulky (-1), Real Weapon (-¼). Total cost: 107 points.

Fusion Beam: A starship-sized version of the plasma weapons for soldiers, this ejects fusing hydrogen at the target and somehow keeps it from dispersing and cooling before impact.

RKA 5d6, MegaScale (1m = 1 km; +1) (150 Active Points); OIF Bulky (-1), Real Weapon (-¼). Total cost: 67 points.





TARGET: EARTH!

Attacks on planets usually take place from many miles above the surface. Rather than applying *No Range Modifier* so that the attack has a chance of hitting, attackers rely on the size of the target cancelling out the Range Modifier penalties. It's hard to miss an entire world!

Here's a summary of the Range Modifier for long ranges:

Range	Range Modifier
16,000m (10 miles)	-22
32,000m (20 miles)	-24
48,000m (30 miles)	-26
64,000m (40 miles)	-26
80,000m (50 miles)	-28
100,000m (60 miles)	-28
125,000m (80 miles)	-28
250,000m (150 miles)	-30
500,000m (300 miles)	-32
1,000,000m (600 miles)	-34
2,000,000m (1,200 miles)	-36

(See APG 162-63 for more information on Range Modifiers for extreme ranges up to 250 light-years.)

In contrast, the Target Size bonus to an attacker's OCV for attacking a planet the size of Earth (12,800,000m diameter, compared to a 2m tall human) is +46. So, the odds of hitting it, even from 1,000 miles away, are much better than average; from 20 miles (roughly equivalent to geosynchronous orbit), you'll only miss if you roll an 18.

If you can hit a planet, what does it take to destroy it? A rocky planet like Earth has a volume of about 1.37×10^{20} cubic meters, if it's considered a perfect sphere. Assuming it all counts as stone (19 BODY, 5 PD/10 ED), a character needs an attack capable of doing 29 BODY to every part of the planet at once. That means RKA 10d6 (standard effect: 30 BODY), Area Of Effect (1m Radius; +¼), MegaScale (affects entire Earth; +2), costing 487 points. (Gamemasters desiring greater precision can re-calculate to account for the molten and solid metals at Earth's core, if desired.) Of course, characters could use lesser attacks to destroy a planet in smaller chunks, but that could take a very long time.

SPECIAL WEAPONS

Besides offensive beams, missiles, and guns, Science Fiction writers have imagined a variety of weird and fantastic space weapons. Some examples:

Damping Field: This device somehow sucks the energy from a target ship's power supplies, rendering it helpless.

Electromagnetic Web: This weapon creates an impenetrable web of electromagnetic field lines (don't ask how) that function as a barrier or a trap.

Space Warp Projector: A natural outgrowth of warp drive technology, a Warp Projector twists and distorts the target like taffy, rending the ship's structure.

Stasis Projector: A device which somehow freezes the target ship in time, so that the crew and ship can do nothing while the enemy attacks freely. In Larry Niven's stories, being put in stasis has the useful side effect of making you immune to harm.

Gamemasters can amuse themselves creating other such rubber science weapons using the *HERO System* rules. Many are permutations of Drain, Entangle, or Transform.

Beware the arms race! Arthur C. Clarke's short story "Superiority" describes an interesting object lesson about efforts to build better weapons.

Guns

These weapons project a physical object directly at the target through some means, causing damage through kinetic impact, explosions, or the like. The most common example in Science Fiction is the *railgun*, which uses magnetic energy to project steel missiles at enormous velocities. But even high-velocity projectiles can't go as fast as beams, so railguns are limited to short range — no more than 100 kilometers. Ships often install them as point-defense weapons. Railgun slugs are usually just chunks of metal, but railguns could also be used to launch nuclear warheads, smart homing missiles, or anything else which can survive hundreds of Gs of acceleration.

Railgun: A typical starship-mounted railgun of average size and range. Versions used for planetary defense and the like are often much larger.

RKA 6d6, Armor Piercing (+¼), Increased Maximum Range (100 km; +1¾) (270 Active Points); OIF Bulky (-1), Real Weapon (-¼). Total cost: 120 points.

Planetary Kinetic Bombarder: This massive weapon is used to attack planets rather than starships. It launches a large metal rod that impacts at roughly five times the speed of sound, devastating a wide area. A variant simply bombards a world with large asteroids, which is often enough to wipe out all life on that planet. Either type requires Extra Time for the missile to hit the target, if fired from beyond 100,000m range — but it's not as if a planet can Dodge.

RKA 10d6, Area Of Effect (32m Radius Explosion; +½), MegaArea (1m = 1 km wide, broad, and deep; +1), Increased Maximum Range (187 km; +1¾) (637 Active Points); OIF Bulky (-1), Real Weapon (-¼), Extra Time (missile travels at 100 km per Segment; -0), 12 Charges (-¼). Total cost: 255 points.

Asteroidal Bombardment Variant: RKA 15d6, Area Of Effect (32m Radius Explosion; +½), MegaArea (1m = 100 km wide, broad, and deep; +1½), Increased Maximum Range (281 km; +1¾) (1,069 Active Points); OIF Bulky (-1), Real Weapon (-¼), Extra Time (missile travels at 100 km per Segment; -0), 12 Charges (-¼). Total cost: 428 points.

Triplanetary's super-ship boasted no ordinary Terrestrial defense, but was sheathed in screen after screen of ultra-vibrations: imponderable walls, it is true, but barriers impenetrable to any unfriendly wave. To the outer screen the red veil of the Nevians clung tenaciously, licking greedily at every square inch of the shielding sphere of force, but unable to find an opening through which to feed upon the steel of the Boise's armor.

—a Human warship's force-fields defeat the Nevians' iron-liquifying ray in *Triplanetary*, by E. E. "Doc" Smith

DEFENSES

To keep attackers from vaporizing them with all this aggressive hardware, spacecraft need defenses. In a realistic setting there are three ways to defend a ship in space: armor to soak up damage; point defenses to stop missiles; and stealth to avoid being shot at. In games with abundant rubber science, ships can also mount force shields, dimensional phase systems, cloaking devices, and the like.

When determining the defenses for starships in your Star Hero campaign, keep the nature and type of weapons used in the setting in mind. Ideally, a ship's total defenses should protect against *most* damage, but not *all* of it. While large ships may be effectively immune to the attacks of smaller/weaker ships, and some ships (like the fighters in *Star Wars*) tend to be fragile, two ships of the same size and power should have the ability to damage each other. That doesn't mean they can destroy each other with a single shot, but rather that a shot with an above-average damage roll should inflict at least a little damage on the target. The ship's size (*i.e.*, BODY) keeps it from being significantly damaged too quickly, but enough shots can, slowly but surely, blow it into chunks of space debris.

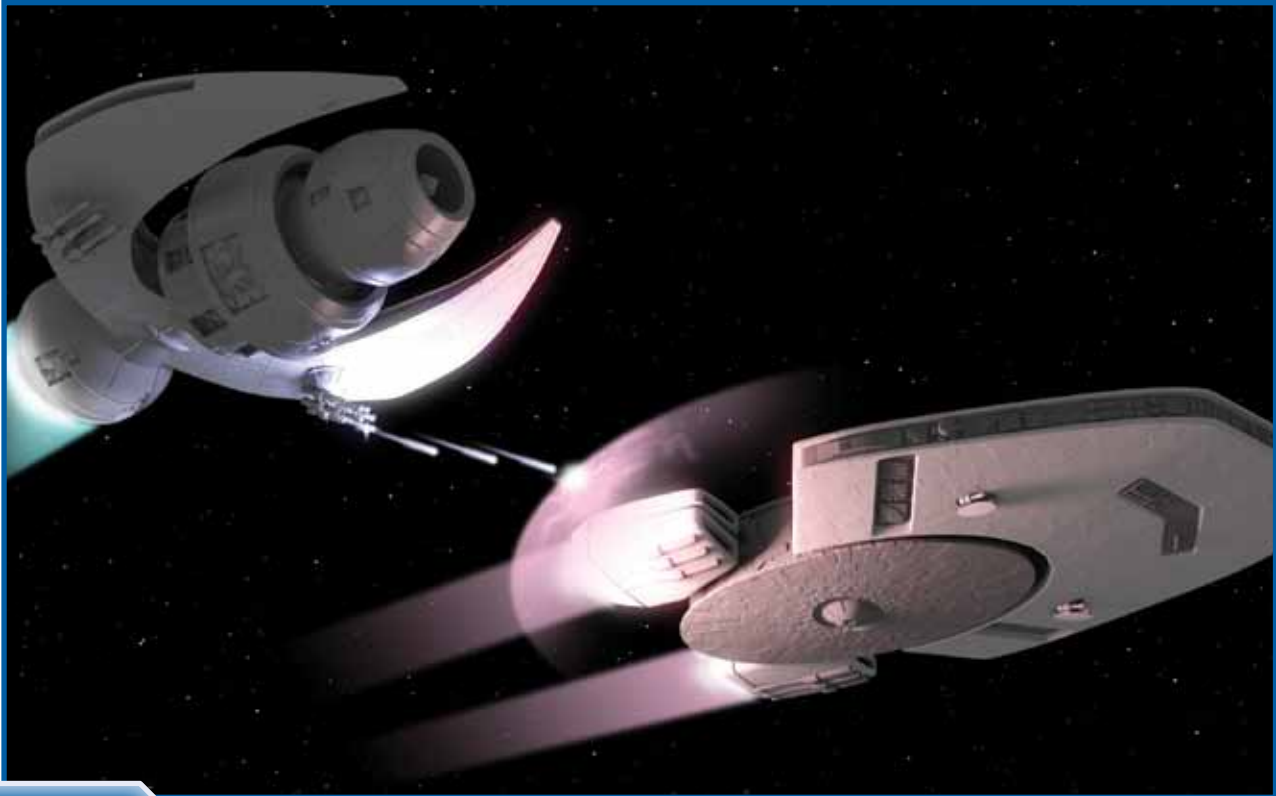
For example, suppose the GM decides the average starship weapon in his campaign does RKA 6d6. That means, on the average, a roll of about 21 BODY, with a maximum of 36 BODY. The average powerful starship mounting this sort of weapon should therefore have defenses in the range of about 16-24 — tough enough to keep from being too badly damaged by most shots, but not enough to be invulnerable. A bigger, more powerful ship might have higher defenses; smaller, weaker ones (like scouts and fighters) probably have less.

Making a ship's defenses Ablative changes this calculation a little. Since ablating defense constitutes a form of "damaging" the target, GMs might allow much higher Ablative defenses than ordinary defenses.

ARMOR

Armor — a thicker, stronger, and/or better-protected hull, in other words — is the simplest form of starship defense. All spacecraft carry a little armor for protection against micrometeors, the friction of entry into an atmosphere, and so forth; 5 PD/ED suffices for those purposes. Anything more than that is for protection against cosmic energy storms, enemy weapons, large meteors, and the like.

Spacecraft designers need to worry about mass, which limits how much armor they can plate on — even Science Fiction technology can only reduce the weight of metal and plastic so much. As a rough guideline, maximum "realistic" spaceship PD/ED in the near future is no more than 20 (and usually less); Space Opera battleships can carry 100 or more (assuming the weaponry used against them justifies having that much).



“Captain, she’s packing quite a wallop — shields weakening!”

—Scotty reports to Captain Kirk in *Star Trek VI: The Undiscovered Country*

In settings featuring force shields and like defenses, a ship’s armor should almost always be significantly lighter (*i.e.*, offer far less PD/ED) than its force shield.

Often spaceship armor is ablative, boiling off as it gets hit. This is not only more realistic, but makes it a little cheaper. Another common technique is to put very heavy armor on one side of a spaceship, then keep that side facing the enemy.

Warship armor may be optimized against the weapons the designers expect them to face — if lasers are the standard weapon, then ships will have heavy ED and light PD, and perhaps even extra ED with the Limitation *Only Protects Against Lasers*. If railguns are the queen of battle, ships’ ED will be light.

In game terms, armor is just more PD/ED for the vehicle. In some cases, designers may use other Defense Powers, but that should be rare.

POINT DEFENSE

The whole idea of point defenses is to stop incoming physical weapons (missiles and the like) before they damage the ship. Most use light rapid-firing lasers or railguns to blow up approaching missiles. Rather than engaging in a battle where the ship tries to do enough BODY damage to a missile to destroy it, it’s best to define point defense systems as a form of Deflection (as noted on page 228, missiles have a Physical Complication that allows spacecraft to Deflect them).

Often point defenses are completely automated, in which case it’s the OCV of the ship’s computer which determines whether a successful interception happens. Of course, that means the ship is using an Action to Deflect, which may keep it from moving that Phase. If a character, or a

dedicated computer, operates the point defenses, they can function without requiring any Actions by the ship itself.

FORCE SHIELDS

Force-fields in all their variations are the classic ship defense of Pulp and Space Opera Science Fiction. From *Star Trek*’s deflectors to the Langston Field of *The Mote In God’s Eye*, ships surrounded by bubbles of energy have been shrugging off attacks capable of reducing them to confetti for decades.

A force shield is defined as either a Resistant Protection or Barrier. A Resistant Protection force-field is much cheaper, since a spacecraft has to make a Barrier large enough to surround itself. (Alternately, a ship may buy two or more Barriers, each covering part of the ship, but joining together to form a single “bubble” around the whole ship, as if they were a single Wall; that way you can arrange situations where one shield isn’t functioning, but the others are.) On the other hand, the protection offered by the Barrier is superior in many cases, because it stops attacks at some distance from the ship itself. (Even though the Power should have the *Self Only* Limitation — starships rarely have the ability to surround other ships with force bubbles — spacecraft may, if they wish, make their Barriers long enough that they surround not only the ship, but a small amount of space as well.)

A ship designer can make force shields Ablative, just like a ship’s armor. The shields in *Star Trek* work that way; attacks gradually wear them down until they “collapse.” In this case, the -1 optional version of Ablative usually works best (see 6E1 147-48).

Ordinarily, an Ablative defense that's lost can only be recovered at the end of an adventure. That works fine for physical defenses like armor, but doesn't make quite as much sense for a force shield — in Science Fiction, a ship can often re-create a “collapsed” shield, just not immediately after it collapses (the shield-generating systems have to work back up to full charge, or the like). Gamemasters should allow a ship to re-activate a “destroyed” Ablative force shield after a defined period of time has passed (typically 1 Minute, or 5 Minutes, or an Hour — any of which are an eternity in battle), unless the shield-generating equipment itself is damaged or destroyed. (At the GM's option, the value of Ablative may be worth $\frac{1}{4}$ less Limitation due to this change.) For Barriers without Ablative, you can simulate this same effect with the *Extra Time* Limitation.

Some ships have different layers of shields — perhaps an outer Barrier and inner Resistant Protection, or multiple nested Barriers. In Iain M. Banks's “Culture” series, some starships are composed of nothing but force fields holding in air for the crew.

EXAMPLE DEFENSES

Deflector Field: A force-field like energy shield that destroys/deflects incoming attacks (both physical ones like missiles, and energy beams) to keep the ship safe.

Deflection (20 Active Points); OIF Bulky (-1)
Total cost: 10 points.

Point Defense Lasers: An array of small, but powerful, lasers mounted all around a ship's hull for the purpose of destroying incoming missiles.

Deflection (20 Active Points); OIF Bulky (-1), Only Works Against Physical Projectiles ($-\frac{1}{4}$). Total cost: 9 points.

Starship Force Shield, Type I: A basic force shield, tuned against both physical and energy attacks.

Resistant Protection (40 PD/40 ED) (120 Active Points); OIF Bulky (shield generators; -1), Ablative (-1). Total cost: 40 points.

Starship Force Shield, Type II: This shield offers an outer layer of protection. It's designed to provide one-fourth of a shield bubble 200m in circumference.

Barrier 20 PD/20 ED, 20 BODY (up to 50m long, 50m high, and $\frac{1}{2}$ m thick), Non-Anchored (192 Active Points); OIF Bulky (shield generators; -1), Costs Endurance (to maintain; $-\frac{1}{2}$), Extra Time (1 minute to re-erect Barrier after it collapses; $-1\frac{1}{2}$), Self Only ($-\frac{1}{2}$), Restricted Shape (one-fourth of “bubble” around ship; $-\frac{1}{4}$). Total cost: 40 points.

OTHER SYSTEMS

Here are some notes on other systems a starship might have. In game terms, usually there's no need to pay for them — you can consider them “Everystarship Equipment” — but the text below has suggestions on how to build them if you prefer.

Airlocks: Airlocks are specially-sealed chambers that allow a character to enter and exit a starship when it's in space. Normally an airlock is pressurized and filled with breathing gases. A character enters through the door that connects the airlock to the rest of the ship, and in preparation for leaving the vessel dons a spacesuit or other protective gear. When he's prepared, he shuts the door to the ship (to seal the chamber) and opens (or orders the ship's computer to open) the other door, which leads to space. When he's ready to come back inside, he enters the chamber and shuts the space-side door, and the ship then re-pressurizes the chamber and refills it with breathing gases.

You can build airlocks as a Change Environment, Area Of Effect (4m Radius; $+\frac{1}{4}$), Varying Effect (restore or remove normal pressure and breathing gases; $+\frac{1}{4}$) (total cost: 6 points). They often make for great dramatic scenes where a character running out of oxygen has to get back inside, or manually open the spaceside door to cause explosive decompression to suck some space monster out of the ship.

Docking Systems: Most ships need a way to attach themselves — “dock” — with other ships, space stations, and the like. That allows personnel to travel back and forth, workers to transfer cargo and consumables to and from the ship, and so on.

If you want to establish an individual cost for docking systems, build them as the ship's standard Life Support package for a small area (*i.e.*, with the *Partial Coverage* Limitation, with the size based on the size of the people and objects who have to pass through).

In most settings and situations, docking a ship to another ship or a station is a routine piloting task requiring no Skill Roll. In unusual or emergency situations, such as when a ship's docking systems are damaged, the GM may require a Combat Piloting roll at -2 (or worse), with failure causing both docking objects to suffer Move Through damage at 0m velocity.

Hangars: Large “carrier” ships (and many space stations) have a complement of two or more smaller spacecraft — usually fighters or similar ships. They transport these vessels in large open areas called hangars. Hangars should have a minimum of two times the cubic meters necessary to house all Vehicles intended to be within them (based on the Vehicles' area in cubic meters, per the Vehicle Size Table); this assumes each has its own separate exit. For hangars where the vehicles share routes out to common exits, the minimum room should be four times the cubic meters necessary to house all Vehicles intended to be within them. If the hangar has a repair section, the repair area requires room equivalent to eight times the cubic meters taken up by the total number of Vehicles to be repaired simultaneously.

Commander Spock: *Invisibility is theoretically possible, Captain — the selective bending of light — but the power cost is enormous. They may have solved that problem.*

—the *Enterprise* encounters a cloaked Romulan starship in the *Star Trek* episode “Balance Of Terror”

STEALTH

The art of not being seen remain important in space combat no matter what the era or technology. Stealth design is usually a form of Invisibility, sometimes with Inherent if it's a matter of the ship's shape. Concealment like a camouflage hull is the Chameleon form of Invisibility.

Closely related to stealthiness are various forms of electronic warfare, and related equipment — jamming enemy sensors and communications (Suppress), tricking sensors (Images), interference fields and chaff (Darkness), and so forth. This can go back and forth, with electronic countermeasures, and counter-countermeasures, and counter-counter-countermeasures....

The most rubber science form of stealth is the cloaking device, first made famous by *Star Trek's* Romulans. It's a highly effective invisibility device that bends light and other forms of energy around the ship, making it almost impossible to detect. It allows starships to act like submarines, lurking hidden until it's time to strike.

Since Radar and other Radio Group Senses are commonly used to target ships in starship combat, the Radio Sense Group should be considered a Targeting Sense Group for purposes of calculating the cost of devices built with Sense-Affecting Powers.

Stealth Hull: This isn't a system so much as how the ship is built. The ship's hull is distinctively-shaped and made of special materials, so that it absorbs radar waves or allows them to pass over it without registering its presence. Stealth hulls are distinctive, readily recognizable if seen, so the ship may have a *Distinctive Features* Complication.

Invisibility to Radio Group, Persistent (+¼), Reduced Endurance (0 END; +½), Inherent (+¼) (40 Active Points); Always On (-½), Limited Effect (Radar only; -¼). Total cost: 23 points.

Radar Jammer: This device blocks radar within a large region centered on the ship. The enemy can easily tell there's something there generating the jamming field, but it's impossible for him to locate exactly, or target with his radar. The downside is, the ship generating the field can't use its own radar, either.

Suppress Radar 6d6, Area Of Effect (8m Radius; +½), MegaArea (1m = 1 km; +1) (150 Active Points); OIF Bulky (-1), Costs Endurance (to maintain; -½), No Range (-½). Total cost: 50 points.

Radar Spoofing: This system attempts to fool enemy radar by creating false images to confuse targeting systems.

Radio Group Images, -5 to PER Rolls, Area Of Effect (4m Radius; +¼), MegaArea (1m = 1 km wide, broad, and deep; +1) (56 Active Points); OIF Bulky (-1), No Range (-½), Set Effect (up to 6 images of the target ship; -1), Limited Effect (Radar only; -¼). Total cost: 15 points.

Cloaking Device: This marvelous device uses force field technology to bend light and other radiation around the ship, making it invisible to most senses.

Invisibility to Sight and Radio Groups, No Fringe (40 Active Points); OIF Bulky (-1), Extra Time (Extra Phase to activate; -½), Increased Endurance Cost (x4 END; -1½). Total cost: 10 points.

OPERATIONS SYSTEMS

“Operations” systems refers to a broad category of systems used to run the ship that don't fit into any other category. They include communications, piloting, sensors, and tractor beams. If the ship has teleporters (page 203) or other such systems, they count as operations systems as well.

COMMUNICATIONS SYSTEMS

Joachim Weiss: *They're requesting communications, sir.*

Khan Noonien Singh: *Let them eat static.*

—Khan toys with the *Enterprise* in *Star Trek II: The Wrath Of Khan*

Starships mostly communicate via radio or light beams — or, in Space Opera games, via rubber science methods that allow instantaneous communication across vast distances. In game terms, communication systems are simply the appropriate Senses (sensor systems; see below) with the *Transmit* Sense Modifier. High Range Radio Perception (HRRP) is the most common Sense used for communications devices.

Communication systems often include the *MegaScale* Advantage so they can “talk” to each other over vast interstellar distances (see 6E1 215). The *MegaScale* is often bought as a naked Power Advantage so the user can easily apply it to any of the ship's communications or sensors systems.

Some campaigns, including almost all Low Science Fiction games, have communication systems that work at STL speeds (or, at most, the speed of light). These communicators can apply a Limitation, *Lightspeed Delay* (-½), to their *MegaScale* Advantage. This means that at ranges over 300,000 kilometers, a lightspeed lag of one second per +300,000 kilometers distance occurs. Thus, it may take hours to get a reply from a message sent to another system, and communications across the Galaxy are impossible. In settings using this sort of communications technology, characters “in the field” have a lot more autonomy and authority — they can't call headquarters to get instructions or relay the latest news.

Faster-than-light communications get *MegaScale* without the *Lightspeed Delay* Limitation (though the GM may still, in his discretion, impose a slight time lag over long distances). The existence of FTL communications makes a great change in the feel of the campaign setting.

Ships in constant contact with home base are subject to more immediate and intrusive meddling by commanders. Diplomats become simple relays for messages from home. It's easier to call for help in a distant star system. News can travel fast (possibly faster than ships), which means the authorities can track pirates or hijackers effectively.

SENSOR SYSTEMS

Major Kira: *There's so much interference our imaging systems are practically useless! ...*

Lieutenant Commander Worf: *Sensor range is less than two kilometers.*

Lieutenant Jadzia Dax: *There might be a way we can increase it.*

Captain Benjamin Sisko: *Let's do it!*

—the atmosphere of a gas giant interferes with the *U.S.S. Defiant's* sensors in the *Star Trek: Deep Space Nine* episode "Starship Down"

Closely related to communications systems are sensor systems — the eyes and ears of a starship. They range from simple visual cameras to advanced rubber science devices able to detect trace particles from light-years away if properly "configured" (set up or programmed).

Sensors are bought as various Enhanced Senses, often with the *MegaScale* Advantage (as discussed above) and/or the *Telescopic* Sense Modifier. Characters should ordinarily define a ship's Senses as belonging to the Radio Sense Group (though a few may qualify as Sight Group). Radar is the most common general Sense used by ships, even if it's defined as a "hyperspace detector" or in some other rubber science way.

In many types of Science Fiction settings, particularly Space Opera, a starship's sensors seem able to detect just about anything (though locating obscure substances or energy phenomena may require the crew to "reconfigure" or "recalibrate" the sensors first). Rather than requiring ship designers to try to think of all the possible Senses a ship needs in advance and pay for them separately, GMs should allow ships to buy Variable Power Pools just for sensor and communications systems. This constitutes an exception to the general rule against putting Special Powers in Power Frameworks, but it lets the game progress much more smoothly and seem more like typical Science Fiction. If a ship has a Sensor Pool, it can buy a single naked *MegaScale* Advantage it can apply to any Sense bought with the Pool. The ship may, of course, have some commonly-used senses (such as HRRP) bought outside the Pool, to free up Pool resources.

Because characters using a ship's sensors aren't literally perceiving things with their own Senses, a "Perception Roll" made by a ship's crew should be made using Systems Operation, not a PER Roll. However, a ship's computer using its ship's sensors would make a PER Roll using its INT, as normal (but any form of interference which penalizes Systems Operation rolls also applies to its PER Roll).

Cost Sensor And Communication Systems

- 46 **Sensor And Communication Systems:** Variable Power Pool (Sensor Pool), 40 Pool + 40 Control Cost; OIF Bulky (-1), Only For Senses And Communications (-1), Costs Endurance (-½)
- 85 **Long-Range Sensors:** MegaScale (1 light-year per Active Point; +4¼) for any Sensor Pool Sense; OIF Bulky (-1)
- 15 **Long-Range Sensors:** +20 versus Range for Radio Group; OIF Bulky (-1)

Total cost: 146 points.

PROBES

In some Science Fiction settings, characters have access to *probes* — small sensor devices they can fire like missiles to extend the range of a ship's sensors, get a sensor package close to a dangerous phenomenon without risking the ship itself, or expand the scope of a large-scale search. Characters can build probes in two ways. The more complicated way is to design them as Automotons (possibly with Computer "brains"), so they can act independently (without oversight or direction from a character). The easier way is to define probes as MegaScaled Clairsentience, with the ability to move the perception point and maintain multiple perception points at once. The multiple perception points in this case represent how many probes the ship can monitor and track at once; each active probe counts as a single perception point. Clairsentience probes have the Limitation *OAF Bulky*, signifying that they can be removed from a ship, shot down in mid-flight (their DCV depends on their size, as defined by the GM), and so forth.

Long-Range Reconnaissance Probe: Clairsentience (Radio Group), Mobile Perception Point, Multiple Perception Points (up to four at once), MegaScale (1 m = 1 billion km; +3¼) (149 Active Points); OAF Bulky (-1½), Extra Time (takes probe 1 Phase or more to get to perception point, depending on distance thereto; -0), Perception Point Cannot Move Through Solid Objects (-0). Total cost: 60 points.



SENSOR AND COMMUNICATION INTERFERENCE

In addition to problems deliberately caused by electronic warfare (see below), ships may experience other forms of interference with their sensor and communications systems. Strange energy fields, nebulae, large masses of rock, and other such phenomena may prevent a ship from using its sensors or communicators, or make using them harder. For example, a ship on one side of a planet may not be able to track an object on the other side of that planet accurately, and a courier hiding from an enemy warship in a nebula may have to rely on eyesight (via a viewscreen) to find its way through the gas cloud. Gamemasters can represent interference by imposing penalties on the Systems Operation rolls required to operate the sensors and communications system. The accompanying table has some suggested modifiers, but since the modifiers depend largely on the type of technology used in the campaign, the GM should adjust the table to suit his own game.

Starships with advanced sensor and/or communication systems often represent this by buying bonuses to Systems Operation that apply when anyone uses the ship's equipment. These bonuses help to counteract interference and make electronic warfare easier.

SENSOR AND COMMUNICATIONS INTERFERENCE

Modifier	Phenomenon
-1 to -3	Atmospheric electromagnetic interference
-1 to -3	Large masses of rock directly between ship and target object
-1 to -5	Energy field (plasma or ion storm, intense solar radiation, or the like)
-1 to -4	Ship or target is inside a nebula (see page 96)
-3 to -8	Ship or target is inside a star's chromosphere or a planet's polar magnetic field

EXAMPLE ELECTRONIC WARFARE SYSTEMS

See also page 234 for other electronic warfare-type defensive systems.

Enhanced Sensor/Communications System: This represents a ship with particularly advanced sensor and communications technology.

+4 to Systems Operation roll (8 Active Points); OAF Bulky (-1½). Total cost: 3 points.

Interferiation Field: A ship with this technology can generate an energy field that inhibits the use of sensors and communications.

Change Environment (create interference), -4 to Systems Operation rolls, Area Of Effect (16m Radius; +¾), MegaArea (1m = 1,000 km wide, deep, and broad; +1¾), MegaRange (1m = 10 million km; +2¾) (75 Active Points); OAF Bulky (-1½). Total cost: 30 points.

Intense Interferiation Field: This energy field is similar to the standard interferiation phenomenon, but is much stronger.

Darkness to Radio Group 20m radius, MegaArea (1m = 1 million km wide, deep, and broad; +2½), MegaRange (1m = 10 million km; +2¾) (1,250 Active Points); OAF Bulky (-1½). Total cost: 500 points.

Sensor Ghosts: A clever tactical officer can use his ship's systems to generate false images of other ships, thus making an enemy think, for example, that there are more ships present than there really are. The trickery quickly falls apart if the enemy can get close enough to observe the affected area visually.

Radio Group Images, -5 to PER Rolls, Area Of Effect (32m Radius; +1), MegaArea (1m = 1 million km wide, deep, and broad; +2½), MegaRange (1m = 10 million km; +2¾) (181 Active Points); OAF Bulky (-1½). Total cost: 72 points.

Electronic Counter-Countermeasures: When the enemy tries to jam your sensors or play other electronic tricks, you have the technology to counter his efforts.

Suppress Electronic Warfare 8d6, Expanded Effect + Variable Effect (any two Electronic Warfare Powers simultaneously; +1), MegaRange (1m = 10 million km; +2¾) (380 Active Points); OAF Bulky (-1½), Costs Endurance (to maintain; -½). Total cost: 127 points.

ELECTRONIC WARFARE

Electronic warfare refers to the practice of jamming, counterjamming, fooling, misdirecting, and otherwise interfering with an enemy's electronic signals. This inhibits his ability to communicate with his allies, control his probes, and locate targets. Of course, one ship's electronic countermeasures (ECM) can be neutralized by another's electronic counter-countermeasures (ECCM), and so on.

In game terms, there are several ways to represent electronic warfare. The simplest is for crewmembers on both ships to use their *Systems Operation Skills* in a Skill Versus Skill Contest, with the victor being the one who successfully neutralized (or avoided the neutralization attempted by) his opponent. See HSS 321 for more information.

Ships desiring more advanced ECM/ECCM systems can create them with Powers. To generate an area of interference that hinders (but doesn't necessarily stop) sensing or communicating, use Change Environment (with combat effects that penalize Systems Operation). Creating an area of totally impenetrable interference requires Darkness, or perhaps Suppress. Fooling or confusing an enemy ship's sensors usually requires Images. Countering any of these abilities typically requires Suppress. Ships sometimes apply the *Personal Immunity* Limitation so they can perceive through their own interference, but this should be rare; it can cause too many game balance problems in starship combat situations.



PILOTING SYSTEMS

Jadzia Dax: Without navigational sensors...

Kira Nerys: We'll have to fly by the seat of our pants.

Jadzia Dax: Great! Seat-of-pants technology.

Kira Nerys: You Starfleet types are too dependent on gadgets and gizmos. You lose your natural instincts for survival.

Jadzia Dax: My natural instincts for survival told me not to climb aboard this thing. I'd say they're functioning pretty well.

—Dax and Kira run into sensor troubles in the *Star Trek: Deep Space Nine* episode "The Siege"

Besides the engines themselves (see page 217), there are several types of piloting (or "flight control") systems characters may want to include on their ships.

First, some ships have improved, expanded, or enhanced systems that make it easier to fly and maneuver the ship. You can buy this as bonuses to the Combat Piloting roll of anyone flying the vessel.

Second, some ships also have navigation computers ("navcomps") to make it easier to steer the vessel toward its destination. You can buy this as bonuses to Navigation (Space) or (Hyper-space). If a ship has a navcomp, its main computer may have only a slight amount of navigation information (*i.e.*, it takes the *Navigation Skill* as a Familiarity or Proficiency). In some settings,

pilots themselves know little or nothing about the complex subject of astronavigation; if a ship's computer and/or navcomp stop functioning, the pilot has no idea which way to go.

Third, most ships have *thrusters*, small rockets used to maneuver the ship in tiny increments so that it can safely enter repair bays and other close spaces. You can buy thrusters as a few meters of Flight (no more than 20m), without any MegaScaling.

TRACTOR BEAMS

Han Solo: Sure hope the old man got that tractor beam out of commission, or this is gonna be a real short trip. Okay, hit it!

—Han, Luke, and Leia prepare to escape from the Death Star in *Star Wars*

In settings where artificial gravity control technology exists (mainly Space Opera universes), ships often come equipped with *tractor beams* — generators able to project beams of gravitic force, which the ship uses to move obstacles out of the way, tow a disabled ship to spaceport, or even as a weapon to hurl asteroids at other ships. Tractor beams are built as Telekinesis, usually with a high level of STR and the *Affects Whole Object Limitation*.

Tractor Beam: Telekinesis (100 STR) (150 Active Points); OIF Bulky (projector; -1), Affects Whole Object (-¼). Total cost: 67 points.



EXAMPLE PILOTING SYSTEMS

Enhanced Flight Control: +4 to Combat Piloting roll (8 Active Points); OAF Bulky (-1½). Total cost: 3 points.

Navigation Computer: +4 to Navigation (Space) roll (8 Active Points); OAF Bulky (-1½). Total cost: 3 points.

Thrusters: Flight 20m. Total cost: 20 points.

PERSONNEL SYSTEMS

The whole purpose of starships is to move people and things from place to place. Consequently they need room on board for people, and systems specifically designed to keep passengers and crew healthy and happy.

LIFE SUPPORT

“Okay, I’m taking power from... life support, we don’t need that!”

—the Emergency Medical Hologram, Mark II, on the *U.S.S. Prometheus* figures he and the holographic Doctor from the *U.S.S. Voyager* don’t need to worry about life support in the *Star Trek: Voyager* episode “Message In A Bottle”

Perhaps the most crucial systems on a starship are the *life support systems*, which keep the crew from dying in the airless vacuum of space. Starships must provide the following sorts of Life Support to those on board: Self-Contained Breathing, Safe Environments (High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum). (Many also provide protection against High Pressure; see page 310.) The various environmental protection systems are just part of having an airtight, insulated hull, but breathing requires some complex equipment. Supplying oxygen (or other breathing gases, as appropriate to the species) to people in space is done in one of two ways: Consumable or Regenerative.

Consumable life support means just a big tank of air, which gets used up during the voyage. You can simulate this with a Fuel Charge, or simply make it the special effect of having the ship’s Life Support cost no END. The longer the voyage and the larger the crew, the more appropriate the “0 END” solution becomes.

Regenerative breathing systems use greenhouses (at current and near-future technology), “atmospheric scrubbers,” or nanotech systems to convert carbon dioxide back into oxygen for the crew to breathe. They can operate indefinitely as long as there’s power, which means you should buy the Life Support as having an END cost. Greenhouses are fairly bulky — assume 1 cubic meter of greenhouses for every 4 people on board. Nanotech recyclers or air tanks are more compact, taking up 1 cubic meter for every 100 people.

In the game, a ship running out of oxygen presents the heroes with a serious problem to solve and lots of opportunities for suspense and adventure (see Arthur C. Clarke’s short story “Breaking Strain,” or many episodes of *Star Trek*, for some good examples). Despite the fact that most ships’ life support systems supposedly contain multiple redundant backups and other safeguards, somehow an accident or invader always seems to find a way around them.

Life support also includes providing enough food and water for the crew. You buy this as the *Diminished Eating* category of Life Support, with the special effect being that the ship provides food for the occupants to eat. This may cost no END (representing stored preserved food which the crew can cook using minimal power), or have an END cost (representing the power needed to refrigerate and prepare the food). Fuel Charges may be an appropriate Limitation instead of Costs Endurance.

GRAVITY

Commander Jeffrey Sinclair: *I’m still waiting for an explanation, gentlemen.*

Ambassador Londo Mollari: *Yes. And I’m prepared to give you one, Commander, as soon as the room stops spinning.*

Sinclair: *This station creates gravity by rotation. It never stops spinning.*

Londo: *Well, you begin to see my problem.*

—from the *Babylon 5* episode “The Quality Of Mercy”

In many cases, gravity is almost as important as life support — it’s hard to get most jobs done, much less fight a star-battle, if everyone in the crew is flailing around in zero-G!

There are two basic ways to generate gravity. The first is to spin the ship so that centrifugal force holds the contents and inhabitants of the ship against the floors and hull with the same force as planetary gravity. This is typically the only solution available in low-tech settings, and it dictates many features of starship (or space station) design — long, symmetrical structures (cylinders, typically) are necessary.

The second is the rubber science method of artificial gravity generation, usually through special “plates” or “generators” built into each deck of a ship. This allows for any sort of starship design, and also makes maneuvering easier — even if the ship is flying straight “up,” the crew still perceives the deck floor as “down” and can move and act accordingly. The crew may also be able to selectively decrease (or perhaps increase) the gravity from place to place in the ship by controlling the gravity generators.

In either case, you can simulate gravity as Telekinesis with the Limitation *Only To Pull Objects Straight Down To The Floor (-1)* (this is a broader and more restrictive form of the *Affects Whole Object* Limitation). Normal Earth gravity (1 G) is equivalent to 5 STR Telekinesis, with every +5 STR equalling +1 G (10 STR is 2 G, 15 STR is 3 G, and so forth). This gravity applies throughout the ship; you don’t have to add the *Area Of Effect* Advantage to it. However, for artificial gravity generators, ships may, with the GM’s permission, apply the *Selective (+¼)* Advantage to the Telekinesis so they can give some areas stronger gravity, and some lighter gravity.

For general rules about moving in variant gravities, see page 306.

GRAVITY SYSTEMS

Spinning Gravity: This represents gravity generated by spinning the ship.

Telekinesis (5 STR)
(9 Active Points); Only
To Pull Objects

Straight Down
To The Floor
(-1), Must
Maintain Spin
(-¼). Total cost:
4 points.

Artificial Gravity: This represents a system that generates gravity artificially. It can go as high as STR 20 (4 G), though it’s usually kept at STR 5 (1 G).

Telekinesis (20 STR),
Selective (+¼) (37 Active
Points); OIF Bulky (-1),
Only To Pull Objects
Straight Down To The
Floor (-1). Total cost:
12 points.

8

QUARTERS, CONTROLS, AND MAINTENANCE

All the crewmembers and passengers need places to sleep and relax. Two cubic meters can hold up to three Human-sized persons in bunks or racks, or a single person in minimal comfort. More pleasant accommodations require three to eight cubic meters per person; luxurious quarters can be virtually any size. For recreation and related activities, allot two to four cubic meters per person the ship normally carries (both crew and passengers). In Space Opera settings, ship designers may use holographic and/or dimension-altering technology to make tiny recreation spaces seem enormous and varied.

Ships also need a command center, with at least 1 cubic meter of space per officer present at once. One-man ships may have just a pilot's seat, but larger ones have multiple control stations. Really big ships have a command bridge with space for dozens of specialists and an impressive chair for the captain.

For corridors, elevators, access tunnels, and other means of physically moving through the ship, you should allot about ten percent of the total interior space devoted to other facilities and systems (or, for ease of calculation, a straight ten percent of the ship's volume).

Ships often include repair shops, for purposes of maintenance and damage control. You can simulate this by buying "labs" for Electronics, Mechanics, and various other Skills. Per the standard rules, the ship needs a minimum of one cubic meter of space per lab, but most ships have even larger labs so more than one engineer can work at once; this requires at least one cubic meter of space per person who can be in the lab. Gamemasters may also want designers to make labs with better rolls larger — for example, one cubic meter for a base roll, +1 cubic meter per +1 to the roll.

HOLOGRAPHIC ENTERTAINMENT

In some Science Fiction settings, characters on starships can fulfill their need for entertainment and recreation in ultra-advanced holography chambers that create any sort of "reality" or adventure they can imagine using photons, force-fields, and inert raw materials. It looks, sounds, and sometimes even feels real, but it's all just an elaborate illusion (at least until the controls malfunction and the holograms gain the ability to kill...). Here's how a "holographic entertainment room" might look in *HERO System* terms:

Sight, Hearing, and Touch Group Images, -3 to PER Rolls, Area Of Effect (16m Radius; +¾) (51 Active Points); OIF Immobile (-1½), Only Within Defined Area (16m radius chamber; -2). Total cost: 11 points.

MEDICAL FACILITIES

Frequently known as "sickbay" thanks to the influence of *Star Trek*, a ship's medical facilities need enough room for doctors, patients, and equipment. It's bought as a laboratory for Paramedics and SS: Medicine (and perhaps other Skills). At a minimum, sickbays require one cubic meter of space per ten people in the standard crew + passengers complement, plus one cubic meter per doctor intended to work in the facility at once. A ship's medical facilities may be especially advanced (bought as bonuses to SS: Medicine), or include autodoctors (see HSEG 327-28) or like technology.

SPACE COMBAT

Space battles are a long-standing part of Science Fiction, both in print and on the silver screen. Many gamers like to include them in their Star Hero games... and sometimes players are forced into one whether they want to fight or not!

Advanced and expanded rules for vehicular combat can be found in *HERO System Vehicles*. Those rules aren't reprinted in *Star Hero*.

The nature of space combat depends largely on the types of technology available — the spectrum of tactical options in a setting with easy FTL flight and starship maneuvering differs significantly from the available choices in a Low Science Fiction game. Therefore, the rules presented in HSV are general ones, intended for use in a wide variety of Star Hero campaigns. Gamemasters can, and should, alter and adapt them for use in their own games, and create new rules appropriate for their campaign settings when appropriate.

There are two schools of thought regarding starship combat. The *Fun* school emphasizes all the cool Space Opera stuff — whooshing fighters, cruisers trading broadsides, and tactics Horatio Nelson would have approved of. The *Accurate* school emphasizes what's known about conditions in space and modern trends in warfare, with high levels of stealth, prolonged duels of sensors and countermeasures, and devastating weapon strikes. Gamemasters can pick which method they prefer. The *Accurate* school is more appropriate for Low Science Fiction and Military Science Fiction games; the *Fun* school is more appropriate for Pulp and Space Opera games.



COMPLICATIONS

The Complications system described for Vehicles on 6E2 194 generally applies to Star Hero spacecraft. Gamemasters may want to consider allowing some other Complications as well.

HUNTED

A specific starship might be sought by the authorities, covetous collectors, or other people. This is different from Hunting the owners or crew of the Vehicle — someone Hunting a starship wants *the ship*; he doesn't necessarily care what happens to the people on it.

PHYSICAL COMPLICATION

Players designing spacecraft could use Physical Complications to represent a ship with perpetual engineering problems. Perhaps the ship is an old junker, always on the verge of falling apart, or maybe it's got so many cross-wired, jury-rigged alien replacement parts the crew doesn't know from day-to-day whether everything will function properly. Some examples:

Physical Complication: Constant Malfunctions

(Frequently, Greatly Impairing; 20 points). The GM rolls for the ship each game session. On a roll of 11-, something on the ship malfunctions or stops working at a crucial moment; the GM randomly determines which system goes kablooeie, or chooses the one with the most dramatic impact.

Physical Complication: Alien Computer

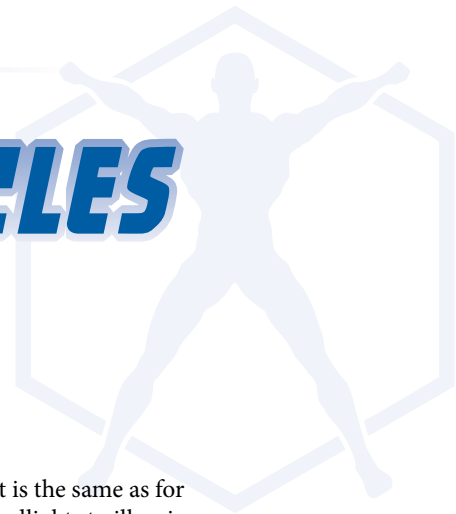
(Frequently, Greatly Impairing; 20 points). The ship's computer was built, modified, or warped by aliens, and doesn't always work the way it's supposed to. Once per game session, the GM should have the computer make an INT Roll at -3. If it succeeds, nothing goes wrong. If it fails, a program or Skill Roll is misinterpreted, with comic and/or dangerous results.

Another good use of Physical Complication is to represent spacecraft that cannot enter planetary atmospheres:

Physical Complication: Cannot Enter Atmospheres

(Infrequently, Greatly Impairing; 15 points). A ship with this Physical Complication was not built to withstand the rigors of atmospheric flight. For every Phase it spends within an Earth-equivalent atmosphere, it takes 1d6 Killing Damage (no defense applies) (the GM can alter the number of dice to reflect atmospheres thinner or denser than Earth's). If it stays too long in the atmosphere, it gets torn apart.

PLANETARY VEHICLES AND MECHA



In many Science Fiction settings, planetary vehicles receive little, if any, attention; *Star Trek*, for example, has shown about 700 hours of Science Fiction television while barely even mentioning, much less showing, any ground-based vehicles. On the other hand, some settings, particularly in Military Science Fiction, involve a lot of planetary vehicles — everything from gas-powered trucks not far different from what twenty-first century Humans drive every day, to hovertanks using artificial gravity fields to move. Some settings focus entirely on a type of ground vehicle called *mecha* (singular, mech), meaning a large humanoid- or animal-shaped military robot/vehicle driven by a pilot and carrying heavy armament.

HOVERCRAFT

Hovercraft are built like typical ground vehicles with a few important differences.

MOVEMENT

Hovercrafts' movement doesn't depend on generating friction against the ground. Instead, they use artificial gravity technology (sometimes coupled with rockets) to generate thrust and "fly" near the ground. A basic hovercraft must remain within 2m of the ground, and buys its movement as ordinary Ground Movement (but without any of the terrain-based Limitations that some forms of Ground Movement suffer from).

More advanced hovercraft can get as much as 8m off the ground (or a like surface, such as a body of relatively calm water). They buy their movement as Flight, with the Limitation *Must Remain Within 8m Of A Surface* (-½). They have some maneuverability that less advanced hovercraft don't (for example, they can go over obstacles 6m tall or shorter with ease), but still cannot cross chasms or other such "gaps" in the ground.

A few hovercraft can fly at unlimited altitudes, which they buy as Flight without any of the Limitations described above. These effectively aren't ground vehicles at all, but the Science Fiction equivalent of airplanes and helicopters.

Other appropriate (but not required) Power Modifiers for hovercraft include No Turn Mode (+¼), Full Reverse (+¼), and Sideways Maneuverability (varies) (see HSV for information on the latter two).

EQUIPMENT

Most hovercraft equipment is the same as for other ground vehicles (e.g., headlights to illuminate the path of travel at night). But hovercraft also have a few systems of their own.

Some hovercraft can attain speeds significantly higher than even the fastest ground-based vehicle, which means they often need some extra equipment, too. Life Support (Self-Contained Breathing) may be necessary if the vehicle isn't physically sealed; this would represent a force-bubble holding a pocket of air "inside" the vehicle so passengers can breathe.

Similarly, high speeds require a high degree of protection from collisions. Many hovercraft have Resistant Protection force-fields or Barriers like those used for starships (page 232), but not nearly as strong.

Hovercraft that can fly above 8m usually have Radar with Increased Arc Of Perception (360 Degrees) so they can keep track of other objects in the air. Even ground-based hovercraft may have radar, since the dangers of a high-speed impact are so severe.

In some settings, hovercraft are primarily (or exclusively) used by law enforcement authorities and/or the military. In that case, they usually come equipped with weapons — mounted blasters, rocket launchers, and the like.

MECHA

Mecha are large ground vehicles common to some Science Fiction settings. In fact, they're the primary feature of some Science Fiction universes and Star Hero campaigns. They usually have a humanoid form (though some are shaped like various animals instead), and in effect are gigantic combat robots requiring Human drivers. The driver rides in a cockpit that's usually located either in the "head" of the vehicle, or in the body just below the head; mecha often have transparent screens so the driver can view the battlefield with his own eyes as well as his sensors.

Mecha use the same Vehicle Size Table as ordinary vehicles, but substitute "height" for "length." Typically they're 8-40m tall at most, but can be up to 64m (about 200 feet) tall in some settings.

This section provides basic guidelines for creating mecha. For more information, see HSV.

"Hōichi my lad — take a look at the trigger for the biggest and baddest of Exaxxion's guns — the Exacannon! A 12 caliber gun with a muzzle diameter of 4096mm and a barrel length of 49.2 meters. Now this is a gun!"

—Hōsuke Kano gives his grandson, Hōichi Kano, an idea of the size and scale of the mecha Exaxxion in the manga *Cannon God Exaxxion*

8



MOVEMENT

Mecha have legs and “walk” like humanoids. To simulate this, they buy Extra Limbs with the *Limited Manipulation* Limitation. Their legs are used for moving; their arms typically serve as weapon mounts and don’t have hands. On those mecha that do have hands (typically to wield enormous guns and other weapons), the hands aren’t built for fine manipulation. The typical mech has two legs and two arms, but more are possible.

To determine how fast a mech can move on its legs, refer to the *Size/Weight* Templates on 6E1 443. At a minimum, a mech should have the amount of Ground Movement (Running) appropriate to its size; some have more, because of their highly efficient motors and servos. Mecha don’t take any sort of Limitation on their Ground Movement; unlike vehicles with tires or treads, their legs allow them to negotiate rough terrain without difficulty. Since they’re using limbs to move, they shouldn’t suffer from a Turn Mode, and thus must buy the *No Turn Mode* (+¼) Advantage for their Ground Movement.

The *Size/Weight* categories also indicate how much Reach a mech should have, if appropriate. Mecha who just use their arms as weapon mounts don’t need to buy any Reach, but mecha who can fight in HTH Combat should have some.

Mecha often have other forms of movement as well. Many have “jumpjets” for making rocket-assisted leaps. Others can even fly, though “flight mode” is most common among mecha that can alter their shape (see below).

WEAPONS AND DEFENSES

Mecha are combat vehicles, and as such come heavily laden with weapons. Most rely on ranged attacks: long-range beam weapons, missile launchers, autocannons, and the like. More exotic attacks, such as Flash, Darkness, and Drain are possible, though less common. Here are a few examples:

Laser Assault Cannon: This enormous gun resembles a distinct weapon the mech carries in a “holster” and fires with its hands, but in fact it’s firmly attached to the mech’s body by an armored cable and other linkages.

RKA 4d6, Armor Piercing (+¼), Increased Maximum Range (x8, or 4,800m; +¾) (120 Active Points); OIF Bulky (-1). Total cost: 60 points.

Autocannon: This weapon uses gauss technology to fire barrages of high-speed, high explosive rounds.

RKA 5d6, Autofire (5 shots; +½), 64 Charges (+½), Increased Maximum Range (x8, or 6,000m; +¾) (206 Active Points); OIF Bulky (-1). Total cost: 103 points.

Missile Pod: This weapon, mounted on a mech’s shoulder next to its “head,” contains 16 large, powerful missiles.

RKA 4d6, Area Of Effect (64m Radius Explosion; +¾), Armor Piercing (+¼) (120 Active Points); OIF Bulky (-1), 16 Charges (-0). Total cost: 60 points.

In some settings mecha engage in HTH Combat as well. Some use their metallic fists and legs to pummel other mecha, even buying Martial Arts in some cases. (Standard rules for buying Martial Maneuvers apply.) Mecha can only engage in unarmed HTH Combat against targets of large size; they can't use their Martial Maneuvers against ordinary Human-sized characters, but only against other mecha, buildings, giant monsters, large terrain features, and so forth. On the other hand, some mecha use gigantic melee weapons — typically swords of blazing energy, or other such “powered” weapons. Most of these weapons are OAFs, because other mecha can disable them or disarm the user, though they are far too big and heavy for a character to wield.

Naturally, with all this weaponry around, mecha also come equipped with defensive systems. First and foremost, they tend to rely on heavy armor and sturdy construction; they have more PD/ED and BODY than similarly-sized normal Vehicles. They may also have “primitive” defenses, such as gigantic shields (extra PD/ED on an Activation Roll, Deflection) to accompany their gigantic swords.

If the tech level of the setting is high enough, mecha may also have defensive energy shields similar to starships' (though of course less powerful). Many define their energy shields primarily as Deflection, though that does little good against Areas Of Effect and similar attacks. Designers can also use Resistant Protection and Barrier to create mecha defense shields, though they drain the vehicle's power (*i.e.*, cost END).

Other possible defenses include: Flash Defense (polarized viewing screens to protect the pilot's eyes; hardened communications and sensor

systems able to resist electronic pulses; and so forth) and Power Defense (in settings where Drain-based mech weapons exist).

OTHER EQUIPMENT

For the most part, you can use the starship equipment detailed elsewhere in this chapter for mecha; all you have to do is “downgrade” it a bit or otherwise adapt it to ground-based warfare. For example, mecha have sensor and communications systems similar to those starships possess, but need much less (if any) MegaScale — a few levels of Telescopic take care of their requirements.

Because of the discomforts of the battlefield, not to mention the possibility of biochemical warfare, most mecha provide Life Support for their drivers. In lower-tech settings, the driver may have to use his own personal breathing gear instead.

Perhaps the most interesting type of “equipment” found on mecha in some settings is the ability to shift shape. In these universes, a humanoid mech may be able to transform itself into a beast-shaped mech for different attack forms, or a plane-shaped mech for fast travel, or a submarine-style mech for underwater combat. You can buy this ability as Multiform, with the cost of the Power deriving from the total cost of the alternate Vehicle shape (not its total cost divided by five). Mecha Multiform shouldn't have the *Instant Change Adder* (in fact, it may take an *Extra Time* Limitation to reflect the fact that it takes longer than a Half Phase to change forms), and usually takes the *Costs Endurance* (-½) Limitation.

EXAMPLE MECHA MELEE WEAPONS

Blazing Energy Sword: HKA 3d6 (plus STR), Armor Piercing (+¼) (56 Active Points); OAF Bulky (-1½). Total cost: 22 points.

Power Mace: HKA 4d6 (plus STR) (60 Active Points); OAF Bulky (-1½). Total cost: 24 points.

EXAMPLE MECHA MOVEMENT POWERS

Mech Limbs: Extra Limbs (4 — two legs, two arms) (5 Active Points); Limited Manipulation (-¼). Total cost: 4 points.

Jumpjets: Leaping 80m. Total cost: 40 points.

Flight Mode: Flight 80m, x4 Noncombat. Total cost: 85 points

EXAMPLE MECHA EQUIPMENT

Basic Mecha Sensors: This represents a basic sensor system for a mech, with a small amount of hardening to protect it from enemy “radarzappers.”

Radar (Radio Group), Discriminatory, Increased Arc Of Perception (360 Degrees), Telescopic (+14 versus Range Modifier) (total cost: 32 points) **plus** Radio Group Flash Defense (5 points) (total cost: 5 points); all OIF Bulky (-1). Total cost: 18 points.

Secure Laser Communication System: This short-range communication device, using both laser and radio, allows for a high level of coordination between two mecha. However, it can easily be cut off by intervening obstacles or electronic warfare.

Mind Link, any willing target (15 Active Points); OIF Bulky (-1), Only With Other Mecha Who Have Mind Link (-1), Must Maintain LOS (-½), Affected As Radio And Hearing Group Instead Of Mental Group (-¼). Total cost: 4 points.

360 View System: Hardened cameras mounted all around the mech's body allow its driver to see everything around him.

Infrared Perception (Sight Group) (total cost: 5 points) **plus** Ultraviolet Perception (Sight Group) (total cost: 5 points) **plus** Increased Arc Of Perception (360 Degrees; Sight Group) (total cost: 10 points); all OIF Bulky (-1). Total cost: 9 points.



SPACE STATIONS AND STARBASES

The Babylon Project was our last, best hope for peace. A self-contained world five miles long, located in neutral territory. A place of commerce and diplomacy for a quarter of a million humans and aliens. A shining beacon in space, all alone in the night. It was the dawn of the Third Age of Mankind — the year the Great War came upon us all. This is the story of the last of the Babylon stations. The year is 2259. The name of the place is Babylon 5.

—the opening credits for Season 2 of *Babylon 5*, spoken by Captain John Sheridan

Space stations and starbases are similar to starships in most ways, and use the same creation rules. The main difference between spaceships and space stations is that ships get to go places. Stations, while they aren't necessarily stationary, remain in place or follow a predetermined orbit and can only make minor adjustments. They can buy any type of starship equipment the GM deems appropriate, but may not have Movement Powers except for low-powered thrusters (page 237) to help them maintain their position.

See *The Ultimate Base* for expanded rules for Bases in general, including space stations, and many types of equipment appropriate for them.

Space Station Types

Space stations serve many purposes. Science stations are orbiting laboratories, either studying the planet below or used for research too dangerous to perform on an inhabited world. Commercial stations are centers for trade and ports of entry for ships visiting a planet; almost every world engaged in off-world trade has at least one commercial station. Transit stations orbit between two planets in the same system, acting as an interplanetary liner that never docks. Military stations can be either planetary defense bases to guard against attack, or space superiority platforms keeping an eye on the planet itself. Finally, colonies are very big self-sufficient space stations, often combining the functions of smaller ones.

In most settings, governments have a classification system for space stations. Most classification schemes account for the station's location (either generally, or at specific coordinates), purpose, and size.

Size

By any standard of measurement, Deep Space 9 is an extremely large free-flying orbit station irrespective of its origins or current custodians. ... The shape descriptors filed with Starfleet's Technology Assessment Directorate classify Deep Space 9 as a Hybrid Planar-Columnar Triradial structure. Its basic form is that of a set of nested flattened rings built out from a vertical stepped-cylinder core. Emerging above and below the ring plane are three tall pylons with wide buttresses and inwardly sweeping curves. As with most space structures, each shape on the original Terok Nor has been designed to perform a particular function.

—from *The Deep Space Nine Technical Manual*, by Herman Zimmerman, Rick Sternbach, and Doug Drexler

Small stations are usually built in the early days of a society's spacefaring period, in low orbit around the home planet. Typical small stations are little more than large airtight cans with life support, solar panels for power, and docking ports. They are most likely designed as orbital laboratories, although weapons platforms or customs quarantine stations are possible if the planet has contact with other civilizations. Starfaring civilizations may put small science stations in orbit around interesting worlds to study them. Asteroid miners may work out of a small station equipped with thrusters to move from rock to rock.

Only mature spacefaring societies can construct large space habitats, which they typically intend to use permanently. They may not be entirely self-sufficient in food production or life support, but can operate for months or years before resupply. A permanent station must have radiation shielding and some form of gravity (either spin gravity or artificial gravity field generators), unless the inhabitants are adapted to microgravity.

8

The power station was a strange-looking beast with a delicate appendage of radiators that spread away from the sun like a comet's tail. Mounted behind the shadow of the giant heat exchanger was a graceful laser cannon that poured gigawatts of power across the inner solar system to the birds of prey that mined the Belt. Lesser cannon fed the ships outbound from Earth's orbit.

—a description of a power-generation space station from "To Bring In The Steel," by Donald M. Kingsbury



Large stations are often used as orbital ports, where ships too big for surface landings can dock so passengers can transfer to other ships or shuttles down to the planet. They may also be manufacturing centers, especially in a rich asteroid cluster where valuable minerals are common. Most interstellar civilizations need large stations as bases to repair and resupply starships — and often place them in strategically-located systems which don't have a habitable world. Equipped with force shields or heavy armor, batteries of big guns, and long-range sensors, a large station could be a formidable space fortress.

If a species wants to settle permanently in a system but doesn't want to live on a planet or inside an asteroid, a space habitat is the answer. These are very big space stations indeed — proposed designs include ring-shaped colonies a mile across, spheres two miles in diameter, and huge cylinders five miles wide and twenty miles long! At that scale, colonies are bound to be self-sufficient in just about everything, and can support populations of tens of thousands of people. The purpose of a space habitat must be an important one to justify the cost: a major port or way-station in a strategically-located system without planets, or the center of an asteroid-based society, or an orbiting industrial complex above an advanced high-population world. Or, in a post-scarcity setting such as the one featured in Iain Banks's "Culture" novels, gargantuan space habitats may be so cheap and easy to create that they abound.

See pages 8-12 of *The Ultimate Base* for an expanded Base Size Table and discussion of other rules pertaining to the Size of Bases (including the issue of area versus volume).

Location

Most Star Hero bases are located In Space, which normally costs +25 points (or possibly more, if you use the expanded rules on page 16 of *The Ultimate Base*). That cost typically assumes a planet-based campaign, where having a base in space provides a number of advantages. In a Science Fiction game, the action may all take place in space, in which case space bases are commonplace. In that case, the GM may wish to ignore the cost for an *In Space* location.

Bases in space typically do not have grounds. Bases located on a planet could have grounds as normal. A base on an isolated planet, asteroid, or the like might even, with the GM's permission, define the entire body it's on as its "grounds."

Equipment

Equipment for Bases is usually the same as or similar to starship equipment. Space stations need defensive shields and weapons, artificial gravity, power plants, and sensors, just like spacecraft. See the accompanying sidebar for a few examples.

See pages 150 *et seq.* of *The Ultimate Base* for rules for Base equipment (including how to buy Focus for it, END cost of Base equipment, how Base equipment is used, and equipment with abilities that affect the entire Base), and for dozens of examples of Base equipment.

IMPERIAL STATION CLASSES

Like the spaceship classification system, the Terran Empire's station classification system uses three letters, the first describing how the station orbits, the second its purpose, and the third its size.

First Letter	Type	Notes
G	Geosynchronous	Station orbits with a period of 1 day
H	High orbit	Station orbits thousands of miles up
L	Low orbit	Station orbits just above the atmosphere
P	Planetary orbit	Station orbits a star
T	Trojan orbit	Station occupies a Lagrange point

Second Letter	Type	Notes
A	Agriculture	Food-producing station
B	Base	Forward base to support spaceships
C	Construction	Orbital shipyard
D	Defense	Armed military station
F	Fuel	Fuel refining and storage facility
G	General	Multipurpose station
H	Habitat	Residential colony
I	Industrial	Orbital factory or smelting plant
M	Meteorology	Weather-monitoring station
O	Observation	Station monitoring planet below
P	Powersat	Large solar power satellite
Q	Quarantine	Medical isolation station
R	Research	Scientific station
S	Spaceport	Orbiting spaceport

Third Letter	Type	Size
O	Outpost	1,000 cubic meters, up to 10 crew
S	Station	1,001-50,000 cubic meters, 11-100 crew
B	Base	50,001 cubic meters or more (typically at least 1 million), 101 crew or more
C	Colony	50 million+ cubic meters, 10,000+ colonists

Thus, a small manned military platform in high orbit would be an HDO, while a commercial port in low orbit would be an LSS. An O'Neill colony at L-5 would be a THC. Like spaceships, stations get individual numbers, grouped together by class.

SPACE STATION EQUIPMENT

Fire Extinguishing System: This system detects and then extinguishes fire. It can only cover a certain area, so a large station installs multiple extinguishers.

Detect Unauthorized/Uncontrolled Fires (INT Roll +5, using Base's Computer) (total cost: 8 points); Only Within Affected Area (40m x 40m zone; -2) (total cost: 3 points) **plus** Dispel Fire Powers 20d6, Expanded Effect + Variable Effect (all Fire powers simultaneously; +4) (300 Active Points); Only Within Affected Area (40m x 40m zone; -2), 16 Charges (-0) (total cost: 100 points). Total cost: 103 points.

Internal Security Monitors: A space station's security team uses this system to keep an eye on events around the station.

Clairsentience (Sight And Hearing Groups), Mobile Perception Point, Multiple Perception Points (up to eight at once), 8x Range (3,200m) (65 Active Points); OAF Immobile (-2), Perception Point Cannot Move Through Solid Objects (-0). Total cost: 22 points.

Secondary Life Support System: If the starbase's main life support systems are disabled, station residents can proceed to a special chamber where a backup system will keep them alive until help arrives... or supplies run out.

Life Support (Self-Contained Breathing; Diminished Eating: no need to eat; Safe Environments: Intense Cold, Intense Heat, High Radiation, Low Pressure/Vacuum) (21 Active Points); Only Within Affected Area (40m x 40m chamber; -2), 1 Continuing Fuel Charge (easily replaced from sources outside the station; 1 Month [i.e., 30 man-days]; -0). Total cost: 7 points.



EXAMPLE VEHICLES



To get you started, here are three example starships (a merchant vessel, a fighter, and a large warship), one example mech, and two example space stations (a trade-oriented station and a military base). None of these sample Vehicles and Bases are necessarily from the same setting; consider each one separately, as an individual example of a possible ship or starbase, not in comparison to the others.

MERCHANT SHIP

This 800-ton merchant ship consists mainly of a relatively small area in which the ten-man crew lives and works, and huge amounts of space for cargo. (You can also convert it to a passenger liner by changing the cargo areas into cabins.) It has a single forward laser for use as a tool or weapon. It carries enough food to support its crew for a year, or more people for less time.

FIGHTER

This starship is a small fighter with a one- or two-person crew. (The character sheet includes artificial gravity on the assumption the ship has room to move around; many fighters are so small or equipment-packed that they forego that in favor of strapping the pilot into his seat.) It's not intended for long flights or FTL travel; it's designed for speed and maneuverability in a battle to which it's been ferried by a much larger carrier vessel. It can enter atmospheres if necessary, and mounts a large forward ion blaster and five smaller ones (one on each other side).

WARSHIP

This large warship, a kilometer long and half as wide, is a major combat starship for an advanced interstellar empire. It carries a crew of 3,500 and mounts dozens of weapons.

X-780 COMBAT MECH

This is a fairly basic combat mech, standing about 80 feet tall. Its cockpit has room for a single pilot, who controls all functions of the mech; it does not have a computer capable of operating the vehicle independently. It mounts three major weapons: cannons on each of its arms, and a pod of rocket-launched bombs on its left shoulder.

MAKARIDES HIGH PORT

Occupying a prime LaGrange point between the mining planet Makarides IV and her largest moon, the Makarides High Port is the largest and most diverse trading post for dozens of systems around. Consisting of a Central Station about one kilometer long, plus dozens of square or rectangular superstructures attached in seemingly chaotic fashion, it's about two kilometers long overall, and half as wide. It has a staff of 3,000, plus the capacity to support another 10,000 visitors and inhabitants.

The lower sections of the station are devoted mainly to bulk industrial items, such as ore mined from the planet below, foodstuffs, and the like. "Dirtside," as the inhabitants of the High Port call this section, is a rough-and-tumble place, often dangerous for those not accustomed to its ways. The upper parts of the station — "Starside" — are given over to shops, restaurants, nicer residence chambers, service businesses, offices, and the like. Just about anything one wants, one can find for sale here; characters making Trading rolls to determine if a particular item is available receive a +2 bonus to their rolls.

ORBITAL MILITARY BASE

This writeup represents a small military installation of the sort often found as part of planetary orbital defense networks, or sometimes as an outpost along a dangerous frontier. It has a crew of 60.

MERCHANT SHIP

Val Char Cost Notes

13	Size	65	40 x 20 x 20 m; mass 800 tons; -13 KB; OCV+ 8
75	STR	0	Lift 800 tons; 15d6 HTH damage [0]
12	DEX	4	
4	OCV	5	
4	DCV	5	
3	SPD	10	Phases: 4, 8, 12
12	PD	15	
12	ED	15	
23	BODY	0	Total Characteristics Cost: 119

Movement:	Ground:	0m
	Flight:	120m
	FTL Travel:	16 LY/year

Cost Powers

END

Power Systems

28	Fusion Power Plant: Endurance Reserve I (100 END/99 REC) OAF Immobile (-2), Only Powers Electrical Devices (-¼)	0
11	Auxiliary Power: Endurance Reserve (40 END/39 REC) OAF Immobile (-2), Only Powers Electrical Devices (-¼)	0

Propulsion Systems

83	Fusion Engines With FTL Enhancements: Multi-power, 125-point reserve All Costs Endurance (-½)	
8f	1) Standard Flight: Flight 120m, x4 Noncombat Costs Endurance (-½)	12
1f	2) FTL Flight: FTL Travel (16 LY/year) Costs Endurance (-½), Extra Time (requires 1 Minute to engage engine, but engine thereafter doesn't require Extra Time; -¾), Requires A PS: Fusion Engine Operation Roll (-¼)	2

20	Thrusters: Flight 20m	0
-12	Spaceflight Only: Running -12m (0m total)	
-2	Spaceflight Only: Leaping -4m (0m total)	
-2	Spaceflight Only: Swimming -4m (0m total)	

Tactical Systems

45	Omnipurpose Laser: RKA 3d6, Autofire (5 shots; +½), MegaRange (1m = 10 km; +1¼) OIF Bulky (-1), Real Weapon (-¼), Limited Arc Of Fire (60 Degrees; -½)	12
13	Starship Force Shield: Resistant Protection (15 PD/15 ED) OIF Bulky (shield generators; -1), Costs Endurance (-½), Ablative (-1)	4

Operations Systems

46	Sensor And Communication Systems: Variable Power Pool, 40 Pool + 40 Control Cost OIF Bulky (-1), Only For Senses And Communications (-1), Costs Endurance (-½)	var
85	Long-Range Sensors: MegaScale (1 light-year per Active Point; +4¼) for any Sensor Pool Sense OIF Bulky (-1)	var
15	Long-Range Sensors: +20 versus Range for Radio Group OIF Bulky (-1)	0
3	Navigation Computer: +4 to Navigation (Space) rolls OAF Bulky (-1½)	0
17	Internal Monitors: Clairsentience (Sight and Hearing Groups), Mobile Perception Point, Multiple Perception Points (up to eight at once) OAF Immobile (-2), Perception Point Cannot Move Through Solid Objects (-0)	5

Personnel Systems

12	Life Support: Life Support (Self-Contained Breathing; Safe Environments: High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum) Costs Endurance (-½)	2
6	Backup Life Support: Life Support (Self-Contained Breathing; Safe Environments: High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum) Only Within Affected Area (5m x 2.5m chamber; -2), 1 Continuing Fuel Charge (easily replaced from sources outside the ship; 1 Month [i.e., 300 man-days]; -0)	[1cc]
10	Backup Life Support: 3 more Backup Life Support chambers (total of 4)	[1cc]
3	Food Supplies: Life Support (Diminished Eating; no need to eat) 1 Continuing Fuel Charge (easily replaced from sources outside the ship; 1 Year [i.e., 10 man-years]; -0)	[1cc]
12	Artificial Gravity: Telekinesis (20 STR), Selective (+¼) OIF Bulky (-1), Only To Pull Objects Straight Down To The Floor (-1)	4

Total Abilities & Equipment Cost: 402

Total Vehicle Cost: 521

Value Complications

15	Physical Complication: Cannot Enter Atmospheres (Infrequently, Greatly Impairing)
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Total Complications Points: 15

Total Cost: 521/5 = 104

FIGHTER

Val	Char	Cost	Notes
4	Size	20	5 x 2.5 x 2.5 m; mass 1.6 tons; -4 KB; OCV+ 2
30	STR	0	Lift 1,600 kg; 6d6 HTH [0]
20	DEX	20	
8	OCV	25	
10	DCV	35	
4	SPD	20	Phases: 3, 6, 9, 12
8	PD	9	
8	ED	9	
20	BODY	6	Total Characteristics Cost: 144

Movement: Ground: 0m
Flight: 60m

Cost Powers

Power Systems

Cost	Power	END
21	Fusion Power Plant: Endurance Reserve (80 END/75 REC) OAF Immobile (-2), Only Powers Electrical Devices (-¼)	0
5	Auxiliary Power: Endurance Reserve (20 END/21 REC) OAF Immobile (-2), Only Powers Electrical Devices (-¼)	0

Propulsion Systems

43	Fusion Engines: Flight 60m, x4 Noncombat Costs Endurance (-½)	6
8	Thrusters: Flight 8m	0
-12	Spaceflight Only: Running -12m (0m total)	
-2	Spaceflight Only: Leaping -4m (0m total)	
-2	Spaceflight Only: Swimming -4m (0m total)	

Tactical Systems

41	Forward Ion Cannon: RKA 1½d6 NND (defense is either ED Resistant Protection or Barrier, defined as a force-field; +1), Does BODY (+1), MegaScale (1m = 1 km; +1), Autofire (5 shots; +½); OIF Bulky (-1), Real Weapon (-¼), Limited Arc Of Fire (60 Degrees; -½)	11
24	Side Ion Cannons: RKA 1d6 NND (defense is either ED Resistant Protection or Barrier, defined as a force-field; +1), Does BODY (+1), MegaScale (1m = 1 km; +1), Autofire (5 shots; +½); OIF Bulky (-1), Real Weapon (-¼), Limited Arc Of Fire (60 Degrees; -½)	7

15	Side Ion Cannons: Four more Side Ion Cannons (total of five)	7
12	Weapons Reserve Power: Endurance Reserve (32 END/30 REC) OIF Bulky (-1), Only Powers Ship's Weapons (-¼)	0
14	Forward Armorplating: Resistant Protection (6 PD/18 ED) Ablative (-1), Limited Coverage (180 Degrees forward; -½)	0
14	Aft Armorplating: Resistant Protection (6 PD/18 ED) Ablative (-1), Limited Coverage (180 Degrees aft; -½)	0

Operations Systems

12	Sensors: Radar (Radio Group), Increased Arc Of Perception (360 Degrees), Telescopic (+20 versus Range) OIF Bulky (-1), Affected As Sight Group As Well As Radio Group (-½)	0
9	Sensors: HRRP (Radio Group), Telescopic (+20 versus Range) OIF Bulky (-1), Affected As Sight And Hearing Groups As Well As Radio Group (-½)	0
26	Long-Range Attuning: MegaScale (1,000 km per Active Point; +1¾) for Sensors OIF Bulky (-1)	5

Personnel Systems

12	Life Support: Life Support (Self-Contained Breathing; Safe Environments: High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum) Costs Endurance (-½)	2
3	Artificial Gravity: Telekinesis (5 STR) OIF Bulky (-1), Only To Pull Objects Straight Down To The Floor (-1)	1

Skills

8	Maneuverability: +4 with Flight	
3	Navigation Computer: +4 to Navigation (Space) roll OAF Bulky (-1½)	0

Total Abilities & Equipment Cost: 254

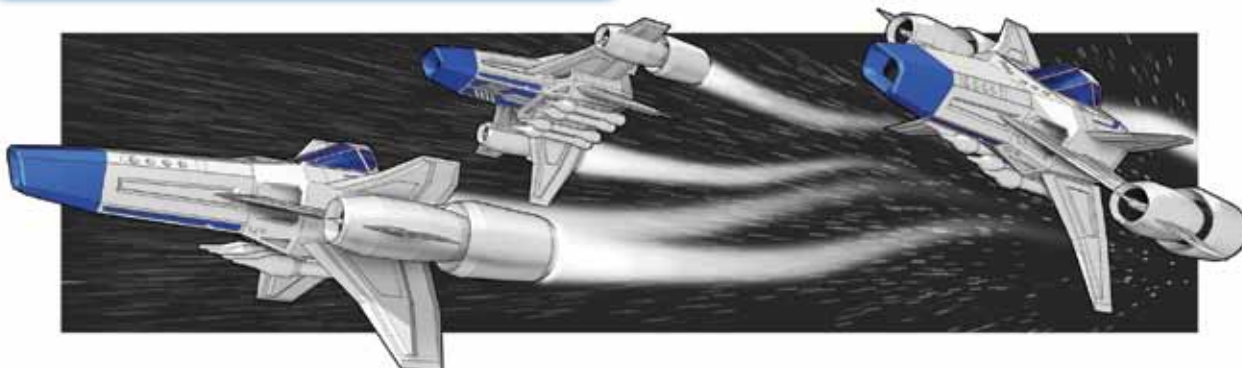
Total Vehicle Cost: 398

Value Complications

25	Distinctive Features: deadly warship (Not Concealable; Causes Extreme Reaction [abject fear])	
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Total Complications Points: 25

Total Cost: 398/5 = 80



WARSHIP

Val Char Cost Notes

27	Size	135	1 x 0.5 x 0.5 km; mass 12.5 mton; -27 KB; OCV+ 18
145	STR	0	Lift 12.5 mtons; 29d6 HTH [0]
15	DEX	10	
6	OCV	15	
5	DCV	10	
3	SPD	10	Phases: 4, 8, 12
25	PD	34	
25	ED	35	
90	BODY	53	Total Characteristics Cost: 302

Movement:	Ground:	0m
	Flight:	20m
	FTL Travel:	1 LY/day

Cost Powers

Power Systems

564	Antimatter Power Plant: Endurance Reserve (2,000 END/2,001 REC) OAF Immobile (-2), Only Powers Electrical Devices (-¼)	0
85	Auxiliary Power: Endurance Reserve (300 END/300 REC) OAF Immobile (-2), Only Powers Electrical Devices (-¼)	0
47	Reserve Batteries: Endurance Reserve (120 END/120 REC) OIF Bulky (-1), Only Powers Electrical Devices (-¼)	0

Propulsion Systems

19	Warp Drive: Multipower, 28-point reserve All Costs Endurance (-½)	
1f	1) Standard Flight: Flight 20m, x4 Noncombat Costs Endurance (-½), Limited Maneuverability (-¼)	2
1f	2) FTL Flight: FTL Travel (1 LY/day) Costs Endurance (-½), Increased Endurance Cost (x10; -4), Requires A PS: Warp Drive Operation Roll (-¼)	30
8	Thrusters: Flight 10m Limited Maneuverability (-¼)	0
-12	Spaceflight Only: Running -12m (0m total)	
-2	Spaceflight Only: Leaping -4m (0m total)	
-2	Spaceflight Only: Swimming -4m (0m total)	

Tactical Systems

112	Main Beamgun: RKA 10d6 Armor Piercing (+¼), MegaScale (1m = 1 km; +1); OIF Bulky (-1), Real Weapon (-¼), Limited Arc Of Fire (2m wide Line; -¾)	34
98	Secondary Beamguns: RKA 8d6 Armor Piercing (+¼), MegaScale (1m = 1 km; +1); OIF Bulky (-1), Real Weapon (-¼), Limited Arc Of Fire (60 Degrees; -½)	27
25	Secondary Beamguns: 31 more Secondary Beamguns (total of 32)	27

END

260	Intense Interferiation Field: Darkness to Radio Group 20m radius MegaArea (1m = 1 million km wide, broad, and deep; +2½), MegaRange (1m = 10 million km; +2¾), Reduced Endurance (½ END; +¼); OAF Bulky (-1½)	32
207	ECCM: Suppress Electronic Warfare 8d6 Expanded Effect + Variable Effect (all Electronic Warfare Powers simultaneously; +4), MegaRange (1m = 10 million km; +2¾); OAF Bulky (-1½), Costs Endurance (to maintain; -½)	62
135	Primary Force Shield: Barrier 30 PD/30 ED, 40 BODY (up to 250m long, 250m high, ½m thick), Non-Anchored OIF Bulky (shield generators; -1), Costs Endurance (to maintain; -½), Extra Time (1 minute to re-erect Barrier after it collapses; -1½), Restricted Shape (one-fourth of "bubble" around ship; -¼), Self Only (-½)	64
10	Primary Force Shield: 3 more Primary Force Shields (total of 4; each covers one-fourth of the ship)	67
10	Secondary Force Shield: Resistant Protection (10 PD/10 ED) OIF Bulky (shield generators; -1), Ablative (-1)	2
9	Point Defense Laser System: Deflection OIF Bulky (-1), Only Works Against Physical Projectiles (-¼)	2
40	Weapons Reserve Power: Endurance Reserve (100 END/99 REC) OIF Bulky (-1), Only Powers Ship's Weapons (-¼)	0
Operations Systems		
114	Sensor And Communication Systems: Variable Power Pool, 100 Pool + 100 Control Cost OIF Bulky (-1), Only For Senses And Communications (-1), Costs Endurance (-½)	var
212	Long-Range Sensors: MegaScale (1 light-year per Active Point; +4¼) for any Sensor Pool Sense OIF Bulky (-1)	var
15	Long-Range Sensors: +20 versus Range for Radio Group OIF Bulky (-1)	0
3	Enhanced Sensors/Communications: +4 to Systems Operation roll OAF Bulky (-1½)	0
20	Internal Monitors: Clairsentience (Sight And Hearing Groups), 4x Range (2,000m), Mobile Perception Point, Multiple Perception Points (up to eight at once) OAF Immobile (-2), Perception Point Cannot Move Through Solid Objects (-0)	6
54	Forward Tractor Beam: Telekinesis (100 STR) OIF Bulky (projector; -1), Affects Whole Object (-¼), Limited Arc Of Fire (60 Degrees forward; -½)	15
5	Aft Tractor Beam: 1 more Tractor Beam (total of 2; this one fires 60 Degrees aft)	15

Personnel Systems

- 12 **Life Support:** Life Support (Self-Contained Breathing; Safe Environments: High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum) 2
Costs Endurance (-½)
- 6 **Backup Life Support:** Life Support (Self-Contained Breathing; Safe Environments: High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum) [1cc]
Only Within Affected Area (80m x 80m chamber; -2), 1 Continuing Fuel Charge (easily replaced from sources outside the ship; 1 Month [i.e., 105,000 man-days]; -0)
- 15 **Backup Life Support:** 7 more Backup Life Support areas (total of 8) [1cc]
- 3 **Food Supplies:** Life Support (Diminished Eating: no need to eat) [1cc]
1 Continuing Fuel Charge (easily replaced from sources outside the ship; 1 Year [i.e., 3,500 man-years]; -0)
- 12 **Artificial Gravity:** Telekinesis (20 STR), Selective (+¼) 4
OIF Bulky (-1), Only To Pull Objects Straight Down To The Floor (-1)
- 3 **Backup Artificial Gravity:** Telekinesis (5 STR) 1
OIF Bulky (-1), Only To Pull Objects Straight Down To The Floor (-1)
- 13 **Medical Facilities:** Paramedics 14- 0
- 5 **Medical Facilities:** SS: Medicine 14- 0

Skills/Laboratories

- 16 **Tactical Computer:** +8 OCV 4
OIF Bulky (-1), Costs Endurance (-½), Only With Ship's Weapons (-0)
- 3 **Navigation Computer:** +4 to Navigation (Space) roll
OAF Bulky (-1½)
- 13 Computer Programming 14-
- 13 Cryptography 14-
- 13 Demolitions 14-
- 13 Electronics 14-
- 13 Mechanics 14-
- 15 Weaponsmith (Firearms, Missiles & Rockets, Incendiary Weapons, Energy Weapons) 14-
- 100 Other laboratories (defined by GM or player)

Total Abilities & Equipment Cost: 2,191**Total Vehicle Cost: 2,493****Value Complications**

- 25 **Distinctive Features:** deadly warship (Not Concealable; Causes Extreme Reaction [abject fear])
- 15 **Physical Complication:** Cannot Enter Atmospheres (Infrequently, Greatly Impairing)

Total Complications Points: 40**Total Cost: 2,493/5 = 499****ADDITIONAL VEHICLES****Cost Vehicle**

- 108 **Nuclear Space Missiles:** RKA 20d6, Area Of Effect (320 km Radius Explosion) (see HSV)
- 20 **Nuclear Space Missiles:** 15 more Nuclear Missiles (total of 16)



X-780 COMBAT MECH

Val	Char	Cost	Notes
11	Size	55	25 x 12.5 x 12.5 m; mass 200 tons; -11 KB; OCV+7
65	STR	0	Lift 200 tons; 13d6 HTH damage [0]
15	DEX	10	
6	OCV	15	
6	DCV	15	
4	SPD	20	Phases: 3, 6, 9, 12
20	PD	27	
20	ED	27	
25	BODY	4	Total Characteristics Cost: 173

Movement: Ground: 50m
Leaping: 40m

Cost	Powers	END
Power Systems		
24	Power Plant: Endurance Reserve (60 END/60 REC) OIF Bulky (-1), Only Powers Electrical Devices (-¼)	0
5	Auxiliary Power: Endurance Reserve (12 END/12 REC) OIF Bulky (-1), Only Powers Electrical Devices (-¼)	0



Propulsion Systems

- 4 **Mech Limbs:** Extra Limbs (4 — two legs, two arms) 0
Limited Manipulation (-¼)
- 25 **Mech Limbs:** Running +38m (50m total) 4
Costs Endurance (-½)
- 20 **Jumpjets:** Leaping 40m (40m forward, 20m upward) [16]
16 Charges (-0)

Tactical Systems

- 52 **Laser Assault Cannon:** RKA 4d6 10
Armor Piercing (+¼), Increased Maximum Range (x4, or 2,400m; +½); OIF Bulky (-1)
- 39 **Gatling Laser:** RKA 3d6 8
Armor Piercing (+¼), Autofire (5 shots; +½); OIF Bulky (-1)
- 39 **Rocket-Launched Bombs Pod:** RKA 3d6 [16]
Area Of Effect (30m Radius Explosion; +½), Indirect (Path can arc attack over intervening obstacles; +¼); OIF Bulky (-1), 16 Charges (-0)

Operations Systems

- 11 **Mech Sensors:** Radar (Radio Group), Discriminatory, Increased Arc Of Perception (360 Degrees), Telescopic (+14 versus Range Modifier) 3
OIF Bulky (-1), Costs Endurance (-½), Affected As Sight Group As Well As Radio Group (-½)
- 2 **Nightsight System:** Infrared Perception (Sight Group) 1
OIF Bulky (-1), Costs Endurance (-½)
- 2 **Nightsight System:** Ultraviolet Perception (Sight Group) 1
OIF Bulky (-1), Costs Endurance (-½)
- 4 **360 View System:** Increased Arc Of Perception (360 Degrees) for Sight Group 1
OIF Bulky (-1), Costs Endurance (-½)
- 4 **Mech Communications System:** HRRP 1
OIF Bulky (-1), Costs Endurance (-½), Affected As Sight And Hearing Groups As Well As Radio Group (-½)
- 5 **Hardened Sensor/Commo Systems:** Radio Group Flash Defense (10 points) 0
OIF Bulky (-1)

Personnel Systems

- 11 **Life Support:** Life Support (Self-Contained Breathing; Safe Environments: High Radiation, Intense Cold, Intense Heat) 2
Costs Endurance (-½)

Skills

- 6 **Tactical Computer:** +3 OCV 1
OIF Bulky (-1), Costs Endurance (-½), Only Works With Mecha Weapons (-0)

Total Abilities & Equipment Cost: 253

Total Vehicle Cost: 426

Value Complications

- 25 **Distinctive Features:** deadly mecha (Not Concealable; Causes Extreme Reaction [abject fear])

Total Complications Points: 25

Total Cost: 426/5 = 85

MAKARIDES HIGH PORT

Val Char Cost Notes

30 **Size** 60 2,000 x 1,000 x 1,000 meters; OCV+ 24
 12 **PD** 15
 12 **ED** 15
 120 **BODY** 118 **Total Characteristics Cost: 208**

Cost Abilities & Equipment

25 **Space Station:** Location: In Space **END** 0

Power Systems

338 **Fusion Power Plant:** Endurance Reserve (1,200 END/1,200 REC) **END** 0
 OAF Immobile (-2), Only Powers Electrical Devices (-¼)

57 **Auxiliary Power:** Endurance Reserve (200 END/201 REC) **END** 0
 OAF Immobile (-2), Only Powers Electrical Devices (-¼)

Propulsion Systems

8 **Thrusters:** Flight 10m **END** 0
 Limited Maneuverability (-¼)

Tactical And Security Systems

90 **Space Combat Lasers:** RKA 6d6 **END** 25
 Autofire (5 shots; +½), MegaRange (1m = 10 km; +1¼); OIF Bulky (-1), Limited Arc Of Fire (60 Degrees; -½), Real Weapon (-¼)

20 **Space Combat Lasers:** 15 more Space Combat Lasers (total of 16) **END** 25

275 **Primary Force Shield:** Barrier 35 PD/35 ED, 40 BODY (up to 500m long, 500m high, ½m thick), Non-Anchored **END** 58
 Reduced Endurance (½ END; +¼); OIF Immobile (shield generators; -1½), Costs Endurance (to maintain; -½), Extra Time (1 minute to re-erect Barrier after it collapses; -1½), Restricted Shape (one-fourth of "bubble" around station; -¼), Self Only (-½)

10 **Primary Force Shield:** 3 more Primary Force Shields (total of 4; each covers one-fourth of the station) **END** 58

9 **Point Defense Laser System:** Deflection **END** 2
 OIF Bulky (-1), Only Works Against Physical Projectiles (-¼)

10 **Cell Block:** PD +8/ED +8 **END** 0
 Cannot Be Escaped With Teleportation (+¼); Partial Coverage (90 cubic meters; -2)

Operations Systems

112 **Sensor And Communication Systems:** Variable Power Pool, 100 Pool + 100 Control Cost var
 OIF Immobile (-1½), Only For Senses And Communications (-1), Costs Endurance (-½)

170 **Long-Range Sensors:** MegaScale (1 light-year per Active Point; +4¼) for any Sensor Pool Sense var
 OIF Immobile (-1½)

18 **Long-Range Sensors:** +30 versus Range for Radio Group **END** 0
 OIF Immobile (-1½)

3 **Enhanced Sensors/Communications:** +4 to Systems Operation roll **END** 0
 OAF Immobile (-2)

22 **Internal Monitors:** Clairsentience (Sight and Hearing Groups), 8x Range (4,000m), Mobile Perception Point, Multiple Perception Points (up to eight at once) **END** 5
 OAF Immobile (-2), Perception Point Cannot Move Through Solid Objects (-0)

46 **Tractor Beams:** Telekinesis (100 STR) **END** 15
 OIF Immobile (-1½), Affects Whole Object (-¼), Limited Arc Of Fire (60 Degrees forward; -½)

15 **Tractor Beams:** 7 more Tractor Beam (total of 8) **END** 15

Personnel Systems

12 **Life Support:** Life Support (Self-Contained Breathing; Safe Environments: High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum) **END** 2
 Costs Endurance (-½)

6 **Backup Life Support:** Life Support (Self-Contained Breathing; Safe Environments: High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum) [1 cc] **END** 1
 Only Within Affected Area (80m x 80m chamber; -2), 1 Continuing Fuel Charge (easily replaced from sources outside the ship; 1 Month [i.e., 390,000 man-days]; -0)

15 **Backup Life Support:** 7 more Backup Life Support areas (total of 8) **END** [1 cc]

3 **Food Supplies:** Life Support (Diminished Eating: no need to eat) **END** [1 cc]
 1 Continuing Fuel Charge (easily replaced from sources outside the ship; 1 Year [i.e., 13,000 man-years]; -0)

10 **Artificial Gravity:** Telekinesis (20 STR), Selective (+¼) **END** 4
 OIF Immobile (-1½), Only To Pull Objects Straight Down To The Floor (-1)

2 **Backup Artificial Gravity:** Telekinesis (5 STR) **END** 1
 OIF Immobile (-1½), Only To Pull Objects Straight Down To The Floor (-1)

13 **Medical Facilities:** Paramedics 14- **END** 0

5 **Medical Facilities:** SS: Medicine 14- **END** 0

Skills/Laboratories

80 Laboratories (defined by GM or player)

Total Abilities & Equipment Cost: 1,374

Total Base Cost: 1,582

Value Complications

None

Total Complications Points: 0

Total Cost: 1,582/5 = 316



ORBITAL MILITARY BASE

Val	Char	Cost	Notes
17	Size	34	400 x 200 x 300 meters; OCV+ 15
15	PD	20	
15	ED	19	
80	BODY	68	Total Characteristics Cost: 141
Cost	Abilities & Equipment	END	
25	Space Station: Location: In Space	0	
Power Systems			
508	Fusion Power Plant: Endurance Reserve (1,800 END/1,800 REC) 0 OAF Immobile (-2), Only Powers Electrical Devices (-¼)	0	
85	Auxiliary Power: Endurance Reserve (300 END/300 REC) OAF Immobile (-2), Only Powers Electrical Devices (-¼)	0	
26	Reserve Batteries: Endurance Reserve (100 END/90 REC) OAF Immobile (-2), Only Powers Electrical Devices (-¼)	0	
Propulsion Systems			
5	Thrusters: Flight 6m Limited Maneuverability (-¼)	0	
Tactical And Security Systems			
138	Superheavy Lasers: RKA 10d6 45 Autofire (4 shots; +½), MegaRange (1m = 100 km; +1½); OIF Immobile (-1½), Limited Arc Of Fire (60 Degrees; -½), Real Weapon (-¼)	45	
15	Superheavy Lasers: 5 more Superheavy Lasers (total of 6) 45	45	
69	Railguns: RKA 6d6 22 Armor Piercing (+¼), MegaScale (1m = 10 km; +1¼); OIF Immobile (-1½), Limited Arc Of Fire (60 Degrees; -½), Real Weapon (-¼)	22	
15	Railguns: 5 more Railguns (total of 6) 22	22	
120	ECCM: Suppress Electronic Warfare 8d6 42 Expanded Effect + Variable Effect (any three Electronic Warfare Powers simultaneously; +1½), MegaRange (1m = 10 million km; +2¾); OAF Immobile (-2), Costs Endurance (to maintain; -½)	42	
80	Weapons Reserve Power: Endurance Reserve (240 END/240 REC) 0 OIF Immobile (-1½), Only Powers Station's Weapons (-¼)	0	
223	Primary Force Shield: Barrier 35 PD/35 ED, 30 BODY (up to 400m long, 400m high, ½m thick) 47 Reduced Endurance (½ END; +¼); OIF Immobile (shield generators; -1½), Costs Endurance (to maintain; -½), Extra Time (1 minute to re-erect Barrier after it collapses; -1½), Restricted Shape (one-fourth of "bubble" around station; -¼), Self Only (-½)	47	
10	Primary Force Shield: 3 more Primary Force Shields (total of 4; each covers one-fourth of the station) 44	44	
17	Secondary Force Shield: Resistant Protection (20 PD/20 ED) 4 OIF Immobile (shield generators; -1½), Ablative (-1)	4	
9	Point Defense Laser System: Deflection 2 OIF Bulky (-1), Only Works Against Physical Projectiles (-¼)	2	
10	Cell Block: PD +8/ED +8 0 Cannot Be Escaped With Teleportation (+¼); Partial Coverage (40 cubic meters; -2)	0	
Operations Systems			
112	Sensor And Communication Systems: Variable Power Pool, 100 Pool + 100 Control Cost var OIF Immobile (-1½), Only For Senses And Communications (-1), Costs Endurance (-½)	var	
170	Long-Range Sensors: MegaScale (1 light-year per Active Point; +4¼) for any Sensor Pool Sense var OIF Immobile (-1½)	var	



12	Long-Range Sensors: +20 versus Range for Radio Group 0 OIF Immobile (-1½)	0
3	Enhanced Sensors/Communications: +4 to Systems Operation roll 0 OAF Immobile (-2)	0
22	Internal Monitors: Clairsentience (Sight and Hearing Groups), 8x Range (4,000m), Mobile Perception Point, Multiple Perception Points (up to eight at once) 5 OAF Immobile (-2), Perception Point Cannot Move Through Solid Objects (-0)	5
46	Tractor Beams: Telekinesis (100 STR) 15 OIF Immobile (-1½), Affects Whole Object (-¼), Limited Arc Of Fire (60 Degrees forward; -½)	15
15	Tractor Beams: 5 more Tractor Beam (total of 6) 15	15
Personnel Systems		
12	Life Support: Life Support (Self-Contained Breathing; Safe Environments: High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum) 2 Costs Endurance (-½)	2
6	Backup Life Support: Life Support (Self-Contained Breathing; Safe Environments: High Radiation, Intense Cold, Intense Heat, Low Pressure/Vacuum) [1cc] Only Within Affected Area (80m x 80m chamber; -2), 1 Continuing Fuel Charge (easily replaced from sources outside the ship; 1 Month [i.e., 1,800 man-days]; -0)	[1cc]
15	Backup Life Support: 7 more Backup Life Support areas (total of 8) [1cc]	[1cc]
3	Food Supplies: Life Support (Diminished Eating; no need to eat) [1cc] 1 Continuing Fuel Charge (easily replaced from sources outside the ship; 1 Year [i.e., 60 man-years]; -0)	[1cc]
10	Artificial Gravity: Telekinesis (20 STR), Selective (+¼) 4 OIF Immobile (-1½), Only To Pull Objects Straight Down To The Floor (-1)	4
2	Backup Artificial Gravity: Telekinesis (5 STR) 1 OIF Immobile (-1½), Only To Pull Objects Straight Down To The Floor (-1)	1
13	Medical Facilities: Paramedics 14- 0	0
5	Medical Facilities: SS: Medicine 14- 0	0
Skills/Laboratories		
11	Tactical Computer: +8 OCV 4 OAF Immobile (-2), Costs Endurance (-½), Only With Station Weapons (-0)	4
13	Computer Programming 14-	
13	Cryptography 14-	
13	Demolitions 14-	
13	Electronics 14-	
13	Mechanics 14-	
15	Weaponsmith (Firearms, Missiles & Rockets, Incendiary Weapons, Energy Weapons) 14-	
100	Other laboratories (defined by GM or player)	
Total Abilities & Equipment Cost: 1,992		
Total Base Cost: 2,133		
Value Complications		
None		
Total Complications Points: 0		
Total Cost: 2,133/5 = 427		
ADDITIONAL VEHICLES		
Cost	Vehicle	
108	Nuclear Space Missiles: RKA 20d6, Area Of Effect (320 km Radius Explosion) (see HSV)	
15	Nuclear Space Missiles: 7 more Nuclear Missiles (total of 8)	

CHAPTER NINE



***YESTERDAY, TODAY, AND
TOMORROW: TIME TRAVEL***



TEMPORAL MECHANICS AND CONSEQUENCES

*“Time is an illusion.
Lunchtime doubly so.”*

—Ford Prefect
philosophizes in *The
Hitchhiker’s Guide To The
Galaxy*, by Douglas Adams

Of the many ideas raised in Science Fiction stories, few have captured the imagination as thoroughly as time travel. The idea of being able to journey to the past or future has fueled many novels, television shows, and movies, and it’s fraught with scenario ideas and plot hooks for gaming. Unfortunately, it also creates some problems in a gaming context.

This chapter looks at the methods and uses of time travel in Star Hero games.

Time travel was invented as a concept the first time somebody wished they hadn’t done something. In literature, the idea of visiting another time was once solid fantasy, as in Mark Twain’s *A Connecticut Yankee in King Arthur’s Court*. With the rise of physics models of “spacetime,” in which time is considered as essentially a fourth “dimension,” the idea of moving about in time got a bit more scientific respectability. In his first novel, H.G. Wells dressed up the notion of time travel in technological trappings, sending his protagonist to the future aboard a “time machine” and drawing an analogy between a balloon moving in three dimensions and the machine moving in four.

For more information about time travel and time travel campaigns, see *Time Travel Hero*.

Time travel is an idea that brings into play immense possibilities, but it lies at the margin of hard sf. Are paradoxes inevitable — or can you really shoot your grandfather and still survive? There is a considerable body of sophisticated theoretical research devoted to probing whether physics can in principle exclude time travel, and the jury — after many physics papers about faster-than-light particles (tachyons) and wormholes in space-time — is still out. Nearly all physicists are very doubtful.

—from Gregory Benford’s essay “Real Science, Imaginary Worlds” in *The Ascent Of Wonder: The Evolution Of Hard SF*, edited by David G. Hartwell and Kathryn Cramer

REAL-LIFE MECHANICS

In recent decades, time travel has made several big jumps toward possibility, as physicists (many of them Science Fiction fans) played around with concepts of modern cosmology to find shortcuts through time. According to physicist Steven Hawking, a rotating black hole distorts spacetime in such a way that one can go backward or forward in time by selecting the appropriate trajectory for a close pass. Of course, the tidal forces involved in close encounters with a black hole can exceed tens of gees across a single meter, and a spaceship must be going an appreciable fraction of the speed of light for such maneuvers. But a physicist would call those mere engineering details.

Another method is the possible creation of a “wormhole” connecting two places that are separate in spacetime. Starships could also use wormholes for faster-than-light travel (page 227). Current theories require staggering amounts of energy to create them, along with the need for “negative energy” to keep them open. But again, those are matters for the engineers.

In point of fact, any method of going faster than light must necessarily be a way to travel in time as well, since outpacing light leads to violations of causality.

GAME MECHANICS

In the *HERO System*, physically visiting other times is an application of the Power *Extra-Dimensional Movement* (see 6E1 220-23). If the power has a Focus or is built into a Vehicle, then you’ve got a Time Machine. Communication between different times is best simulated by the *Clairsentience Power*, with the *Transmit* and *Dimensional* modifiers.

METHODS AND EFFECTS

The [Very Slow Time Machine] was the size of a small caravan; but it had the shape of a huge lead sulphide, or galena, crystal[.] ... It perched precariously — but immovably — on the base square, the four lower hexagons bellying up and out towards the waist, where four more squares (oblique, vertically) connected with the mirror-image upper hemisphere, rising to a square north pole. Indeed it looked like a kind of world globe, lopped and sheared into flat planes[.]

—a description of the Very Slow Time Machine from “The Very Slow Time Machine,” by Ian Watson

Regardless of the scientific justification, in a game the “special effect” of how one actually travels in time has a tremendous influence on the structure of the campaign.

TIME MACHINES

[T]here in the laboratory we beheld a larger edition of the little mechanism which we had seen vanish from before our eyes. ...

“Upon that machine,” said the Time Traveler, “I intend to explore time.”

—the Time Traveler shows his friends his time machine in *The Time Machine*, by H.G. Wells

When most people think of a time machine, they think of a vehicle or device that one rides into the past or the future, like getting into a car and riding to the store. This method gets rid of cumbersome explanations about how to get home — you get back in the machine and shift into reverse — and it makes it easy to send a small group and a moderate amount of equipment to another time.

If the characters control the vehicle themselves, the GM must give serious thought to how easy it is to operate and how much power it has on board. If very precise time-hops are possible, the characters may be tempted to fix problems by going back half an hour and redoing their mistakes. On the other hand, imprecise controls make it hard to hit specific historical events.

A time machine which the travelers don't control themselves is one option: Mission Control back in their original time operates the time machine, and the explorers go where their bosses send them, much like modern-day astronauts. (This is also a good way to prevent paradoxes and time loops: Mission Control's crack time engineers make sure they don't happen.)

The biggest problem with time machines is that characters are obsessed with protecting their ride home (and understandably so). This makes it hard for the GM to involve them in plots and goings-on in the past. A related problem is that the time machine imposes limits on where and when the explorers can go. Is there room on the deck of the *Marie Celeste* for the Time Pod? How about aboard the *Hindenburg*? Unless the device has really effective camouflage, time missions will have to arrive in deserted or wilderness areas (or, as on *Doctor Who*, accept the consequences of sticking out like a sore thumb).

DOORS INTO SUMMER

Time gates are another popular option, and one with more than a smidgen of possibility. The characters go through the gate and come out somewhere else. Gates may be permanent or temporary. Since a gate isn't very large, it can appear almost anywhere, making it possible for the Player Characters to slip aboard Lenin's train to Russia in 1916 or arrive backstage at Ford's Theater in 1865.

A time gate means the travelers are limited to just what they can carry themselves, and they're likely to be very paranoid about getting separated from the gate. Since the gate is presumably generated from the Time Institute, the characters can't mess with causality unless the directors (and the GM) agree.

The size and permanence of the time gate can be very important. If the gate can only stay open long enough for the explorers to pass through, then it's more like time jumping, described below. A permanent gate means anybody can wander from one time to another, creating the possibility of abundant paradoxes and causality violations. Human-sized gates are most appropriate for an exploration-centered adventure, but one can imagine time gates big enough for trains or even supertankers. This could allow large-scale trade (or warfare) between different times.

TIME JUMPING

Time travel might be akin to teleportation. You switch on the time machine or step into the booth, and suddenly you're in another time. (The temporal transporters of *Star Trek* work this way.) The big question is how you get back. If the time jump is generated by a “time belt” or some other device carried by the traveler, then getting back or visiting some other time is simply a matter of adjusting the controls and making sure the batteries are charged.

If teleportation requires some huge machine back in the jumper's home time, getting home can be a bit harder. Maybe there's a limit on how long the traveler can remain in another time before bouncing back to his own. This would certainly be an advantage for characters captured by sacrifice-minded Aztecs or Stalin's NKVD. However, it encourages an attitude of “get it done and get out” that limits character interaction and exploring in the other time.

TIME TRAVEL JARGON

Time Travel is a hard concept for Human minds to grasp, so the technical vocabulary relating to the subject is complex and includes lots of shorthand terms. Here is some standard lingo for the time travel business:

Causality: The idea that things happen in a particular order. If A causes B, then A has to happen before B. If for some reason B happens before A does, causality has been violated. Marrying your grandmother and becoming your own ancestor violates causality because you have to exist before you can exist. Seeing something before it happens is also a causality violation.

Paradox: A self-contradicting causality violation. Shooting your grandfather before he can sire your father is a paradox (in fact, it's the famous “grandfather paradox”) because you have prevented yourself from ever existing. If you don't exist, then you can't have shot Grandpa. Which means you will exist, and can do it after all. And so on.

Time Loop: A special paradox in which a time traveler does something which leads

to his traveling in time in the first place. Loops include becoming your own ancestor, giving future technology to the inventor of time travel, starting life on Earth via sloppy trash disposal, or setting off the Big Bang. Time loops violate causality by requiring the effect to exist before the cause.



EXAMPLE TIME MACHINES

Here are a few example time travel devices, using the expanded rules presented in the text.

Time Belt: This device is a concealable one-person time machine, with limited range and an inconvenient recharge time. It can take its wearer and a few pounds of gear on hops of up to a century; but the miniature cold fusion power supply needs a day to recharge the batteries for each jump. Characters can link multiple Time Belts with cables for synchronized hops by more than one person.

Extra-Dimensional Movement (any date up to 50 Billion years in the future or the past) (67 Active Points); OIF (-½); Can Only Move Up To 100 Years At A Time (-½), 1 Charge (-2). Total cost: 17 points.

Wells Device: Patterned after the device described in *The Time Machine* by H.G. Wells, this time machine is bulky but not immovable, and the mechanism is fairly fragile. There's one seat for the operator, but two people can squeeze aboard in a pinch. It has a self-contained power supply sufficient for a round-trip time voyage of up to a billion years.

Extra-Dimensional Movement (any date up to 1 Billion years in the future or the past), x2 Increased Weight, Reduced Endurance (0 END; +½) (105 Active Points); OIF Fragile Bulky (-1¼), Extra Time (requires 1 Segment per 1,000 years traveled, minimum of 1 Full Phase; -½), Requires A PS: Operate Wells Device Roll (-¼). Total cost: 35 points.

Wormhole Gate, Standard: A simple hole through spacetime, fixed in place physically. People and information can move freely between any times in the lifespan of the gate. So a gate activated in 2038 and accidentally shut down in 4753 allows travel among any dates during that period, but could not be used to visit 1879 or 5255. This is the most "hard science" type of time machine.

Extradimensional Movement (any date up to 1 Million years in the future or the past), x16 Increased Weight, Reduced Endurance (0 END; +½) (118 Active Points); OIF Fragile Immobile (-1¾). Total cost: 43 points.

Wormhole Gate, Fixed Dates: A variant time gate allows passage between times separated by a fixed period. If the gate links, say, 2212 and 1773, then characters can only travel between those times. Time passes normally at both ends, so a traveler who goes through the 2212 gate on January 1 and spends three weeks in the past returns to January 22. If he waits a month before going back in time again, he arrives in 1773 a month after he left for the future. This is a tremendous benefit for game play because characters can never use a fixed gate to loop back into their own pasts within the campaign.

Extradimensional Movement (a fixed moment in time — to January 1, 1773 from January 1, 2212), x16 Increased Weight, Reduced Endurance (0 END; +½) (90 Active Points); OIF Fragile Immobile (-1¾). Total cost: 33 points.

If the characters have a Time Communicator and can call home to get "beamed out," then the comm unit becomes their Holy Grail and they won't part with it (even to the point of wanting it surgically implanted). Characters who can pop out whenever they want are protected from the consequences of their actions, but won't be as rushed as those trying to beat the recall clock.

The existence of a Time Communicator opens up the possibility of calling Mission Control for help and advice. Depending on how precise and expensive time travel is, this could be limited to just information (which in the right circumstances might still be priceless), or it could even allow the folks back home to pop equipment to the travelers as needed.

MIND TRANSFER

The central gimmick of the television series *Quantum Leap*, intertemporal mind transfer leaves the bodies of the travelers where they are but casts their minds into other people in other times. Obviously this limits the range to eras when there are people to possess (although dropping your mind into a *Tyrannosaur* body for a vacation in the Cretaceous could be a lot of fun).

Mind transfer time-travel means the travelers must spend the first part of every trip figuring out who they are and what's going on. This situation should be catnip for GMs, since they can send the PCs' minds into the bodies of spies, fugitives, or people with an important task to accomplish.

The fate of the other person's mind is worth considering. Is the transfer an actual switch? If so, while the time traveler is visiting ancient Egypt, some ancient Egyptian is hanging around the Time Institute in the traveler's body, watching talk shows and playing foosball. Or maybe he's figuring out how to pick the locks and escape, giving any PCs who didn't go on the mission to the past the job of recapturing him without damaging the body of their comrade. It might well be the policy of the Time Institute to keep the bodies of time-jumpers sedated, so the switched mind can't carry back any information that could create a paradox.

If the transfer isn't a switch, the past individual has suddenly acquired a nasty case of Multiple Personality Disorder. The Player Character's personality may have to win duels of EGO or PRE against the host personality, either during the initial jump or every time they differ about what to do.

OPTIONS

“Like they say in the Temporal Mechanics Department, there’s no time like the present.”

—Captain Kathryn Janeway philosophizes in the *Star Trek: Voyager* episode “Endgame”

Since time travel is still highly theoretical (to put it mildly), GMs can pretty much make up whatever “laws of nature” they like to govern it.

ONE WAY DO NOT ENTER

One way travel has some interesting possibilities. It essentially means moving the campaign permanently to another era, although characters may try to get around the limit by leaving messages or equipment caches for themselves in very durable containers, to travel through time the ordinary way.

A very special form of one-way time travel is simply patience. Characters can visit the future easily by living a very long time, or going into hibernation or cryogenic suspension for decades or centuries. This is a good way to drop contemporary characters into a far-future setting (Buck Rogers got to the twenty-fifth century that way). The chief problem is that there’s no way back unless someone in the future conveniently invents a time machine.

The “Dr. Zeus” series of stories by Kage Baker combines one-way travel to the past with immortality: the time agents are indestructible cyborgs, created in the distant past and manipulating history according to the instructions of their creators in the future. The Terminator robots of the “Terminator” movies and television show serve a similar function.

YOU ARE HERE

The Doctor: Hence, this new device. It’s called a randomizer, and it’s fitted to the guidance systems [of the TARDIS] and operates under a very complex scientific principle called pot luck. No one knows where we’re going, not even the Black Guardian.

Romana: Not even us.

—the Doctor figures out a way to avoid a deadly enemy in the *Doctor Who* episode “The Armageddon Factor”

If the time gate machinery (or the mystical portal, or the alien time-teleporter) can only send to the same location in past eras, travelers face some unique problems. Unless the Time Institute is in downtown London, a fair amount of the adventuring in the past involves traveling from the point of arrival to wherever they want to explore. This is a good way to “cut the apron strings” and force the heroes away from their time machine, but it also means most adventures involve an inconvenient amount of travel.

Slightly more convenient for the GM is a random arrival point. That allows the players to turn up “just by coincidence” in the right place for an interesting adventure. (To be realistic, most random arrivals would be in mid-ocean somewhere, requiring either a seaworthy time machine or else a way to see what’s there before the exploration team goes through.) Much of the Tom Baker run of *Doctor Who* involved travel in a time machine equipped with a randomizer so the Doctor’s foes couldn’t track him down — if he didn’t know where he was going, neither could they!

NEXT EXIT 1492

Perhaps time travel is only possible between certain past eras. They may be as broad as centuries or as narrow as minutes. This is one way to keep characters from visiting their own pasts, and the GM can select the available windows with an eye to interesting adventure opportunities (as Tim Powers did in his novel *The Anubis Gates*). All windows may connect to all others, or the system can be very complicated, requiring multiple hops between different eras to arrive at a given destination (“You jump from 2930 to 4588 BC; from there you can hop to 1451, and that lets you jump to 1969 in time to watch Apollo 11 take off”).

Short-duration windows do create the possibility of “traffic jams” as time travelers from throughout history try to arrive during the same brief period. If the heroes have time-traveling enemies, they may find themselves arriving next to each other! Windows also impose a little tension on the campaign, since the end of a given window is a deadline which the characters really don’t want to miss.

PARADOXES AND COMPLICATIONS

River Song: We came here because of what we saw in the future. If we try [to] prevent the future from happening, we create a paradox.

Amy Pond: Time can be rewritten.

River Song: Not all of it.

—Amy and River contemplate time paradoxes in the *Doctor Who* episode “The Impossible Astronaut”

The big problem with time travel is the possibility of paradoxes — many physicists consider it impossible for just that reason. In Star Hero, time paradoxes raise problems of their own. Most campaigns are linear narratives, and being able to change the past may mean early adventure sessions can suddenly “not have happened.” There are a couple of ways to handle this.



Fixed History

"But the facts kept staring me in the face. I was going to do all those things. There were no alternatives, no fanciful "branches of time," no decision points that might be altered to make the future change. My future, like yours, Dr. Wald's, and everyone else's, was fixed. ... Cause and effect, as I could see for myself, just don't exist. One event follows another because events are just as indestructible in space-time as matter and energy are. ... What we call motives evidently are rationalizations by the helpless observing consciousness, which is intelligent enough to smell an event coming — and, since it cannot avert the event, instead cooks up reasons for wanting it to happen."

—Dana Lje explains how reality works in "Beep," by James Blish

This is the easiest to handle conceptually, but can be surprisingly tricky in play. If history cannot vary, then by definition nothing the characters do can change things. Circumstances always work to thwart them, or perhaps attempts to change the course of history simply bounce them right back to their starting point. It can be

frustrating for players to continually run afoul of unchangeable history, and the GM may have to resort to more and more unlikely "accidents" to stymie the heroes. Players often quickly come to loathe this sort of situation.

A slightly looser version of this takes the view that history itself can be full of errors, falsifications, and misinformation. While the historical record is generally true, the details of specific events can sometimes be fudged or tweaked without consequences. Obviously, this works best with poorly-documented eras: you can't shoot Hitler, but you may be able to help the Trojans beat the Greeks (later Greek literature about their victory can be explained away as propaganda by sore losers).

The loosest form of unchangeable history assumes that only things the heroes themselves witness are absolutely true. Records may be false, history books are full of errors, and NPCs can lie, but things which happen in the campaign are real and true and cannot be altered. Changes to history are allowed so long as they won't change anything the heroes have seen themselves: if they saw the *Titanic* sink, then no amount of trying can prevent it. On the other hand, anything unseen is fair game — while they were watching the ship go down they might not have noticed their later selves rescuing passengers with a time-submarine.

Mutable History

Gamemasters who do not want to allow at least the possibility of changing history must decide how “alterable” the timeline is.

ELASTIC TIME

An elastic history tends to snap back to its original state and resists changes. Shoot Hitler during World War I and some other extremist warmonger becomes dictator of Germany in the 1930s. Rescue Lincoln from his assassin and he spends the rest of his second term losing battles with Congress over the course of Reconstruction, just like Andrew Johnson did. The extreme version of this is like an unchangeable history.

A less elastic history allows for potential change points. Possibly some people or events are “critical nodes” which can shift history onto a different track, but the vast majority of people have little influence. An elastic history with critical nodes means the PCs can visit the past without disrupting their future, while still allowing for Time Patrol-style adventures preventing villains from affecting critical nodes.

IMMUNITY TO TIMESHIFTS

Life Support (Immunity To Timeshifts) renders a character completely immune to the effects of changed history. He can go back in time and prevent his parents from meeting, or change things so the Human species never evolves, and he himself remains unchanged. It costs 2 Character Points.

The technological version is the “Reality Stabilizer,” which comes in two versions. A personal stabilizer is simply a wearable device which confers the power: *Life Support (Immunity To Timeshifts)* (2 Active Points); OIF (-½); total cost: 1 point. Time machines may have built-in Stabilizers. If reality shifts are common, a character’s Stabilizer is absolutely essential to his continued existence.

A more powerful version is the “Reality Field Generator” which can anchor an entire area. Multiple projectors can be linked to stabilize a base or even a whole city. The headquarters of the Time Institute is certainly protected by Reality Generators, and they would be valuable accessories for any time-traveling villain’s hideout.

Reality Field Generator: *Life Support (Immunity To Timeshifts)*, Usable By Nearby (anyone within 100m of the generator; +1) (4 Active Points); OAF Bulky (-1½). Total cost: 2 points.

CHAOTIC HISTORY

Spock [speaking to Captain Kirk]: *Save her — do as your heart tells you to do — and millions will die who did not die before.*

...

Doctor McCoy [to Captain Kirk]: *I could have saved her! Do you know what you just did?*

Spock: *He knows, Doctor... he knows.*

—Kirk has to allow Edith Keeler to die so that he doesn’t negatively alter history in the *Star Trek* episode “City On The Edge Of Forever”

The opposite of elastic history is chaotic history, in which even tiny changes ripple outward, transforming everything. Step on a butterfly in the Cretaceous and humanity may not evolve. Help a girl cross the street in New York in 1930 and the Nazis win World War II. Chaotic history is difficult to game, because it’s hard for the heroes to avoid making changes, or to know how to correct them. However, many historians have come to believe human history is chaotic, so GMs with a yen for accuracy may go with this interpretation despite its difficulties.

If history can be altered, sanity demands some way to keep the heroes from blinking out of existence every time some klutz squashes a bug. They must be immune to changes in history. Perhaps traveling in time places voyagers somehow “outside the timestream” and immune to any changes they cause. Or perhaps it’s an innate power (see sidebar).

A reality-bending campaign requires a GM who can think on his feet and extrapolate future histories on the fly. The only constant in the campaign is the Player Characters; the world can shift around them.



TIME TRAVEL CAMPAIGNS AND ADVENTURES

“You’re a time traveler now, Amy. It changes the way you see the Universe.”

—the Doctor explains the effects of traveling in time to Amy Pond in the *Doctor Who* episode “Flesh And Stone”

Time travel is such a nifty idea that it tends to creep into just about every Star Hero campaign. In any kind of Science Fiction setting, the heroes may be cast into another time by a mysterious alien artifact or a crackpot scientist’s jury-rigged prototype. In settings with faster-than-light travel, arriving in the wrong year could be a fairly standard drive malfunction, and anyone with a sufficiently durable starship might have a close encounter with a black hole.

One-shot time adventures make a good change of pace without too much risk of tangling the campaign up in paradoxes. For whatever reason, the heroes visit another time, get into trouble, and get home. Usually their goal is nothing more than getting back to their proper time, while surviving the bloodthirsty post-atomic mutants of the future or the bloodthirsty pre-atomic gangsters of the past. The time jaunt may be part of an ongoing plotline in the game’s proper era — if the cure to the Omega Virus can only be found a hundred years in the past, surely a band of brave heroes would be willing to risk a voyage through time to prevent billions of deaths; once they accomplish that and return to the future, then they can hunt down the Andromedan agents who released the plague in the first place.

More ambitious GMs may want to tackle an actual time-traveling campaign. The focus can be just time travel, or combined with space travel to allow the widest possible scope. The actual mechanics of time travel have an immense effect on potential campaigns, and the GM should choose carefully to allow the kinds of adventures he wants to run.

“In my century we scan time much as you use sensors to scan space. The Temporal Integrity Commission detected your vessel over twentieth century Earth. I was sent to correct that anomaly. Prepare to follow me back into the rift. I’m returning you to your own time to your previous coordinates in the Delta Quadrant.”

—Captain Braxton keeps the temporal continuum functioning properly in the *Star Trek: Voyager* episode “Future’s End, Part II”

Some common time travel campaign frames include:

TIME COPS

The heroes are agents of some organization (call it the Time Patrol) that strives to prevent unauthorized meddling with history. If history is unchangeable, then the Patrol focuses on preventing time travelers from exploiting past-timers; in a mutable timeline, the Patrol also defends the “one true history” against would-be revisionists. Either way, Patrol agents must have some way to detect interference by other time travelers, then go into action to put things right.

Advantages of a Patrol campaign are the relative ease of setting up adventures (“Your boss tells you to get dressed in togas — you’re heading for Pompeii”), and the convenience of avoiding paradoxes through Patrol regulations (“You can’t go back to the day before and fix things; the Patrol won’t allow it”). Complications are a lack of player initiative and a certain amount of routine in a long-running campaign.

TIME COLLECTORS

The heroes are either agents or freelancers who specialize in acquiring artifacts from the past. Ethical collectors only pick up things which are certain to be destroyed — books from the Library of Alexandria, archaeological treasures from the Berlin Museum, or Mayan astronomical codices. Time thieves may prefer to snatch the Mona Lisa from Leonardo’s studio and replace it with a cheap laser-printed copy — or they may manipulate the stock market to make themselves rich, loot gold shipments, or engage in other such chronal crimes.

A variant is collecting people in time. Humanitarians can rescue steerage passengers from the *Titanic* or smuggle Jews out of the Warsaw Ghetto. Exploiters recruit Helen of Troy or Mozart with promises of future luxuries, and villainous time slavers might abduct thousands from the past to serve the future as laborers, playthings, or possibly sources of fresh genetic material. All three types may coexist, and some slightly shady types who just want to sign up Marilyn Monroe for a holovideo studio have to contend with both do-gooders from the Time Rescue Mission and time slavers.



Like Time Patrol adventures, Time Collecting can degenerate to a routine of “show up, shoot the locals, grab the item, get out.” It may also raise troubling ethical questions, especially for people-collectors.

TIME CASTAWAYS

“Though you cannot exile me in space, there is still one alternative. The river of Time stretches ahead of us as far as our thoughts can go. Send me down that stream to an age when you are certain this civilization will have passed. That I know you can do with the aid of the Roston time-field.”

—the rebellious Trevindor suggests his own punishment to the Council in “Exile Of The Eons,” by Arthur C. Clarke

If the time travelers are stuck in another time, then the focus of the campaign shifts to building a new society and coping with historical threats. A band of near-future characters may try to keep the Roman Empire from falling, or may have to choose sides in the Hundred Years’ War. A castaways campaign avoids all the problems of paradox and causality by keeping the heroes in one era, but it requires a lot of research by the GM, and players who really enjoy that setting.

TIME EXPLORERS

There’s a lot of history out there, and characters can have all sorts of interesting adventures just exploring the past. Exploration is likely to be the main focus when time travel is still a new technology; the Time Institute sends out parties of time explorers to learn about obscure periods in history, discover if any other time travelers are active in the past, and work out how to avoid or survive paradoxes.

A Time Explorers campaign has many advantages for the GM: the destination is determined by Mission Control, the party probably won’t be packing a lot of heavy firepower (so when they get into trouble they’ll need to use their wits instead of shooting their way out), and the heroes can visit a variety of historical eras. Problems with plausibility come up when every “simple research trip” turns out to involve danger and threats to the future. If the players really enjoy playing tourist in the past and learning about other times, the GM is going to need to do a lot of advance research.

ALTERNATE HISTORIES

An alternate history is an entire cosmos somehow “next to” Earth’s own, usually physically identical but with a different history. Sometimes time travelers who alter history can create an alternate universe that splits off from the original timeline. (Some theories of time travel claim that any significant act “splits off” new timelines — one in which the act occurs as planned, one in which it doesn’t occur at all, one in which it occurs but something goes wrong, and so on. In this view, time travel may not really be time travel; it may simply involve parallel jumps from one timeline to another.)

Alternate universes are very useful from a game perspective. They allow many of the more entertaining results of time travel (different history, weird societies, and the like) without any of the problems of paradoxes and causality. If shooting your grandfather merely creates a new universe in which he died young, there’s no paradox: your grandfather is still fine. (Being the grandfather of a time traveler seems to be very hazardous.)

Visiting an alternate history is much like time travel, at least in terms of *HERO System* rules and special effects. You get in the Crosstime Machine, or walk through a World Gate, or whatever, and there you are. Gamemasters need to decide if world-jumpers can visit any point in an alternate universe’s history, or if they can only shift directly “sideways” to the same date in a different timeline.

Popular change-points for alternate histories include: a Nazi victory or stalemate in World War II; the survival of the British Empire; a Confederate victory in the Civil War; failure of the American fight for independence; the Spanish Armada conquering England; Columbus failing to reach the New World; no rise of Islam; the survival of the Roman Empire; and the destruction of Greek civilization by the Persians. Gamemasters can either try to create their own riffs on these themes, or come up with different change-points.

There are two ways to go about creating an alternate timeline for a campaign. The first is to choose an event, make it come out differently, and then try to extrapolate the subsequent course of history and see what might happen. This requires a good knowledge of history, and means the GM must make some decisions about how history works — is it the result of remarkable individuals (like Napoleon, Augustus, or Hitler), the result of large-scale trends, or the product of cycles? The most likely answer is “all of the above,” but one still must decide how influential each really is.

Suppose you’re taking the assassination of Archduke Franz Ferdinand of Austria in 1914 as the changepoint. In our history, it sparked World War I. In another history, perhaps the assassin missed, or was dazzled by the flash of a time-tourist’s camera at the critical moment. Well, what then? No dead Archduke means no World War I (at least, not in 1914). No World War I probably means no Nazi regime in Germany, no Communists in Russia, no World War II, no Auschwitz. Of course, that doesn’t mean this new history has to be a boring Utopia. The European colonial empires are likely to last longer, keeping large parts of the world under foreign rule. Without the terrible example of the Nazis, racism remains more solidly entrenched. Technology may progress more slowly without the impetus of two global wars plus the Soviet-American Cold War. Instead of massive wars among the European powers, this timeline might see a series of drawn-out struggles pitting Asians, Muslims, Africans, and others against their colonial overlords.

A second method may irk purists, but often makes for more entertaining campaigns. Instead of choosing the changepoint and working forward, pick the result and try to figure out how to make it happen. If you want a world in which the Aztecs are a major power in 2011, that means the Spanish conquest of Mexico must have failed for some reason. What would have accomplished that? Since current historians attribute the European success in the New World as much to the diseases they carried as their military might, perhaps the Aztecs simply got exposed to European germs by lost Portugese or Viking seafarers a few centuries before Columbus. With enough time for the population to recover, the American civilizations of Mexico and Peru could hold off the Europeans and learn the secrets of ironworking, gunpowder, and horsemanship. Once able to compete on equal terms, the Aztecs could easily survive and rise to Great Power status.

Of course, those changes do have ripple effects. Without the Mexican and Peruvian treasure to pay for armies and fleets, Spain is not as powerful, and Spain’s ally Austria falls to the Turks. The kingdoms of western Europe are occupied with fighting off the Turkish menace and cannot spare the resources to explore the Americas or conquer India. So the European empires of the Age of Sail never get off the ground, and some other region might be the first to industrialize.



CHAPTER TEN



***THE POWERS OF
THE MIND: PSIONICS***



PSIONICS CONSIDERATIONS

The term “Psionics” became popular during the 1950s, as part of the efforts by Dr. J.B. Rhine and others to analyze phenomena which were long considered supernatural. The legendary Science Fiction editor John W. Campbell was very interested in the idea and encouraged his writers to use psi powers in their stories. Some Science Fiction writers adopted a very rigorous, logical approach to the topic — Larry Niven, for example, worked out some interesting consequences of psi powers — while others used the term as an excuse for magic.

Despite a stunning lack of experimental evidence for their existence, psi powers have remained popular in Science Fiction for decades. This chapter discusses the role of psionics in Star Hero campaigns. It covers not just how to build psionic powers in game terms, but what types of powers might exist (or are most common in Science Fiction) and the consequences their existence may have for the campaign.

When using psionic powers in a campaign, GMs need to make several decisions: how do psi powers work? How powerful are they? What powers are possible? Can anyone learn to use them? How does society adapt?

“Now, you come here!”

The command whipped out at him. Paul found himself obeying before he could think about it. Using the Voice on me, he thought. He stopped at her gesture, standing beside her knees.

—the Reverend Mother Gaius Helen Mohiam uses the Voice, a trained way of speaking, to force Paul Atrides to obey her in *Dune*, by Frank Herbert

THE BASICS

Here are some of the basic considerations to keep in mind when determining the nature and role of psionics in the campaign.

How They Do It

In the absence of reliable data, theories of how psionic powers might work have multiplied. They

range from the mechanistic to the surreal. At the hard science end, some theorists and Science Fiction writers try to explain psionics in terms of existing laws of physics and biology. Telepathy transmits an organic radio signal from brain to brain, and Mind Control or Mental Illusions involve hacking into some other brain’s operating system remotely. Extrasensory Perception uses

unidentified senses — electric or magnetic field sense, possibly attuned to the fields given off by living things. Powers which violate the laws of thermodynamics or conservation of energy don’t exist. If telekinesis is possible, the user has to expend just as much effort as if he were lifting the object with his muscles. Powers are reduced by range.

Related to the hard science approach is the idea of mental powers (and related abilities) as a function of advanced training of the Human (or alien) mind, direct control of autonomic body processes, and so forth. Frank Herbert’s *Dune*, with its highly-trained Bene Gesserit sisters manipulating Human breeding patterns to cause the birth of a person with true powers of prophecy, is an excellent example. Psionic powers in this sort of setting can become pretty powerful, but they’re usually “self only” sorts of abilities — a character can’t read minds or strike down his enemies with mental blasts, but he can heighten his powers of observation, override his body’s response to pain, or improve his own reaction time.

A less rigorous (but more fun) version of psionics assumes the human mind can tap into some sort of external source of energy to create effects. George Lucas called it “The Force,” while modern pseudoscientists talk vaguely of “bioenergetic fields” or “cosmic power.” Whatever you call it, this external power source allows psionics to do far more than they could accomplish with their own bodies. The field extends through the entire universe (or possibly exists in hyperspace), so psionics can violate the inverse square law and the speed of light.

Finally, there’s the idea of psionics as reality manipulation. In this view, the psionic is simply changing the universe by force of will. Adherents of this model make reference to the role of the observer in quantum mechanics to “prove” that consciousness is important in maintaining reality as we know it. Those who learn the trick can alter reality with a thought. The weakest form of reality alteration is probability alteration — the Luck power, in *HERO System* terms. More powerful reality-altering psionics can teleport themselves, conjure up things they want or need, and influence the minds of others. Reality alteration can bend or ignore any physical laws.

Gamemasters can adopt or make up whatever explanation they wish for how psi powers operate. The above are just examples; you can combine or modify them to suit the campaign. It's even possible to have two or more different "modes" of psi powers at work in the same game world: perhaps some psionic abilities are mechanistic while others involve reality transformations. One species may have body-manipulation powers, while another possesses true telepathic abilities.

Power Level

"There are approximately one hundred thousand (100,000) 3rd Class Espers in the Esper Guild. An Esper 3 can peep the conscious level of the mind — can discover what a subject is thinking at the moment of thought. A 3rd is the lowest class of telepath. ...

"Next, there are approximately ten thousand 2nd Class Espers in the Guild," the Personnel Chief continued. ... "They are experts like myself who can penetrate beneath the conscious level of the mind to the preconscious. Most 2nds are in the professional class... physicians, lawyers, engineers, educators, economists, architects, and so on. ...

"Finally, there are less than a thousands 1st Class Espers in the Guild. The 1sts are capable of deep peeping, through the conscious and pre-conscious layers down to the unconscious... the lowest levels of the mind. ... These, of course, hold premium positions."

—the Personnel Chief explains the basic levels of psi power to Ben Reich in *The Demolished Man*, by Alfred Bester

The issue of power level shapes the nature of the campaign. If psionic powers are weak, then social controls are likely to be less strict, psionic characters can live mostly normal lives, and the existence of mental powers doesn't radically transform the world. If powers are strong, then society must find a way to control them — even if only by letting the psionics rule. From a gaming perspective, the more powerful psionic abilities are, the more likely it is characters will want them, that characters without them will be (or feel) "handicapped" in comparison, and that psionic PCs can overwhelm or unbalance the game.

Of course, power level doesn't always equate to usefulness. A character with a low-powered Mind Control ability, just enough to make everyone like him, is in many ways much more useful as a PC than someone with the ability to destroy whole planets. Larry Niven's stories about Gil Hamilton, the future policeman with an incredibly weak telekinetic/clairvoyant "imaginary arm," provide excellent examples of how useful a very limited psi power can be.

See page 273 for more discussion of power levels in game terms.

LATENT PSIONIC POWERS

Often characters in fiction have latent powers which they're only just learning how to use and control. There are several good ways to represent this in the *HERO System*. One possibility is to start out with a high power level, but load the power down with Limitations to reflect the novice psionic's inability to control it properly (see page 273 for some suggested Limitations). As the character gains in experience, he buys off these Limitations to reflect increasing mastery.

Another method is for the GM to assign a pool of "banked points," subtracted from the character's original point value. As the psionic character gains experience, the GM releases points from the bank, so that the latent psi can gain power faster than he would with Experience Points. The GM can establish conditions the character has to meet in play to gain access to his banked points — an amnesiac psi must regain his memories before he can use his hidden powers, or a novice must receive training from a wizened old master.

Third, the GM can use the *Latent Psionic Talent* on page 73. This is similar to the "banked points" approach, but with a little more structure.

Available Powers

Exactly which powers are available in the campaign determines a lot about the flavor of the campaign and how society reacts to psionics. Mental abilities like Telepathy and Mind Control make psionics good at manipulating other Humans, but not able to withstand gunfire or smash planets. Telepaths make good spies or policemen, and inspire society to make rules about mental privacy. Telekinetics who can throw cars around are more useful as soldiers (or in construction), and inspire a different set of social controls.

While almost any ability can be explained with enough handwaving as "psionic," fifty years of Science Fiction and pseudoscience have created a more or less standard list of psionic powers common to Science Fiction settings, in six main families.

BODY CONTROL

Mystics have long claimed to be able to perform amazing feats of self-control, and psionics have co-opted many of the same claims. In *HERO System* terms this includes Talents such as Double-Jointed, Lightning Reflexes, and Simulate Death. It also covers abilities built with Powers such as Aid, Healing, Life Support, Running, and possibly even Shape Shift. Often making conscious changes to one's body requires Concentration and Extra Time; realism suggests Increased Endurance Cost, and/or a Required Skill Roll. Characters who can manipulate their bodies may be recruited as super-agents (or take up a life of crime); anyone who can heal or aid others will be in demand as a psychic doctor.

Body Control powers are most impressive and important in relatively low-tech settings. In Space Opera games, cybernetics, bio-engineering, nanotechnology, and advanced surgical techniques may mean that just about anyone could have Body Control-type abilities.

ESP

“With the aid of your precog mutants, you’ve boldly and successfully abolished the post-crime punitive system of jails and fines.” ...

“You’ve probably grasped the basic legalistic drawback to precrime methodology. We’re taking in individuals who have broken no law.”

“But surely they will,” Witwer affirmed with conviction.

“Happily they don’t — because we get them first, before they can commit an act of violence.”

—Anderton and Witwer discuss how precognition has revolutionized law enforcement in “The Minority Report,” by Philip K. Dick

Extra-Sensory Perception, more commonly known as ESP, is the scientific name for what used to be called clairvoyance, second sight, or prophecy. It includes all abilities to perceive things beyond normal senses. In *HERO System* terms, ESP covers Talents like Combat Sense or Danger Sense and Powers like Clairsentience (including Precognition) and Enhanced Senses. It can be as narrowly-focused as dowsing (Detect Water) or as broad as the ability to cast one’s mind across the Galaxy (Clairsentience with the *MegaScale* Advantage). Concentration is usually required. A good way to limit the power of ESP abilities is to make them chancy or unreliable, with an Activation Roll or No Conscious Control.

Settings with ESP may have restrictions on psionic snooping, or may simply become extremely open societies (since secrets are impossible). Especially interesting consequences arise when individuals with Precognition exist in a society: can precogs prevent crimes and disasters? What if the “oracles” decide to misuse their power?

[Lyta Alexander demonstrates her telekinetic abilities by “slapping” two of Bester’s Psi Cops]

Psi-Cop Alfred Bester: Not bad. Tell me, is that really telekinesis, or are you just pushing the nerve endings, making them feel as if they’ve been slapped? Either way, it’s taken a lot out of you, Lyta. You’re sweating, flushed. How many times can you do that, Lyta? Can you do just one at a time? Maybe two? How about three? How about a half dozen of us?

Lyta: I don’t know. Like you said, I’m new at this. I could even make a mistake. Maybe even pop a blood vessel in someone’s head by accident by pushing too hard. Feel like playing the odds, Mr. Bester?

—Lyta Alexander displays rare telekinetic powers in the *Babylon 5* episode “Strange Relations”

TELEKINESIS

Telekinesis is any ability to manipulate energy or physical objects with mental power. It has a number of related abilities: pyrokinesis (the ability to start fires), cryokinesis (the power to reduce temperature), and electrokinesis (control of electric currents). You can model telekinesis and related powers with many *HERO System* Powers, including Barrier, Blast, Change Environment, Deflection, Entangle, Flight, Killing Attacks, Knockback Resistance, Resistant Protection, Telekinesis (of course), and Tunnelling.

Telekinetic powers are often Indirect, and if no defenses are available, telekinetic attacks can be No Normal Defense (imagine the damage a pyrokinetic can do by starting a fire inside someone’s brain). In a hard science game, telekinesis powers should burn a lot of Endurance and be limited by range. Concentration, No Conscious Control, and Requires A Skill Roll are other common Limitations.

TELEPATHY

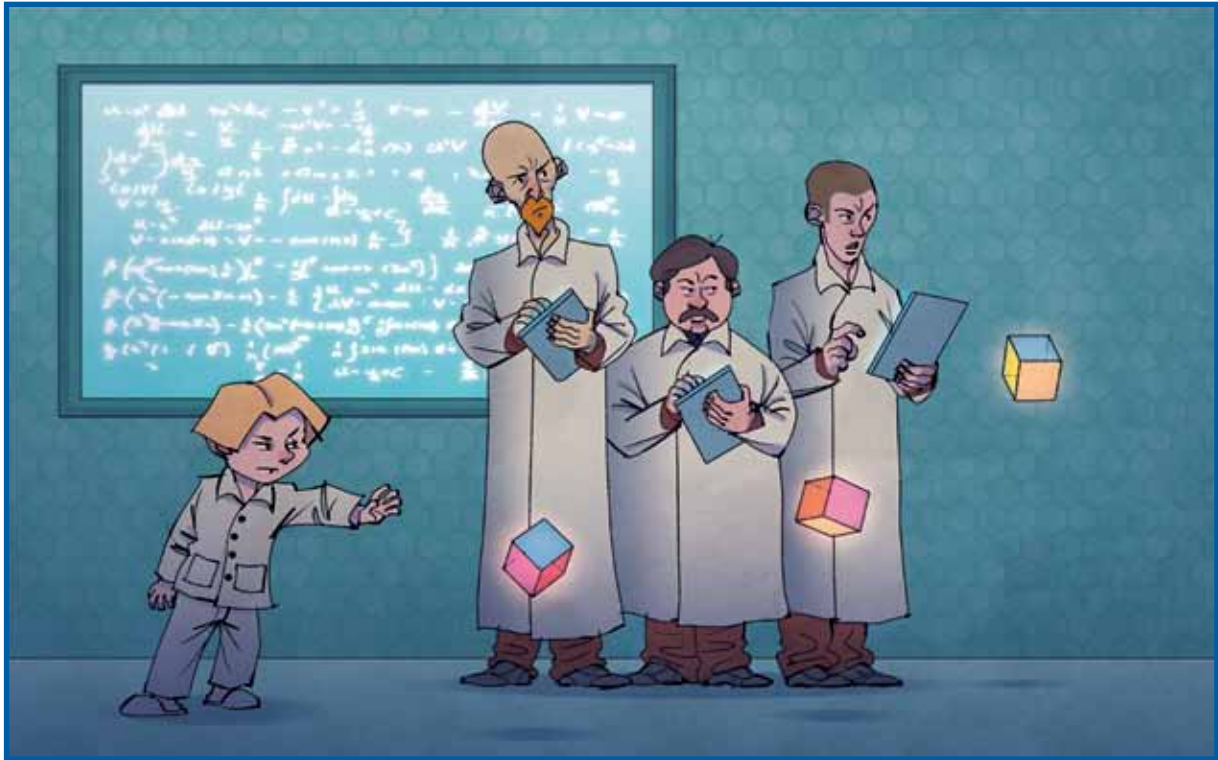
Nothing quite prepared telepath Larry Greenberg for mind-to-mind contact with an alien. In the interest of science, Larry tapped the mind of Kzanol... and that was his first mistake! Kzanol was a thrint from a distant galaxy. He had been trapped on Earth in a time-stasis field for two billion years. Now he was on the loose, and Larry knew everything he was thinking.

—from the back cover text on *World Of Ptavvs*, by Larry Niven

Telepathy is the ability to read minds, transmit thoughts, or otherwise mess with people’s heads. Depending on how powerful and skilled the telepath is, that “otherwise” can include editing people’s memories, implanting compulsions and commands, attacking others psychically, and even transferring the telepath’s consciousness into other bodies. Telepathy is normally instantaneous, not bound by the inverse square law or the speed of light. Telepaths with interstellar range can serve as a super-fast communication system.

Most of the Mental Powers are subsets of telepathy — Mental Blast, Mental Defense, Mental Illusions, Mind Control, Mind Scan, and Telepathy itself — but telepathic characters can have plenty of other abilities. For example, Universal Translator could be a form of telepathy, and characters must use Transform to make permanent changes to a target’s mind, like compulsions or memory edits.

Telepathic abilities often take Concentration and a Required Skill Roll to use, and may need Extra Time (especially for major effects like Transform, or large-scale powers like Mind Scan). Hard Science Fiction telepathy is likely limited by range and only works on the same species as the user (see *Classes Of Minds*, page 274).



No Conscious Control or Always On make for twitchy, overloaded telepaths who seek out solitude to escape the chatter of unshielded minds. In film it's common for telepathy to have a visible effect on the user (like all-black or glowing eyes, nosebleeds, or pulsing foreheads); these are either the *Perceivable* or *Side Effects* Limitations, depending on how serious the effect is.

Societies with telepathy have to face some major changes in how they view the world: thoughts are not private; memories and sensory impressions may be false; and people may not always have free will. Enlightened telepathic cultures may create a society where nobody has emotional problems and deception is unknown. More sinister ones could be a tyranny of “thought police.” Tightly restricting (or even exterminating) telepaths lets mundanes keep their minds free, but perhaps at the price of having blood on their hands. A world entirely populated by telepaths could be an interesting game setting: presumably most people have enough Mental Defense to prevent casual eavesdropping on their thoughts, but anyone planning anything shady needs to find a way to hide from the telepathic cops (as shown in Alfred Bester’s novel *The Demolished Man*).

Any man was capable of jaunting provided he developed two faculties, visualization and concentration. He had to visualize, completely and precisely, the spot to which he desired to teleport himself; and he had to concentrate the latent energy of his mind into a single thrust to get him there.

—the basics of jaunting (teleportation) are described in *The Stars My Destination*, by Alfred Bester

TELEPORTATION

Being in two places at once or spontaneously disappearing is a very old psychic effect. The teleportation family of powers includes the ability to teleport one’s self, teleporting other people, and “apporting” — bringing desired items to the user.

In *HERO System* terms a great many powers can result from teleportation (besides, of course, Teleportation itself). A teleporter who can bring water to a dry place is using Change Environment. Those who really can be in two places at once have Duplication (possibly Linked to Teleportation). Some teleporters visit other times or dimensions — Extra-Dimensional Movement. A teleporter who can zap things into a foe or remove vital body parts has an Killing Attack, NND, Does BODY. Someone who can “blip away” missiles has Deflection. The ability to call others to you is Summon or Teleportation Usable As Attack; the power to “conjure” useful items is a form of Variable Power Pool.

Limitations common to teleportation are Concentration or Extra Time to reflect “attuning” oneself to the target; Increased Endurance or Charges for teleportation that drains the user; No Conscious Control for a power that only manifests in a crisis; and Requires A Skill Roll or Activation Roll if the teleporter can’t always make his power work.

A world with teleportation changes many ideas about privacy, security, and distance. Teleporting terrorists, spies, or thieves inspire ever more paranoid security measures — labyrinths, constant surveillance, or simply hiding anything of value. If everyone can teleport, the whole world is essentially “next door” — with all that implies. Alfred Bester’s novel *The Stars My Destination* focuses on some of these considerations.

RATING SYSTEMS

If psi powers are common and can be scientifically studied, researchers or governments will probably have classification and rating systems to identify power levels. High-powered psionics may have special privileges — or increased restrictions. If nothing else, a “psi rating” system provides nice in-game color, allowing characters to discuss their powers without referring to game mechanics.

Point costs are an obvious basis for power ratings. One simple system is to divide the Active Points in a character's most powerful psionic ability by 5 to get his or her “Psi Rating.” Ratings are classified by the power “families,” so an individual with the combination of Mind Scan (30 Active Points), Mental Illusions (20 Active Points), and Invisibility (25 Active Points) would have a Telepath rating of 6 (30 divided by 5), and a Wild Talent rating of 5.

Alternately, GMs can assign larger point ranges and group them under Roman numerals, letters, even colors — perhaps powers up to 25 Active Points are Blue-level psionic abilities, 25-50 Active Points are Green powers, and 50 or higher are Gold psionics. Blues usually have other jobs

and use their powers only as a supplement, Greens are professional psionics, and

Gold is rare and powerful. The exact cutoff may vary with different powers, so that someone with tremendous Damage Negation still isn't a Gold psionic, while even fairly weak pyrokinetics get the Gold-level perks and restrictions.

WILD TALENTS

“Also... I can kill you with my brain.”

—River threatens Jayne in the *Firefly* episode “Trash”

Finally there is the category of Wild Talents — psi powers which aren't easily classified. These are numerous and varied. A partial list (along with *HERO System* equivalents) would include: probability alteration (Deflection, Luck, and possibly a Variable Power Pool), weather control (Change Environment), time control (extra SPD and various other abilities), materializations (Summon), astral form (the Projection form of Desolidification), channelling (a mental-only Multiform), temporal fugue (Duplication), and psychic invisibility (Invisibility with Limitations).

Rarity

The rarity of psi powers determines a lot about their effects in the campaign. If powers are common, then society must have a way to cope with their effects. Rare powers can be especially effective through sheer surprise value. Interesting effects occur when some species have powers and others do not.

RARE POWERS

Usually psychic powers are rare in a given setting. This allows psionics to remain poorly understood and hard to counteract. Even low-grade powers can be useful, since nobody expects to encounter them. But their very rarity means psionic characters often face fear and suspicion from “mundanes.” Self-protective measures by psionics only inspire further distrust from others, leading to paranoia and conspiracy theories. In some settings, the normals may decide the risks of psionic powers are too great, leading to anti-psionic pogroms. When powers are rare, being psionic may qualify as a Social Complication, and the Negative Reputation “Psionic” could be dangerous.

COMMON POWERS

In some settings, psi powers are very common. Alfred Bester (the author, not the *Babylon 5* villain named after him) wrote several stories about worlds with widespread psionic powers. In *The Stars My Destination*, he described a world where everyone knows how to teleport. In *The Demolished Man* he explored how crime and police work would function in a world with lots of telepaths. Larry Niven examined the effects of probability alteration by the entire Human species in his later “Known Space” stories.

The chief point to remember about common powers is that nobody's surprised by them. If teleporters are common, people find ways to keep from being robbed by teleporting burglars. Bester suggested labyrinths inside houses to confuse thieves trying to teleport in; teleport-proof force-fields are another possibility. Laws will address the use and misuse of common psi powers — if mind control exists, then people won't go to jail for crimes committed while under someone else's control... assuming the police can verify their claims.

Characters in a setting with common psi powers may be able to take a low-value Complication for being psionic (a Psychological or Social Complication equivalent to a doctor's professional ethics, for instance).

TECHNICAL FIXES

Sometimes the commonality of psionic powers depends on artificial aids. Psionic characters may need to use “amplifier crowns” to boost their powers, or have to stimulate their brains with psi-drugs (like the spice melange of *Dune*, which allows some people to “fold space”). In those situations, the technology is what gets controlled — maybe characters need a license to own a psionic amplifier, or a prescription for psi-drugs. Perhaps the devices are a closely-guarded monopoly of the psionic elite. Naturally, wherever something is forbidden, an illegal market develops. Player Characters who run afoul of the legitimate psionic authorities may have to make do with unreliable black-market amplifier helmets and home-brewed psi drugs.

SPECIES DIFFERENCES

Gamemasters should also consider whether psionics are a universal phenomenon among all sentient species, or only some species can have psionic powers. Interesting results emerge when certain powers are only found in certain species. Perhaps Sirians are the only telepaths in the Galaxy, but Earth produces powerful clairvoyants and Vegans are known for their mighty telekinetic abilities. The Denebians, who don't have any psionics, are desperately trying to acquire the technology to create or breed some. If interstellar travel or communication depends on a certain psi power, then the species with a monopoly on that power becomes a key player in galactic politics (like the Spacing Guild in *Dune*).

Some psi powers may only work on members of the user's own species, because they require compatible “brain frequencies” or some such. This is especially appropriate for telepathic powers. Gamemasters who want to have interspecies telepathy may consider making some powers less effective on other species — so a Human telepath's powers work at full strength on other Humans, but only half power on Sirians. See *Classes Of Minds*, below, for more information.

10

Social Issues

Ambassador Londo Mollari: *Lyta, I understand the Psi Corps is looking for you. I would hate very much for them to find you.*

Lyta Alexander: *So would I. Because I'm not with the Corps anymore. That means I'm not bound by their rules! So if someone were to turn me in, I'd find him. And before they took me, I'd plant a nightmare deep in his mind where no one else could find or remove it. And that person would spend every night for the rest of his life screaming!*

—the Psi Corps's professional ethics and strictures don't apply to Lyta Alexander anymore in the *Babylon 5* episode "Passing Through Gethsemane"

Gamemasters should decide in advance what social rules control psionic powers. Specifically, which powers are subject to what rules? Are all psionics licensed? Do all telepaths have to wear inhibitor collars? Are there any organizations (legal or clandestine) of people with psionic powers? What happens to psionics who don't join those groups?

Much depends on the powers available. Telekinetics are useful in warfare, criminal activity, and a whole range of legitimate jobs. They can do damage, but so can a drunk behind the wheel of a hovertruck. They probably have to register or get a license (to ensure they receive proper training in the use of their powers), but probably will be permitted and encouraged to use their abilities. Extremely powerful telekinetics may be isolated, drafted, forced (somehow) to wear inhibitor collars, or simply assassinated at the earliest opportunity.

Telepathy, by contrast, has much greater possibilities for abuse, and even the legitimate uses are a little creepy. The government is almost certain to require telepaths to register, and they probably have to follow strict rules about the use of their powers (unless everyone in the society has telepathic powers and can shield his thoughts from others). Telepathy is sufficiently useful in espionage (both foreign and domestic) that governments may wish to recruit telepathic spies even if their powers are supposedly illegal.

A lot of society's reaction to psionics depends on history. A world where psi-crooks are running wild has a much less favorable opinion of psionics than a world where telekinetic rescue teams avert disasters predicted by precognitives. In a Star Hero campaign, this means the GM can juggle the society's history to produce the desired result. Want a setting with oppressed psis? Give the planet a background including a couple of juicy scandals centering on the abuse of psi powers, and maybe a disaster blamed on a wild talent gone out of control. Want a tolerant world where psionics live openly? Then give them a strong ethical tradition among psionics, and some examples of heroic telepaths foiling terrorist plots or clairvoyants finding trapped survivors after an earthquake.

LAW AND ORDER

"Every race to develop telepaths has had to find some way to control them, through laws, religion, drugs, or extermination. We may not be pretty, but we're a hell of a lot better than the alternatives."

—Psi Cop Alfred Bester tries to justify the existence of the Psi Corps in the *Babylon 5* episode "Phoenix Rising"

Society needs some way to prevent psionics from abusing their powers. For abilities like clairvoyance, a lot of the same rules that apply to spying on your neighbors with a telescope and tapping their phones would apply — assuming the police have their own clairvoyants, or devices to detect the unauthorized use of such powers. But how can a mundane law enforcement agent stop a powerful telekinetic in a drunken rage? How can he arrest a telepath who mentally commands him to leave? How can he keep a teleporter locked in jail?

There are three ways to deal with potential lawbreakers who have powers beyond those of the law enforcers: find enforcers who do have the power (the stick); find ways to encourage responsible behavior (the carrot); or eliminate the problem entirely (the *big* stick).

The obvious people to control psionics are other psionics, but mundanes may not wish to hand over that much power to them. In any society at least as organized as twenty-first century America, the police and the government probably have specially trained and equipped teams to deal with psionic threats. They can control telepaths with robots or cops in psi-shield helmets, and use long-range snipers or knockout gas to take down dangerous telekinetics. A teleporter who can't see outside of his cell (perhaps because of holograms) may not be able to escape. Solutions like these will exist if society has to deal with renegade psionics.

Encouraging ethical behavior means early identification of those with talents and careful training. This is one of the primary purposes of virtually all psionic organizations, whatever their other goals may be. Schools (or possibly hospital maternity wards) may have mandatory psi-testing. Training consists of courses about the brain and how psi powers work, plus plenty of indoctrination that "with great power comes great responsibility" (or at least "we must not antagonize the mundanes").

Finally, a given society simply may not want any psionics at all. In brutal cultures, a positive result on the childhood psi test means lethal injection. More humane societies could exile psionics to another world, or require them to neutralize their powers. With inhibitor collars, psi-damper drugs, or possibly even brain surgery, a civilization could create a psionic-free world. Of course, when the psionic invaders come, society may wish for a few telepathic defenders, but by then it's too late.



ORGANIZATIONS

One solution to the problem of untrained and uncontrolled psionics — and to the problem of public distrust of mind-readers — is the formation of psionic organizations. These may be government agencies, such as the Psi Corps in *Babylon 5*, or private foundations created by the psionics themselves to protect their interests and train new talent. They might even be for-profit corporations hiring out skilled psionics for any task.

Any group with access to unique sources of power or information becomes influential. Even in worlds that officially proscribe psionics, the underground Psi Guild may trade favors to one government agency for help against another bureau.

In societies that don't regulate psionic powers and/or otherwise accept them in mainstream culture, psionic organizations remain important, if only because they represent a valued group. Think of them as something like the American Medical Association. Doctors don't possess psi powers, but they do have specialized knowledge and training which makes them influential. On the planet Sigma Alpharis VII, the Alpharisian Society of Psionics has a similar place in society.

Gamemasters should think of the most important psionic organizations and how they interact. Who studies psi powers scientifically? Who trains psionics? Who enforces the registration and licensing rules? Who tests people for psi abilities?

Which agencies have psi-agents? Any group with a monopoly on one of these functions becomes a power center — and inspires endless attempts to chip away at the monopoly by rivals.

FORM OF ORGANIZATION

Exactly what form a psionic organization takes depends on how powers work and how society treats psionic individuals.

Families are a natural social group for psionics, especially in quasi-feudal settings, or worlds where psionic powers are hereditary. Powerful psionic families might become something like Renaissance nobility. Persecuted psionic families might be more like Jews in medieval Europe — living apart from the mundanes and trying to go unnoticed, but occasionally called upon for help by those who despise them.

On worlds that at least tolerate psi-powers, psionics could form guilds — independent organizations aimed at maintaining a monopoly on a given trade or type of power. This allows them to bargain for better pay and working conditions, and provides them with political leverage. A psionic guild might aggressively crack down on non-member “pscabs.” Often the Guild doubles as a licensing and regulating agency, rather like the Bar Association.

Since psi powers often require a lifetime of dedicated training and arcane disciplines of study and meditation to master, psi organizations may model themselves on monastic orders or groups

like the Knights Templar. The Jedi of *Star Wars* are the obvious example. Different orders may specialize in different mental powers. Rival orders also lets the GM tap into the Musketeers versus Cardinal's Guards theme, as apprentice psionics duel and brawl with the winking approval of their superiors. As with the historical Templars, the mundane authorities may come to view orders of psionic monks or knights as too powerful, thus driving the groups underground. Legends of a suppressed psionic order can linger for centuries, inspiring hope among persecuted psis and fear among their persecutors.

Money and psionics may interact in some settings. A psi-corporation is a for-profit organization, paying dividends to its owners or shareholders. Small ones would resemble legal or medical partnerships, while big ones would have large research divisions, a marketing department, and scores of mundane employees. Psionic employees might own part of the company, or they could jump from company to company whenever they get a better offer. Psi-corporations would compete to recruit the most talented psionics or the rarest wild talents. In a Cyberpunk setting, they might use their psi-agents in direct attacks against each other.

Crime might also attract psionics. "Psi-gangs" would be the equivalent of organized crime groups, using psionic muscle to run protection rackets, control mundane illegal activities like drug smuggling and prostitution, and engaging in uniquely psionic crimes (such as telepathic blackmail, clairvoyant spying for hire, mind control theft or fraud, and telekinetic mayhem).

Government agencies would employ psionic individuals in the public interest — or, more specifically, in the interest of the agencies themselves. Psi agencies would control rogue psionics, thwart efforts at psionic espionage, crime, and terrorism, and conduct psionic espionage themselves. In tyrannical states, psi agencies might use mind control and telepathy to suppress dissent and brainwash dissidents.

In settings that at least tolerate psi-powers, psionic institutes or societies may become very important. Psionic training centers would be the equivalent of elite universities or prestigious boarding schools. Even if society persecutes psionics, a mundane scientific organization might include a covert psionic research program. Similarly, a seemingly ordinary private school might in fact be a training center for psionic teens.

Finally, even in the most open cultures, psionic dissident groups will exist, because there are extremists and malcontents in every society. Psionic dissidents in an open society would campaign for equal rights and an end to discrimination. In societies that oppress psionics, dissident groups might run an "underground railroad" to get psionics to safety, or be psi-rebels using their powers to overthrow the regime.

RULES CONSIDERATIONS

Here are a few rules considerations to keep in mind when deciding how psionics should function in your Star Hero setting.

POWER LEVELS

Most Star Hero campaigns feature Standard Heroic characters, and in such games, the power level of psi powers generally should range from about 10 to 50 Active Points. A ceiling of 20 Active Points limits characters to small-scale effects, requiring a lot of finesse and imagination for best results. Low-powered campaigns often limit characters to one power, or a handful of closely-linked abilities. More high-powered campaigns, such as those modeled on the writings of E.E. "Doc" Smith, can go up to 75 Active Points (or more), although by that level the characters are effectively superhumans.

Alternately, the GM may allow fairly high levels of power — 40-60 Active Points — but require characters to impose a large amount of Limitations (-2 worth, or more) on each power. That gives characters enough dice of effect to really get things done with their psionic powers, but reins them in so they can't use their mental abilities to run roughshod over everyone they meet.

COMMON LIMITATIONS

The discussion of the categories of psionic powers above listed the Limitations that tend to apply to each category. Here's a list of the Limitations that, general speaking, are most often applied to psionic powers in Star Hero settings:

- Concentration
- Costs Endurance
- Extra Time
- Focus (activation drugs and the like)
- Increased Endurance Cost
- Limited Range
- No Conscious Control
- Reduced By Range
- Requires A Roll

In many cases, the key to keeping psionic characters from becoming too powerful in a Star Hero campaign is not restricting Active Points — it's Limitations. Active Points aren't always a good measure of overall power, and the way Mental Powers function in the *HERO System*, characters often need to roll a certain minimum number of dice to achieve any significant effect. Rather than restricting the number of dice, make the dice harder to use. A power that requires Extra Time and Concentration can still come in very handy during the game... but the odds of a character using it to triumph easily in a combat situation are significantly reduced.

Byron: *I'm a strong P-12. Lyta Alexander: But all P-12s are automatically designated Psi Cops. You were a Psi Cop?*

—an example of the psionics rating system in the *Babylon 5* universe, from the episode "Phoenix Rising"

POWER FRAMEWORKS

The GM needs to decide whether characters can buy psionic powers in Power Frameworks. The lack of, or inclusion of, Power Frameworks in the game can have significant implications.

NO FRAMEWORKS

If characters cannot put psionic powers in Frameworks, then psionics tend to be rarer in the game, since buying each psionic ability separately can get expensive. This encourages one of two approaches.

The first is the all-psi character, who devotes most of his points to psionic powers, giving him few points to spend on anything else. Typically the character tries to make up for his lack of Characteristics, Skills, and the like with either powers he can use in many different ways (*e.g.*, Telekinesis), or technology. Gamemasters need to examine all-psi characters carefully. Not only do they suggest poor character conception (since few people, particularly heroes, are so one-dimensional), but the level of technology available in most Star Hero games gives the character a significant chance to overcome his deficiencies with gadgets, and that can lead to game balance problems.

The second approach is the low-powers character, who has a few psionic abilities of low power. Sometimes the powers simply don't have many Active Points; in other cases the character uses lots of Limitations to get the Real Point costs down. Assuming the Limitations applied (if any) are legitimate, low-power characters usually cause few game balance problems, and can lead to interesting characters with intriguing roleplaying potential. For that reason, many GMs prefer this approach — powers bought without Frameworks, with low Active Point or high Limitation value requirements.

FRAMEWORKS

If characters can put psionic powers into Frameworks, psionics tend to become more common and more powerful in the game. While paying for the base Framework itself can get expensive, the individual powers themselves become cheap to buy once the Framework is in place.

In most cases, Frameworks are inappropriate for games where GMs want to keep psionics low-powered or difficult to use. However, they work quite well in games designed to simulate the high-powered nature of the psionics depicted in some novels, comics, and movies. Those games are often psionic-oriented, with every character having psionic powers. Putting the powers in Frameworks not only ensures each character has a respectable suite of “standard” psionic abilities, but also has the capacity to branch out and create some unusual psi-powers they otherwise could not afford.

If the GM allows psi-Frameworks, he has to decide which Frameworks characters can choose from. In all but the most high-powered psionics campaigns, Variable Power Pools aren't allowed; they simply offer too much flexibility and power for a Heroic campaign. Multipowers are much more common, though they can present game balance problems because the slots are relatively cheap.

CLASSES OF MINDS

6E1 149 and APG 65-66 discuss the concept of classes of mind — in other words, the fact that by default, Mental Powers work against specific classes of minds. For Star Hero purposes, the “Human” class of minds refers to the same sentient species the character with the Mental Powers belongs to. “Alien” refers to any sentient species other than the character's own. Thus, to a Perseid psionic, other Perseids are in the “Human” class of minds; Humans, Toractans, Mon'dabi, and other sentient species all have “Alien” class minds.

Because of the prevalence of Alien minds in many Star Hero campaigns, applying the classes of minds rules precisely as written can have the effect of crippling Mental Powers. Gamemasters may wish to consider the optional rules from APG 66.

PSIONIC CAMPAIGNS

Some Star Hero campaigns focus on psionic abilities, with every character having at least one or two mental powers. When running a campaign centering on the exploits of psionic characters, GMs can choose several different structures. Some possibilities are described below.

Most psionics campaigns are Standard Heroic games, with characters built on 75 Base Points plus up to 75 points' worth of Complications. However, some GMs may find 150 points a little limiting when PCs have to buy both psionic powers and ordinary Skills and abilities. In that case, upgrading to Powerful or Very Powerful Heroic-level characters may be appropriate. Alternately, the GM can have players build characters on up to 150 points without any psionic powers, then allot a fixed amount of additional points (say, 50, 75, or 100 points) solely for purchasing psionics.

CAMPAIGN TYPES

Psionics campaigns tend to fall into several categories. Many of them are simply other types of Star Hero campaigns with psionics introduced into the setting or emphasized in the game.

PSI AGENTS

Espionage and covert operations are all about gathering information, denying it to the enemy, and striking by stealth. Those jobs are much easier when you can read minds, teleport, see through walls, and toss boulders by looking at them. Psi-agents can do all the things James Bond is famous for, plus match wits with psionic counterparts, evade clairvoyant monitors, and cope with teleporting telekinetic assassins. Psi-spies working for an oppressive government may wind up conducting covert operations against internal dissidents instead of foreign governments. Corporate-sponsored psi-agents can go looking for trade secrets.

Any sort of espionage campaign gives the GM a good framework for assigning missions and equipment to the heroes, and covert operatives usually can't call for help when things get dangerous.

Having PCs from different agencies or branches allows for intra-party intrigue and paranoia. The combination of the shadowy world of espionage and the literally mind-bending possibilities of psionics allows adventures in which nothing is what it seems, nobody can be trusted, and even your own thoughts can betray you.

PSI COPS

When psi-agents and psi-rebels break the law, it's up to psionic detectives to find and capture them. Telepathic police must follow the rules about when they can legally read a suspect's mind, or risk seeing the guilty go free. Police precogs must work with fuzzy impressions of the future to determine what crimes perpetrators will commit (as in Philip K. Dick's short story "The Minority Report").

Psionic police campaigns focus on cop work in a psionic society, including the problems of how to arrest mind-controlling telepaths and how to hold teleporters in custody. Psionic detective games center on solving mysteries — who done it, and how. Psi powers make it easier to solve mundane crimes, but they also make possible a whole bunch of new offenses, like locked-room murders in which the killer used telekinesis to fire a gun at the victim — how can the cops determine whose mind pulled the trigger? Psi-cops who belong to the Psi Guild or a secret institute may pursue their own agendas, trying to recruit talented suspects, or shelter them.

Like a psi-agents campaign, psi-cops games let the GM send the PCs out on adventures by simply having an NPC superior officer give them orders. Beat cops or investigators can also get into trouble on their own while following up leads or trusting a hunch. Cops are also likely to be first on the scene when something weird happens, and may have to cope with major threats until heavy backup arrives. For the proper stationhouse feel, the GM should create some official department codes or abbreviations (like a "section 799" for unlawful mind-reading, or "MCNC" for using mind control without the subject's consent), and encourage players to come up with their own hard-bitten police slang.



PSYCHIC WARS

On the battlefield of the future, bullets, lasers, and artillery may not be the only weapons available. “Psoldiers” use awesome psionic powers against the enemy, whether to assault his mind from a distance, shield troops from his sensors, or teleport a squad of commandos into the heart of his command center.

As psi agents games mix psionics and espionage, and psi cops mix police drama with psionics, a psychic wars campaign introduces psionic powers into a war story. The war may take place in the near future, with weapons any twenty-first century Human would recognize, or in a time and setting so distant scientists have changed the face of the battlefield by inventing combat drones, teleporting cannons, and disintegrenades. Player Characters in a psychic wars game are typically “special forces” soldiers. Their “special” nature derives not only from the fact that they’ve got advanced military training, but because either they have psionic powers in a setting where few others do, or they have much more mental power than other psi-soldiers.

Adventures in psychic wars campaigns use plots familiar to any war movie buff: Infiltrate behind enemy lines and destroy an important resource. Recover a kidnapped person of importance. Help develop a new weapon (possibly a psi-enhancer of some sort) and protect it from the enemy. Test out a new weapon. Spearhead a major offensive. Perform a commando raid against an important enemy stronghold. The GM doesn’t even have to worry about motivating the PCs; all he has to do is have a superior officer give the order.

REBEL PSIS

The heroes are psionics in an oppressive society, fighting for freedom. The regime may only oppress psionics, or it may be just as brutal to mundanes. Either way there’s plenty of scope for adventure: infiltration missions to rescue captive psis, tense cat-and-mouse games with the psi-hunters, and maybe an attempt to organize a general uprising. But beware: the Mind Police have psi-detectors and use captured telepaths as “psi-hounds” to track the rebels. If the heroes fail, the hound’s collar could be their fate as well.

A rebel campaign means the heroes must rely on their own powers and resources, and is good for roleplayers who enjoy coming up with their own plans and schemes for daring rebel exploits. It also allows the GM to examine interesting ethical questions: are the mundanes right to oppress psis? What actions are justified by the fight for freedom? Will the revolution solve anything? Psi-rebels can be worked into most Science Fiction subgenres: pretty much all Cyberpunk games are about rebellion in at least some respects, and Space Operas usually have at least one tyranny that needs overthrowing.

SCHOOL FOR PSIONICS

Psionic abilities can be very powerful, but unless an individual learns to use and control them properly, they pose a danger to everyone — including the person possessing them. Since non-psionic parents can't teach their children to use their powers, society needs specialized schools.

In a light-hearted campaign, the psi school can use all the tropes of classic boarding-school stories — dorm rivalries, standing up to bullies, meddling in the teachers' private lives, and winning the big game. Of course, at psi school, the bullies may be psychic vampires, the teachers have powerful mind shields, and the big game is a demanding contest of telekinetic rugby. Darker psi schools campaigns may emphasize the need for secrecy in a hostile world, the creepy master-race ideas of the teachers, and the very real dangers of immature minds wielding immense power.

Students at psi school are fairly low-powered characters, which saves the GM from having to come up with credible opponents for powerful psionics. Their powers and simple youthful curiosity can get psi-kids into real danger, but the GM can always use a wise old headmaster to sort things out if the players are overwhelmed.

EXAMPLE: PSIONICS IN THE TERRAN EMPIRE

As a demonstration of how to set up a system of psionic powers, here are the steps Jim, the GM, took to create the psionic background for his Terran Empire campaign.

HOW IT WORKS

Since the Terran Empire is a Space Opera setting, Jim doesn't want to limit psionics based on scientific plausibility, so his explanation of psi powers is deliberately "rubber science." The idea of reality-warping doesn't quite fit the tone he has in mind, so he adopts the notion of psionics tapping into a "quantum substratum" existing in a parallel dimension. This allows psionic characters to use more power than their bodies can produce, and have powers with interstellar range. This explanation also suggests that rubber science psi-tech machinery can sometimes augment or block psi powers.

POWER LEVEL

Powerful psionics are a common feature in Space Opera games, so Jim wants a fairly broad range of power levels. Most psionic powers are limited to 40 Active Points, about right for Heroic-scale characters. A rare few psionics have more impressive powers, up to 90 Active Points in a single ability. Usually these powerful people are off-stage as master villains or NPCs, since that minimizes the impact of their powers on the campaign as a whole.

Jim establishes a rating system based on point value, classifying psionics with Greek letter designations because they have a nice scientific sound. Psi-Alphas are normals, with no known psionic abilities. Psi-Betas have detectable but low-level powers: *HERO System* Talents or Powers worth no more than 10 Active Points. Psi-Gammas have notable powers up to 20 Active Points. Psi-Deltas are the most common "professional" psionics, with powers up to 30 Active Points. Deltas and higher are actively recruited by organizations that train and employ psionics. Psi-Epsilons have up to 40 Active Points in a single psionic power, and are the intrepid psi-agents or dreaded Mind Police during some periods of Imperial history.

Beyond Epsilons the scale gets patchy because there are so few high-powered psionics. Psi-Zetas have powers in the 50 to 60 point range, and Etas are 60 to 80 Active Points. Individuals with more than 80 Active Points are all lumped together as "Psi-Thetas," and are considered very dangerous even by other psionics. The term "Omegas" is used by psionics to refer to amazingly powerful individuals, with powers in the 100-point range — beings so rare that some psionics scoff at their existence. Rumors say the Empire has a secret team of "Omega Agents" to handle threats even the Imperial battlefleet can't handle.

Jim's rating system provides some enjoyable campaign color. Psionic characters can make disdainful remarks about "brain-dead alphas," and be properly impressed when they learn their patron is an Eta. And a message from headquarters saying "Rogue Omega" ought to raise their hackles....

AVAILABLE POWERS

For the proper Space Opera feel, Jim limits the available powers to the "standard" psionic list: Telepathy, ESP, and Telekinesis. Telekinesis can only manipulate physical objects, so telekinetic Resistant Protection or Barrier provides PD protection only. Teleportation, pyrokinesis, and other abilities are "wild talents" and as such are viewed with suspicion and scientific interest. Body Control powers are not available, mostly because Imperial medicine and biotechnology are good enough to make them obsolete. Precognition and any long-range Clairsentience powers must have the *Vague And Unclear* (-½) Limitation. All psi powers require Concentration and Requires A Psionics Roll to perform, but they don't use END (if they cost END normally, the character must buy them to 0 END). What this means in play is that psionic characters can do cool tricks like picking locks telekinetically or influencing weak minds, but still can't defy a whole squad of police armed with blasters.

PSIONIC TECHNOLOGY

Here are a few examples of psionic technology from the Terran Empire.

Booster Helmet: Aid Psionics 5d6, Variable Effect (any one Psionic power at a time; +½), Reduced Endurance (0 END; +½) (60 Active Points); OAF Fragile (-1¼), Activation Roll 14-, Burnout (-¼). Total cost: 24 points.

ESP Static Generator: Darkness to Mental Group 10m radius, Reduced Endurance (0 END; +½) (45 Active Points); OF Fragile (-1¼). Total cost: 20 points.

Inhibitor Collar: Drain Telepathy 1d6, Constant (+½), Reduced Endurance (0 END; +½) (20 Active Points); OIF (-½). Total cost: 13 points.

Psi-Damper Drug: Drain Mental Powers 1d6, Expanded Effect + Variable Effect (all Mental Powers simultaneously; +4), Delayed Return Rate (5 points per Day; +2¼), Damage Over Time (4 increments, one per 5 minutes for 20 minutes, defenses only apply once, cannot be used again on same target until all increments accrue; +½) (77 Active Points); OAF Fragile (-1¼), 4 Charges (-1). Total cost: 24 points.

Psi-Detector: Detect Psionic Powers, Increased Arc Of Perception (360 Degrees), Range, Sense (17 Active Points); OAF (-1), Limited Range (20m; -¼). Total cost: 7 points.

Psi-Shield Helmet:

Mental Defense (20 points) (20 Active Points); OIF Fragile (-¾), 1 Continuing Fuel Charge (easily replenished with a new power cell; 20 Minutes; -¼). Total cost: 10 points.

Telepathic Static Generator: Suppress Telepathy 5d6, Area Of Effect (20m Radius Explosion; +½) (75 Active Points); OAF Fragile (-1¼), Costs Endurance (to maintain; -½). Total cost: 27 points.

RARITY

Psionics are usually just a bit of extra “chrome” in Space Operas — they shouldn’t overshadow the fun of things like mile-long space dreadnoughts, lost alien civilizations, and a good blaster pistol at your side. So Jim makes them rare, at least among Humans. He decides there’s one Beta (10 Active Point powers) per million people in the Empire, and half as many at each increment of 10 Active Points above that. So a planet like modern Earth, with 6 billion people, would have no more than 12,000 psionics, half of them low-powered Betas. This way characters with no powers remain able to cope with psionic adversaries, and even moderately powerful psi PCs are important individuals.

Some powers are much more common than others: half of all Human psionics are telepaths, with Telepathy, Mind Scan, Mind Control, or similar powers. The remainder are divided evenly between those with ESP and those with telekinesis, plus a tiny percentage of wild talents.

Psionic talent manifests itself randomly, although scientists believe there’s an hereditary component. As a result, any character can have psi-powers, but there’s still plenty of fun opportunities for someone to turn out to be the lost child of a rogue Omega, or the product of a secret breeding program. Since there’s no simple genetic test for the psi-gene, psionic organizations have to find and test potential psionics — which means mysterious strangers from different groups may visit a young psi to try to win him over as a new apprentice.

Humans are not the only species with psionic powers, of course. Several species in the Milky Way Galaxy are uniformly psionic, while others have mental powers at a greater or lesser rate than Humanity. Much of Imperial psionic research studies the powers of rival species and tries to discover ways to counteract them. For the proper Space Opera feel, Jim assumes all psionic powers work equally well across species. Thus, PCs don’t have to worry about the classes of minds rules, and can take Limitations on powers that only affect one or two species.

Psionic technology remains tricky and unreliable. Experimental psi-amplifiers may exist (probably in the hands of secretive government agencies), but they’re not commonly available. Psi-drugs are known, and some psionics depend on them for effective use of their powers. Drugs cannot give anyone new powers, although rumors of some miracle substance that can make anyone an Omega often crop up. Psi-shielding is a bit more widespread, since fears of telepathic spying inspired military crash research programs to devise countermeasures, and some of their devices have trickled out to the general public.

SOCIAL ISSUES

Social issues are actually pretty simple in the Empire. Since the Empire itself is not at all democratic during much of its history, individual rights are low on the priority list. Psionics pose a potential danger to Imperial control, but are also tremendously useful, so they’re controlled but not exterminated. Psionics in the Empire must register with the Imperial Psionic Foundation. The Foundation is in charge of identifying and training new talent. To keep the Foundation in line, the Imperial government quietly encourages anti-psionic attitudes among the general population (a task made easier by the existence of hostile psionic species). The Foundation also conducts research on psionics and psi technology.

The Empire itself employs most psionics above Beta grade, in various agencies. The Imperial Security Police and the Imperial Secret Service both have a Psi Section; agents counter psionic threats and use their powers for espionage and covert operations. The military intelligence services have their own psi agents. The Foundation employs some high-rated psis, often veterans of Imperial service.

The sheer scale of the Empire means even the Psionic Foundation can’t spot everyone with psi powers. Some grow up ignorant of their abilities, others hide deliberately. Rogue psionics who don’t want to serve the Empire tend to wind up as rebels working with various dissident groups, or as criminals in the Empire’s extensive underworld. Psionic crooks often gravitate toward the Olympian Syndicate, a psionic-dominated criminal organization with shadowy ties to psi-supremacist dissidents and the Psionic Foundation itself.

Player Characters with psi powers in the Imperial era can fit into various campaign structures. Low-powered Betas exist in normal society, coping with mild prejudice as they use their powers as an aid in mundane jobs. High-powered psionics are either Imperial agents, hunted rebels, scholarly Foundation researchers, or criminals.

EXAMPLE PSIONIC POWERS

Here are a few example psionic powers for Star Hero campaigns. They're not specifically related to the Terran Empire or any other setting. If necessary, the GM should alter or adapt them to fit a specific campaign's approach to psionic powers.

APPORT

Effect: Teleport 30m, Usable As Attack
Target: One object of up to 10 kg
Duration: Instant
Range: 30m
END Cost: 8

Description: The character can “summon” nearby objects by teleporting them into his hand. This ability only works on small objects, not on living beings.

Game Information: Teleport 30m, Usable As Attack (+1¼), Limited Range (30m; +¼), Reduced Endurance (½ END; +¼) (82 Active Points); Concentration (½ DCV; -¼), Only To Teleport Unliving Objects Of Up To 10 Kg To Character (-1). Total cost: 36 points.

Options:

- 1) *Strong Power:* Remove Concentration (-¼). Total cost: 41 points.
- 2) *Weak Power:* Decrease to Teleport 20m (and change Limited Range to 20m). 55 Active Points; total cost 24 points.

BRAIN HACKING

Effect: Major Transform 4d6 (erase, change, add to, or otherwise affect a person's mental “objects”), ACV (OMCV versus DMCV), AVAD (Mental Defense)
Target: One character
Duration: Instant
Range: 400m, Reduced By Range
END Cost: 6

Description: The character can telepathically infiltrate another being's brain to alter memories, feelings, and beliefs.

Game Information: Major Transform 4d6 (erase, change, add to, or otherwise affect a person's mental “objects”; heals back normally), ACV (uses OMCV against DMCV; +¼), AVAD (Mental Defense; +0), Works Against EGO, Not BODY (+¼) (60 Active Points); Concentration (0 DCV; -½), Extra Time (Full Phase; -½), Limited Target (mental “objects” in the minds of sentient beings; -½), Reduced By Range (-¼), Requires A Psionics Roll (-½). Total cost: 18 points.

Options:

- 1) *Strong Power:* Remove Concentration (-½). Total cost: 22 points.
- 2) *Weak Power:* Decrease to Major Transform 2d6. 30 Active Points; total cost 9 points.

DREAM HACKING

Effect: Mental Illusions 2d6, Damage Over Time
Target: One character
Duration: Instant
Range: LOS
END Cost: 1

Description: The character can manipulate the dreams of sleeping people, allowing him to conduct a form of psychological warfare against them.

Game Information: Mental Illusions 2d6, Damage Over Time (4 increments, one per 5 minutes for 20 minutes, defenses only apply once, cannot be used again on same target until all increments accrue; +½) (15 Active Points); Concentration (½ DCV; -¼), Only Works Against Sleeping Targets (-1). Total cost: 7 points.

Options:

- 1) *Strong Power:* Increase to Mental Illusions 4d6. 30 Active Points; total cost 13 points.
- 2) *Weak Power:* Add No Range (-½). Total cost: 5 points.

EMPATHIC COMMUNICATION

Effect: Telepathy 6d6, Empathy
Target: One character
Duration: Instant
Range: LOS, Reduced By Range
END Cost: 3

Description: The character can communicate with others empathically, both reading their emotions and projecting his own emotions into their minds.

Game Information: Telepathy 6d6 (30 Active Points); Communication Only (-¼), Empathy (-½), Reduced By Range (-¼). Total cost: 15 points.

Options:

- 1) *Strong Power:* Remove Reduced By Range (-¼). Total cost: 17 points.
- 2) *Weak Power:* Add Increased Endurance Cost (x2 END; -½). Total cost: 12 points.



EMPATHIC CONTROL

Effect:	Mind Control 8d6, Only To Alter/Inflict Emotional States
Target:	One character
Duration:	Instant
Range:	LOS, Reduced By Range
END Cost:	4

Description: The character has the ability to manipulate the emotions of others. This is particularly useful for, among other things, triggering certain Enrageds.

Game Information: Mind Control 8d6 (40 Active Points); Concentration (½ DCV; -¼), Reduced By Range (-¼), Only To Alter/Inflict Emotional States (-½). Total cost: 20 points.

Options:

- 1) *Strong Power:* Remove Reduced By Range (-¼). Total cost: 23 points.
- 2) *Weak Power:* Add Increased Endurance Cost (x2 END; -½). Total cost: 16 points.



INTERSTELLAR BRAIN LINK

Effect:	Mind Link, one specific mind, No LOS Needed
Target:	Self
Duration:	Persistent
Range:	Special
END Cost:	0

Description: The character can establish a mental link with one other person, provided that person is no more than 50,000 light-years away (approximately the radius of the Milky Way Galaxy).

Game Information: Mind Link, one specific mind, No LOS Needed (works over interstellar distances, to a maximum range of about 50,000 light-years) (15 Active Points); Activation Roll 15- (-¼), Concentration (½ DCV throughout; -¼), Costs Endurance (-½). Total cost: 7 points.



MIND SHIELD

Effect:	Mental Defense (10 points)
Target:	Self
Duration:	Persistent
Range:	Self
END Cost:	0

Description: The character knows how to shield his mind from psychic assaults and mental intruders.

Game Information: Mental Defense (10 points). Total cost: 10 points.

Options:

- 1) *Strong Power:* Increase to Mental Defense (15 points). Total cost: 15 points.
- 2) *Weak Power:* Add Costs Endurance (-½). 10 Active Points; total cost 7 points.



PREMONITIONS

Effect:	Clairsentience (Sight Group), Precognition
Target:	Self
Duration:	Constant
Range:	Self
END Cost:	2

Description: The character receives strange flashes of insight — mysterious visions of events yet to occur. He cannot control this ability; the visions simply come upon him, bringing not only a glimpse of the future but intense headaches.

Game Information: Clairsentience (Sight Group), Precognition, Reduced Endurance (½ END; +¼) (50 Active Points); No Conscious Control (-2), Precognition Only (-1), Vague And Unclear (-½), Side Effect (take 3d6 STUN damage, always occurs; -½). Total cost: 10 points.

Options:

- 1) *Strong Power:* Increase to Reduced Endurance (0 END; +½). 60 Active Points; total cost 12 points.
- 2) *Weak Power:* Remove Reduced Endurance (½ END; +¼) and add Increased Endurance Cost (x2 END; -½). 40 Active Points; total cost 7 points.



PROBABILITY MANIPULATION

Effect:	Luck 8d6, , Side Effect (suffers 2d6 Unluck within 10 minutes)
Target:	Self
Duration:	Constant
Range:	Self
END Cost:	0

Description: The character can consciously alter probability (though of course he cannot dictate exactly what occurs when he tilts the odds in his favor, he can only ensure the outcome will be good for him). The downside is that bad luck often follows.

Game Information: Luck 8d6 (40 Active Points); Requires A Psionics Roll (-½), Side Effect (suffers 2d6 Unluck within 10 minutes, always occurs; -½). Total cost: 20 points.



PSIONIC JAMMING

Effect:	Mental Defense (10 points), Usable By Nearby
Target:	Self
Duration:	Constant
Range:	Self
END Cost:	2

Description: The character can project a field of psionic interference to protect his non-psionic friends from a mental attack.

Game Information: Mental Defense (10 points), Usable By Nearby (anyone with 5m; +1) (20 Active Points); Concentration (½ DCV throughout; -½), Costs Endurance (-½), Requires A Psionics Roll (-½). Total cost: 8 points.

Options:

- 1) *Strong Power:* Increase to Mental Defense (15 points). 30 Active Points; total cost 12 points.
- 2) *Weak Power:* Decrease to Mental Defense (5 points). 10 Active Points; total cost 4 points.



PSYCHIC INVISIBILITY

Effect:	Invisibility to Sight, Hearing, and Smell/Taste Groups, No Fringe, , Only Works Against EGO/5 Persons At A Time
Target:	Self
Duration:	Constant
Range:	Self
END Cost:	2

Description: The character can manipulate others' minds to "erase" himself from their perceptions. Except at the highest level of power, he can only do this with a certain number of minds at once. He cannot affect cameras, robots, or other beings without minds.

Game Information: Invisibility to Sight, Hearing, and Smell/Taste Groups, No Fringe, Reduced Endurance (½ END; +¼) (50 Active Points); Only When Not Attacking (-½), Only Versus Beings With Minds (-½), Requires A Psionics Roll (Active Point penalty -1 per 20 points; -¼), Only Works Against EGO/5 Persons At A Time (-½). Total cost: 18 points.

Options:

- 1) *Strong Power:* Remove Only Works Against EGO/5 Persons At One Time (-½). Total cost: 22 points.
- 2) *Weak Power:* Change to Only Versus EGO/10 Persons At A Time (-1). Total cost: 15 points.



PSYCHIC DIAGNOSIS

Effect:	Detect Disease
Target:	Self
Duration:	Constant
Range:	Self
END Cost:	2

Description: The character can send his mind into a person's body to discern whether he has an illness, and if so what kind.

Game Information: Detect Disease (INT Roll) (Mental Group), Discriminatory, Analyze, Sense (22 Active Points); Activation Roll 14- (-¼), Costs Endurance (-½), Requires An SS: Medicine Roll (-¼). Total cost: 11 points.



REMOTE VIEWING

Effect:	Clairsentience (Sight Group), MegaScale (1m = 100 km)
Target:	Self
Duration:	Constant
Range:	Self
END Cost:	2

Description: A character with this ability can see far-off scenes. This makes him an excellent asset for intelligence agencies, corporations willing to engage in industrial espionage, and military units.

Game Information: Clairsentience (Sight Group), MegaScale (1m = 100 km; +1½), Reduced Endurance (½ END; +¼) (55 Active Points); Attack Roll Required (-¼), Blackout (-½), Concentration (½ DCV throughout; -½), Extra Time (1 Minute to activate; -¾). Total cost: 18 points.

Options:

- 1) *Strong Power:* Remove Concentration (-½). Total cost: 22 points.
- 2) *Weak Power:* Remove Reduced Endurance (½ END; +¼). 50 Active Points; total cost 17 points.



TELEKINETIC HAND

Effect:	Telekinesis (10 STR), Fine Manipulation, Invisible To Sight Group
Target:	One character
Duration:	Constant
Range:	250m
END Cost:	2

Description: The character has the ability to manifest a psychokinetic "hand" that no one can see, but which can move or manipulate objects weighing up to 100 kilograms.

Game Information: Telekinesis (10 STR), Fine Manipulation, Invisible To Sight Group (+½), Reduced Endurance (½ END, +¼) (44 Active Points); Limited Range (40m; -¼). Total cost: 35 points.

**TELEPATHIC PROBE**

Effect:	Telepathy 10d6
Target:	One character
Duration:	Instant
Range:	LOS, Reduced By Range
END Cost:	2

Description: The character has telepathy strong enough to get past most beings' mental shields and probe deep into their memories, and perhaps even their subconscious.

Game Information: Telepathy 10d6, Reduced Endurance ($\frac{1}{2}$ END; $+\frac{1}{4}$) (62 Active Points); Concentration (0 DCV throughout; -1), Extra Time (1 Minute; $-1\frac{1}{2}$), Reduced By Range ($-\frac{1}{4}$), Requires A Psionics Roll (Active Point penalty -1 per 20 points; $-\frac{1}{4}$). Total cost: 15 points.

Options:

- 1) *Strong Power:* Remove Reduced By Range ($-\frac{1}{4}$). Total cost: 16 points.
- 2) *Weak Power:* Change to: Requires A Psionics Roll ($-\frac{1}{2}$). Total cost: 14 points.

**TELEPATHIC SHRIEK**

Effect:	Mental Blast 4d6
Target:	One character
Duration:	Instant
Range:	40m
END Cost:	4

Description: The character can telepathically project a "shout" into another person's mind, causing that person intense pain.

Game Information: Mental Blast 4d6 (40 Active Points); Concentration ($\frac{1}{2}$ DCV; $-\frac{1}{4}$), Limited Range (40m; $-\frac{1}{4}$). Total cost: 27 points.

Options:

- 1) *Strong Power:* Increase to Mental Blast 6d6. 60 Active Points; total cost 40 points.
- 2) *Weak Power:* Decrease to Mental Blast 3d6. 30 Active Points; total cost 20 points.

**THOUGHT SPEECH**

Effect:	Telepathy 4d6, Communication Only
Target:	One character
Duration:	Instant
Range:	LOS
END Cost:	1

Description: The character possesses basic telepathic communication powers.

Game Information: Telepathy 4d6, Reduced Endurance ($\frac{1}{2}$ END; $+\frac{1}{4}$) (25 Active Points); Communication Only ($-\frac{1}{4}$), Concentration ($\frac{1}{2}$ DCV; $-\frac{1}{4}$). Total cost: 17 points.

Options:

- 1) *Strong Power:* Increase to Reduced Endurance (0 END; $+\frac{1}{2}$). 30 Active Points; total cost 20 points.
- 2) *Weak Power:* Remove Reduced Endurance ($\frac{1}{2}$ END; $+\frac{1}{4}$) and add Increased Endurance Cost ($\times 2$ END; $-\frac{1}{2}$). 20 Active Points; total cost 10 points.

CHAPTER ELEVEN



***A JOURNEY INTO THE UNKNOWN:
GAMEMASTERING STAR HERO***



CREATING A CAMPAIGN

Creating an RPG campaign is never easy — and in Star Hero, when an entire galaxy (or more) may be the GM's backdrop, it can be particularly difficult! To keep the campaign on track, the GM needs to decide on things like the campaign's theme, the type of game he wants to run, and the game's primary setting.

CAMPAIGN THEME

The *theme* of a campaign is the underlying subject of all the adventures. It isn't strictly necessary to have one, but a campaign without a theme may seem disconnected and unfocused. In a campaign of interstellar exploration, the theme is "exploring the unknown." The heroes encounter new and unknown planets, beings, and civilizations. Some of them are hostile, some are friendly, some need help, some offer opportunities for profit, but the underlying theme is always the same. The GM may even twist the theme a bit on occasion to tell stories of the characters' *self-exploration*.

It's possible to have more than one theme in a campaign. Adventures can cycle among a couple of different underlying subjects — the adventures of a group of high-tech cyborg mercenary soldiers could alternate between a theme of the ethics of warfare and a theme of the boundaries of human and machine. Gamemasters shouldn't get carried away with multiple themes, though, since having too many isn't much better than having none at all.

Be careful not to confuse theme with message. "The effects of biotechnology on society" is a theme; "cloning is bad" is a message. You can return to a theme, look at it from various angles, and develop it in depth. But once you've stated a message, the only thing to do is state it again.

Some common themes in Science Fiction include:

BEING HUMAN

As technology allows people to create intelligent animals and robots, or replace Human bodies with machines and Human brains with computers, the question of what is Human becomes important. Is a cyborg a Human?

What about an intelligent dog with some Human genes? What about an artificial intelligence program simulating a Human personality, or an artificially intelligent robot (like Data from *Star Trek: The Next Generation*)? Beyond the simple question of definition, the relations of Humans to near-Humans also leads to interesting questions. If a sentient robot is programmed to serve Humans, is that slavery?

EXPLORATION

Boldly going where nobody has gone before has one of the central themes of Science Fiction ever since Jules Verne wrote his "Voyages Extraordinaires." A campaign with an exploration theme constantly involves the heroes with new-found worlds and species. Its focus is on understanding aliens, solving science puzzles, and learning about the world... and about one's self.

POWER

Plato's dialogue *The Republic* can be considered a very early Science Fiction story, and concerns itself with an ideal state and how it might be governed. A campaign with the theme of power can ask all kinds of juicy questions. What are the proper uses of power? What should people do when power is used improperly? Does power corrupt? What forms of power are there? Beware: Plato asked these same questions and people have been finding answers to them for thousands of years.

TECHNOLOGY

Possibly the central theme of all Science Fiction is the question of technology, its proper role/place in society, and Man's relationship to it. Is it a positive force, freeing people from drudgery and hardship — or is it destructive and contrary to Nature? How can people enjoy the benefits while controlling the dangers?

This theme is particularly appropriate for Star Hero games, since, as noted on page 188, technology can cause problems in roleplaying campaigns as well. A clever GM might dovetail the exploration of the theme of technology with his solutions to the in-game problems it causes.

"It is at the heart of our nature — to feel pain... and joy... it is an essential part of what makes us what we are."

—Captain Jean-Luc Picard tries to explain Humanity to an alien in the *Star Trek: The Next Generation* episode "The Bonding"

CAMPAIGN TYPES

After, or at the same time as, choosing a theme, GMs need to decide on the type of campaign they want to run. Often one decision leads to another; a Military Science Fiction game probably focuses on the power and/or technology themes, not on exploration or being Human.

Subgenre

Chapter One describes various Science Fiction subgenres and crossovers. The first consideration for a GM deciding on the type of Star Hero campaign he wants to run is which subgenre his campaign belongs to. Each decision has benefits and drawbacks; keeping these in mind as you create a campaign should let you maximize the former, and minimize the latter.

CYBERPUNK

Although not as popular now as it was in the Eighties and early Nineties, the Cyberpunk subgenre still retains a lot of appeal for many gamers. By reflecting, often darkly, a world based on our own — one where the computer, information, and technological revolutions of the past quarter-century have continued, sometimes unchecked by ethical considerations — it allows GMs and players to explore concepts and themes derived from modern-day concerns, but sufficiently removed from them so that no one becomes too uncomfortable.

The benefit to a Cyber Hero campaign is that very familiarity. To establish a good, plausible Cyberpunk setting, the GM need only spend a few hours researching technology trends and futurological speculation, add a dash of the fantastic (if desired), and mix in some of the well-known features of the genre (cyberware, the Cybrnet, super-powerful megacorporations, urban dystopia). The trick, in many cases, is to find a way to make the setting/campaign unique, rather than a warmed-over copy of what the GM read in a few novels.

The drawback to many Cyberpunk games is getting the PCs to act like *heroes*. The subgenre lends itself to characters who are amoral and selfish, who care only about their own comforts and wallets. Many, if not most, of the characters depicted in Cyberpunk stories are outright criminals at worst, violent urban survivalists at best. That works for a novel or movie, and it can even work for some roleplaying games. But generally, RPGs work best if the characters are heroes and act like it. Convincing them to stick to their principles as well as their guns may challenge even the most creative GM.

For more on Cyberpunk campaigns, please see *Cyber Hero*.

EARTHBOUND SCIENCE FICTION

Earthbound Science Fiction is an unusual choice for a Star Hero campaign, since most GMs and players prefer star-spanning adventure. But its benefits — including a setting well-known to everyone involved, yet containing the possibility of mystery, discovery, and excitement — do appeal to some gamers. If he sets the game in the Victorian or Pulp era, the GM can minimize the familiarity aspect by plunging the players into a time and a culture that isn't the same as what they know from personal experience.

The drawback to this subgenre is, of course, that the PCs are stuck on Earth. That means there's a whole universe of adventure out there they can't become involved in. The GM can, of course, bring aliens and other standard Science Fiction elements to Earth, but sooner or later that often begins to strain credibility. Make sure all the players are on board with the idea of an Earthbound campaign before you decide to run one.

HARD SCIENCE FICTION

True Hard Science Fiction is a difficult subgenre for Star Hero gaming, because its stories depend on rigorous scientific accuracy and extensive scientific knowledge. The GM and players all have to be conversant in the hard sciences, and able to use their scientific and technical knowledge as part of the campaign. Otherwise, the game breaks down into an unending series of Skill Rolls, which isn't much fun for anyone involved. It's sometimes possible to get around this difficulty by veering ever-so-slightly toward Space Opera. This works particularly well if the GM invents some hard pseudo-scientific principles the players can learn about and exploit (like "subspace" in *Star Trek*, which provides a convenient rubber science explanation for many types of technology, but generally behaves in scientifically predictable ways).

To make a Hard Science Fiction campaign function properly, the GM has to do a lot of work to justify the technology, alien species, psionic powers, and anything else he wants to use. He has to have a scientifically plausible explanation for why they exist and what they can do — and the players have to buy into his explanations. It's no fun for anyone if the game constantly breaks down into arguments over whether the Shreenar could "really" survive by photosynthesis alone.

LOW SCIENCE FICTION

Low Science Fiction suffers from many of the same drawbacks as Earthbound Science Fiction. It takes the most common and readily-identifiable element of Science Fiction — highly advanced technology — and tosses it away. To many gamers, if they can't have FTL starships, energy swords, blaster pistols, and bumbling robot servants, Science Fiction just isn't much fun. Something else about the campaign, be it the setting, the storyline, or the theme, has to interest them so the GM can draw them into the game and get them involved.



On the other hand, the low-tech nature of a Low Science Fiction game has some distinct benefits. The GM has to spend less time preparing extensive lists of equipment, and the players don't have to take as long to outfit their characters. The problems high technology causes in many Star Hero campaigns diminish in Low Science Fiction; the PCs don't have access to planet-busting weapons or teleporters, so they can't cause difficulties with them.

MILITARY SCIENCE FICTION

Military Science Fiction is a popular subgenre for Star Hero campaigns; the excitement and drama of war (from a literary perspective) mixes well with the excitement and drama of outer space, FTL travel, and weapons that *really* give the words “mass destruction” meaning. Players who enjoy tactical problem-solving have a field day as they try to exploit (or counteract) teleportation technology, FTL kinetic weapons, and combat mechs; they can spend hours of game time gleefully orchestrating planetary invasions or establishing a defense perimeter of automated weapons platforms.

The drawback to Military Science Fiction is its singular focus on matters military. A Space Opera or Hard Science Fiction campaign might concentrate on, say, exploration, but it could dip into trading, espionage, or even military adventure on occasion. A Military Science Fiction campaign, on the other hand, usually sticks to invasions, raids, battles, and the like. The steady diet of gunfights and commando operations may soon lose its attraction if the GM doesn't find ways to mix in new elements. For example, after a while, maybe a Military Science Fiction campaign shifts from outright warfare to more of a Cold War/low-intensity conflict sort of situation, with the PCs acting more as spies and “special forces” operatives than ordinary soldiers.

PLANETARY ROMANCE

Planetary Romance campaigns offer many of the benefits of Earthbound Science Fiction without many of the drawbacks. They take place on a world other than Earth, which means the well-known elements of high technology and space travel (and all they imply) have to exist. It also means the PCs can meet aliens and explore weird alien landscapes; they're not limited to the familiar fields of Earth. As Larry Niven's *Ringworld* and its sequels illustrate, a Planetary Romance can easily involve dozens of alien species.

But some of the drawbacks remain. Even on a “planet” as big as a ringworld or Dyson sphere, the PCs are still limited to just one world, and as a result they may feel trapped or artificially restricted. And because the campaign focuses on this one world, the GM has to develop it in detail. In an Earthbound campaign, he can rely on the players' common knowledge; he doesn't have to tell them what continents exist and where Europe is. But for a Planetary Romance, he has to create

all the details (including the “deep mystery” backstory about who created the place, if appropriate), *and* communicate that information to the players. A GM who wants to run a Planetary Romance should develop a plan for dealing with this problem, lest he drown in details.

POST-APOCALYPTIC

The world after disaster has struck makes an interesting setting for most Star Hero gamers. Not only do the PCs have to cope with the many problems disaster has wrought, but they get to embark on the noble and heroic effort to re-build civilization. In some games, the GM can couple this with the excitement of discovering there was once a better world, and what happened to it.

The benefit to choosing post-apocalypse as a campaign setting is that it's a wide-open field in many ways. If he wants to, the GM can introduce all sorts of fun, weird stuff — mutants, leftover technology run amok, Fantasy Hero-like melee combats, dieselpunk car chases, perhaps even the return of magic to the world (as in the *Thundarr The Barbarian* cartoon) — but still keep many classic Science Fiction tropes reasonably intact (cyberware, superintelligent computers, and so on), even if only in isolated pockets or long-lost ruins. The drawback is that he also usually has to abandon many of the other tropes so beloved of gamers — things like starships, interstellar travel, and a plethora of alien species. In many ways, Post-Apocalyptic campaigns are as much Fantasy Hero as Star Hero, and that's not to every gamer's taste.

For more on Post-Apocalyptic campaigns, please see *Post-Apocalyptic Hero*.

RETRO-SCIENCE FICTION

Retro-Science Fiction — or Pulp Science Fiction, to use its most common incarnation for gaming purposes — has a wonderful, lush feel that appeals to many GMs and players. It harks back to an earlier era of storytelling, where adventure and romance (in the classical sense) were the hallmarks of the day, and all but the lightest emphasis on scientific accuracy or plausible events was unnecessary. For many gamers, that lets them concentrate on roleplaying and having fun, without having to worry about the baggage Science Fiction sometimes brings with it.

But that asset is also the subgenre's biggest drawback. In today's modern, educated, scientifically literate, jaded world, many gamers find it difficult to put aside their knowledge and beliefs to embrace the Pulp Science Fiction aesthetic. These days, we *know* Mars doesn't have canals, and that Venus isn't a swampy jungle world. We *know* that some types of alien life, space travel, and technology are scientifically implausible. We *know*, at least from the perspective of cynicism, that the Pulp themes of “good always wins” and “noble intentions and a strong right hook solve everything,” aren't true. Awareness of these “realities” may make it hard for the GM to pull off a Pulp Science Fiction campaign the way he wants to.



SPACE OPERA

Space Opera is by far the most popular subgenre for Star Hero gaming. After all, the best-known and most influential Science Fiction properties — *Star Trek*, *Star Wars*, *Babylon 5*, and others — all qualify as Space Opera to one degree or another. It's only natural for gamers to want to emulate what attracted them to the genre in the first place.

The advantage to Space Opera is that it offers the entire spectrum of Science Fiction adventure. A Space Opera GM can do pretty much *anything* the genre encompasses. The advanced technology and galactic scope of the setting provide unlimited possibilities for scenarios, characters, and excitement. The GM can even temporarily convert the campaign to another subgenre by, for example, stranding the characters in a low-tech situation or plunging the setting into an interstellar war.

On the other hand, the wide-open nature of Space Opera may lead to a lack of focus. The players need to have a firm idea of what the campaign's about, and that means the GM does, too. Similarly, the readily-available technology may cause all the “tech overshadowing character” problems discussed elsewhere in this book. To keep a Space Opera campaign exciting and flourishing, the GM definitely needs to have a theme, or at least a storyline, in mind when he begins, and to stick with it as the game progresses.

TIME TRAVEL

Time travel campaigns have a broad appeal for many gamers, particularly those interested in history. They offer a wonderful chance to play “what if?”, combined with the tension and drama of having to preserve the “true” timeline and avoid being stranded in the wrong time-frame. However, they require a lot of work by the GM. To construct a plausible scenario set in, say, Elizabethan England, the GM has to research that period and gain a good “feel” for it. The game works even better if the players do the same; it's difficult to play the part of a time-cop sent back to make sure the colonists win the American Revolution if you don't know at least a *little* something about the Revolutionary period. But at the same time, the players and the GM have to avoid bogging the campaign down in arguments about what “really” would have happened if Hitler had gone into the Middle East instead of Russia, or if Genghis Khan hadn't been born. Research and realism aside, to some extent everyone involved in the game has to willingly suspend his disbelief in the interest of telling a fun story.

For more on Post-Apocalyptic campaigns, please see *Time Travel Hero*.

UTOPIA/DYSTOPIA

This subgenre is the least popular for Star Hero gaming; utopias are too perfect to offer many adventure opportunities and dystopias are too depressing (except perhaps as places to visit in an otherwise ordinary campaign). A few campaigns structure themselves around improving (or overthrowing) a dystopian society, but even that's fairly rare — rebellions against galactic tyrants seem to attract gamers more. A GM who wants to run a successful Utopia/Dystopia campaign has to offer something more than just the (im)perfect nature of the setting. Given their stark qualities, utopias and dystopias often make excellent backdrops for campaigns with themes such as “what are the proper uses of power?” or “the role of moral absolutism in society.”

Campaign Subject

A campaign can take place in any of the subgenres described above, but the campaign subject is also what the characters *do* — are they soldiers, thieves, policemen, traders, explorers, or something else? Campaign subject and campaign theme have a lot of overlap — if the theme is exploration, the characters should probably be explorers (even if reluctant ones).

BOLDLY GOING

“You keep wondering if man was meant to be out here. You keep wondering... and you keep signing on.”

—Captain Kirk acknowledges the fascination of space exploration to Joe Tormolen in the *Star Trek* episode “The Naked Time”

Campaigns centered on exploration and distant voyages are a natural choice. *Star Trek* and a host of imitators sent the crew off to encounter different problems and guest stars each week. Exploration doesn't even have to take place in outer space — *SeaQuest DSV* and its more obscure predecessor, *Voyage To The Bottom Of The Sea*, did the same thing in the oceans, and any number of Post-Apocalyptic settings involve bands of heroic adventurers roaming through the devastated landscape to see what's in the next ruined city.

Exploration campaigns are good because episodes tend to be self-contained: the crew arrives at a new planet or city or seabottom trench, they explore it, confront whatever threats or mysteries lurk within, and leave. At the very most, each major “episode” constitutes a story arc in the overall campaign. This structure can become a disadvantage if the players want to feel more connected to the setting, and they may start to wonder if every new planet holds some deadly puzzle. Sometimes the GM needs to throw them a curve ball — such as a roleplaying-oriented episode on an idyllic pleasure-planet.

CLOAK AND DAGGER

Espionage and covert operations have a long history in Science Fiction, and at times the border between Science Fiction and spy stories gets blurry indeed. An espionage-oriented *Star HERO* campaign can focus on actual intelligence-gathering and paramilitary operations, or on James Bond-style superspy adventures. Robert Heinlein's *Friday* and Eric Frank Russell's *Wasp*, among others, provide excellent examples of the possibilities of Science Fiction espionage.

Spy characters as a team are best if each player chooses a specialty — the Tech Guy, the Con Man, the Martial Artist, the Master of Disguise, and so forth. Science Fiction settings add the Hacker, the Psionic, and the Getaway Pilot. The introduction of alien species and ultra-technology can add even more dimensions to the party's composition.

The tone of an espionage campaign can vary greatly. If the emphasis is on spy-thriller chases and confrontations with master villains in their hidden headquarters, the tone is likely to be straightforward action-adventure. Grimmer stories emphasize the betrayal, paranoia, and moral compromises of the shadow war.

GALACTIC PATROL

The life of a military (or quasi-military) starship crew can draw from a variety of sources. If they're busy fighting pirates and waging war against rival empires, the GM can use all the tropes of sea adventure stories. If the crew are more like frontier marshals or cops on the beat, then the GM can lift ideas from Westerns or crime dramas. Combined with exploration, a Galactic Patrol campaign can be as much like *Star Trek* as the GMs and players desire.

Starship crews usually have to obey orders, which makes adventure hooks easy — “the Admiral says go check out the spacetime anomaly in Sector Twelve” — but may feel restrictive to players who want autonomy and resent being bossed around. Often, PCs who are part of a large military organization call in the cavalry early rather than dealing with threats themselves. You can prevent this by making them “the only ship in the quadrant” at the time, although they may start to wonder just where all those other ships are when danger appears. Another solution is to make the PCs a “special forces” outfit, one tasked with “impossible missions” and given a high degree of autonomy because of its members' skills and importance.

MAKING CRIME PAY

Shepherd Book: *Yes, I'd forgotten you're moonlighting as a criminal mastermind now. Got your next heist planned?*

Simon Tam: *No. But I'm thinking about growing a big black mustache. I'm a traditionalist.*

—from the *Firefly* episode “War Stories”

Science Fiction crime stories usually center on the more clever and technically adept kinds of criminals — skilled thieves, quick-witted con men, and high-tech assassins. Cyberpunk stories add the elite computer hacker, who's really just another kind of thief.

Criminal characters can be fairly noble Robin Hood types, only stealing from Evil Corporations or conning people who really deserve it. Or they can be genuine rotters; it's up to the players to decide, though most *Star Hero* games work better with heroic-minded PCs. Often criminals in Science Fiction get recruited into espionage and covert operations. That neatly sidesteps the ethical issues and allows the characters to do their stuff in exotic and dangerous locales. In an all-crooks campaign, Hunteds are almost mandatory, so daring crimes can alternate with daring escapes.

A potential problem GMs need to watch out for is the question of the Big Score. If the criminal heroes successfully steal the most valuable gem in the Galaxy, why do they need to commit crimes anymore? Why not sell it and settle down on some resort world to live off the proceeds? You can avoid this by having fences take a ruinous percentage of the loot, and occasionally skipping ahead to when the money starts to run out after months of riotous living.

MANHUNTERS

Maybe the characters would like to be the hunters for a change. Bounty hunters and other free-lance law enforcers are quite popular in Science Fiction (Mike Resnick has made a career out of writing Science Fiction bounty hunter novels). Bounty hunter campaigns allow for plenty of action and gunplay, but the heroes probably won't go to jail for it. Characters can be idealistic, mercenary, or no better than the people they chase. This kind of campaign fits well with a theme of Law and Justice.

But the life of a manhunter isn't trouble-free. Problems faced by bounty hunters include getting the target back to the hands of the Law, outwitting rivals intent on the same prize, and coping with unfriendly police and Space Patrol officers who don't like freelancers.

Gamemasters need to worry about adventure hooks — what if the heroes don't want to chase the villain you spent two days creating? What if they stick with easier prey? If the heroes are the best in the business, their fees will be steep, which leads to questions of how to get them away from managing their investment portfolios long enough to have adventures.



THE PIRATE LIFE

“There was a lot of trouble with space pirates before they were wiped out in the Dordellis wars, and the mega-freighters had to be equipped with the most fantastic defense shields known to Galactic science. They were real brutes of ships, and huge. In orbit round a planet they would eclipse the sun.”

—Ford Prefect relates some history to Arthur Dent in *The Hitchhiker’s Guide To The Galaxy*, by Douglas Adams

Space piracy is largely unrealistic and pulpish, but it’s also a lot of fun. It can be done with varying degrees of realism. The most realistic versions take into account the limitations of spaceships — you normally can’t grapple and board across millions of kilometers, so the pirates have to rely on threatening merchant ships with superior firepower to get them to power down long enough to board and rob. This encourages a fairly “gentlemanly” style of piracy, since the merchants won’t surrender if they know they’ll be killed.

Or you can toss realism to the winds of space and have pirates wearing frilly shirts waving swords as they fly aboard with maneuvering packs or teleport onto the quarter-deck for some furious swashbuckling. This kind of piracy requires spaceships with very short-range weapons, and drives that let the corsairs to catch up to their prey and haul alongside.

Whichever style you use, key tropes of space piracy are hidden treasures, pirates who are secretly something else, privateering (working as a pirate for some interstellar government by attacking only its enemy’s ships), rivalries with

other bandits, and roistering times ashore in a lawless free port. In Science Fiction, pirates often wind up joining the rebels against tyranny (there’s a historical precedent in Jean Lafitte), or serving as the ultimate deniable covert agents for a space intelligence agency.

REBELS

It is a period of civil war. Rebel spaceships, striking from a hidden base, have won their first victory against the evil Galactic Empire.

—from the opening text crawl in *Star Wars*

Long before *Star Wars*, heroic rebels in Science Fiction were overthrowing awful tyrannies and battling for freedom. Being part of a rebellion makes for a great campaign, because the organization can send heroes on missions when the GM needs an adventure hook, but a rag-tag rebel movement can’t always provide backup when the heroes are in trouble. Also, the ultimate triumph of Good over Evil proves most satisfying.

The classic Rebellion campaign draws on the American Revolution and the exploits of resistance fighters in occupied Europe — the heroes are good, the villains are bad, and moral ambiguity is kept to a minimum. Gamemasters can darken the tone by making some of the Rebels fanatics or psychopaths (as shown on *Babylon 5*), and showing that the tyranny has sincere supporters with valid reasons to prefer order over upheaval.

Rebel characters all are Hunted unless they maintain a Secret Identity and/or Deep Cover. Missions are a mix of military operations and espionage. Rebellions can often cross over well with criminal campaigns, or a band of rebels might go undercover as space merchants.

SCIENCE!

A campaign covering the adventures of a group of scientists may not sound too exciting at first — analyzing data and filling out grant proposals? But this is Science Fiction after all, and sufficiently adventurous scientists do get out of the lab sometime.

Archaeology and paleontology have lots of adventure potential, especially when the characters are digging up remains of alien civilizations. Often there are powerful artifacts or lost technologies waiting to be found — and dangerous rivals or villains trying to get them. Most long-running Star Hero campaigns feature an archaeology-oriented scenario or two at some point.

Characters may need biologists (including, broadly speaking, doctors) to solve scientific puzzles on alien worlds, cope with devastating plagues, or go through harrowing adventures to locate a rare life form. In Fifties-style Retro-Science Fiction, biologists are often the first ones to discover alien invaders or atom-spawned monsters. Physical scientists get to cope with spacetime anomalies, try to come up with countermeasures to alien superweapons, and test out new stardrives or power sources with unforeseen side effects.

Even historians and linguists may get into the act if time travel is available. Researchers studying the past might find themselves dealing with time crooks, undoing accidental changes to history, or simply caught in the middle of ancient battles and atrocities.

Scientific campaigns require both GMs and players interested in solving scientific puzzles, and usually involve a fair amount of background research to ensure accuracy. They mesh well with exploration campaigns. A big potential problem is that the pace can get glacially slow when the GM has to present a lot of information. Handouts or e-mails can move a lot of “infodumps” to out-of-game time.

“Tell you, Zoe, we get a mechanic, get her up and runnin’ again, hire a good pilot, maybe a cook. Live like real people. Small crew, them as feel the need to be free, take jobs as they come. Ain’t never have to be under the heel of nobody ever again. No matter how long the arm of the Alliance might get, we’ll just get ourselves a little further.”

—Captain Malcolm Reynolds dreams of living a good life in the *Firefly* episode “Out Of Gas”

STAR TRADERS

A classic standby in both written Science Fiction and Science Fiction roleplaying is the continuing exploits of a merchant starship crew as they try to earn a (mostly) honest living. Similar campaigns can describe space traders operating just within the Solar System, or even merchants in a Post-Apocalyptic landscape. Power levels tend to be low — the heroes are working stiffs trying to make a living, not save the Universe. The fact that they may wind up in a position to save the Universe anyway just makes it more entertaining.

Merchant campaigns make heavy use of the trade rules in Chapter Six (or a similar set of rules devised by the GM), and require GMs to do their homework and set up trade routes in a sector. Problems can arise when the players are more interested in “wargaming” the trade rules to get rich rather than having adventures, so the GM should feel free to introduce elements of economic unpredictability (depressions and recessions, the rising and passing of fads, ruinous taxes/tariffs, and so forth) if necessary.

You don’t have to limit a star traders campaign to commercial matters alone. Heroes in a mercantile campaign can often moonlight as rebels, spies, bounty hunters, or even pirates!

STARSHIP TROOPERS

Military campaigns involve characters serving in the same unit — usually a squad or platoon. Adventures are naturally heavy on combat. A favorite subtrope is the mercenary campaign, which allows a lot more flexibility and action than most national armies face. Working as mercenaries also allows the heroes to face unexpectedly powerful opposition with no support because their patron was too cheap to hire any.

Since full-scale battles using even present-day weapons are incredibly destructive, military games often chronicle the exploits of specialized commando units. This may shade into espionage and covert operations if the troops fight secret battles, or into law enforcement if they oppose crime gangs or terrorists.

Military campaigns have several advantages — the heroes go where they’re ordered and are certain of action when they get there. Players may start wishing for variety (which the GM can provide with “R&R” trips or temporary assignments). The emphasis on combat means players who like set-piece battles will have fun and those who don’t will loathe this kind of campaign.

TIME POLICE

As outlined in Chapter Nine, a Time Police campaign combines the fun of time travel with the advantages of a space patrol or law enforcement campaign structure. The heroes still get to visit different times and cope with both historical perils and the meddling of other time travelers, but this way there’s an agency back home to send them out on missions and control what gear they take along.



SETTINGS

“We found a new solar system — dozens of planets and hundreds of moons, each one terraformed, a process taking decades, to support human life, to be new Earths. The central planets formed the Alliance. Ruled by an interplanetary parliament, the Alliance was a beacon of civilization. The savage outer planets were not so enlightened and refused Alliance control. The war was devastating. But the Alliance’s victory over the independents ensured a safer universe, and now everyone can enjoy the comfort and enlightenment of true civilization.”

—from the introduction of the movie *Serenity*

The setting is a key ingredient in Science Fiction, which is why a major portion of this book talks about creating realistic and interesting settings. An intriguing setting has saved any number of mediocre novels, and can turn an otherwise average Star Hero campaign into one players will enjoy for years.

SCALE

Scale defines the size of the stage for the campaign. In a Cyberpunk setting, the characters may do all their adventuring in a single large city, while Space Opera heroes may make intergalactic voyages on a regular basis. Every level of campaign scale has its own advantages and disadvantages.

Small-scale settings offer the advantage of intimacy. You can develop a small locale (a city,

a colony, a space station) in great detail. You may even have names and character notes, if not character sheets, for everyone who lives there (or at least every person of importance). The PCs are more likely to be “big fish” in a small-scale campaign, and their activities can have visible effects. On the other hand, the characters (or their players) may get bored with such limited surroundings. They may want to get away from the consequences of failure. They may seek more challenging foes.

Larger-scale settings — a planet, say — offer considerably more potential for adventure and travel. They may have exotic societies and multiple species. Gamemasters shouldn’t underestimate the gaming potential of a single planet: consider that every single person in Human history (except a few astronauts) has lived all of his life on Earth. Any alien world worth setting a campaign on is at least as varied and interesting as Earth is. Obviously, no GM can envision a whole planet in as much detail as a city or starbase, so if you want to create a planet as the focus for your game, concentrate on developing the things that affect the PCs: important states and organizations, major species, the environment, the actual places the heroes visit, and strange or unusual things that might form the basis for scenarios.

Multiplanet campaigns allow characters to adventure in radically different environments — airless worlds, low and high gravity, strange atmospheres, and all the other parameters discussed in the *Environment* section (page 305). They also allow for more exploration, greater interaction with alien beings, and a wider range of societies.

The heroes are likely to be less important in the grand scheme of things (about as important as individuals in the modern world). Initially, you need only describe the components of the setting in general terms (physical parameters and the rough outlines of society for each world). As the heroes travel about, you can bring individual worlds and places into the spotlight and deck them out with more detail and depth. A multi-world campaign may be restricted to a single star system, or can cover several systems.

Finally, a truly star-spanning campaign lets the heroes visit just about any conceivable setting. There can be dozens or hundreds of alien species, variant Human races, and artificial life forms. Characters can play tourist in an infinite number of societies and cultures. The chief problem is that it's easy to get lost in the crowd when the universe has trillions of inhabitants. Only exceedingly powerful characters can stand out and make a difference. (Of course, many characters may not want to stand out and make a difference, and are quite content to have adventures and gain profits in obscurity.)

Of course, all these scales may co-exist in the same campaign! Characters start out in a relatively small setting — a frontier colony, say — then explore their planet and become familiar with it, then venture to other worlds, and at last make their way across the stars. The expanding scale matches their increasing experience and power. Caveat: once the players get used to adventuring on a given scale, it's very hard to shrink things down again. If the characters have been visiting dozens of planets, an extended period stuck on one world may make the players bored and restless, even if once their characters were limited to a single town.

The technology level in the campaign significantly affects the scale. If space travel is as difficult as it is for Humans in the early twenty-first century, visits to other worlds will be rare, and characters will tend to spend a long time at each place they visit. If it's as easy as making an airplane trip, the heroes can zip off to another planet at the drop of a space helmet. You can control this somewhat by deciding how accessible the technology is: if star travel is easy and quick, but the Imperial Interstellar Transport Authority controls all the ships, the characters may still have trouble getting around.

Decisions about the number of stars with planets and the frequency of habitable worlds also help define the scale. If there are only six planets in the Galaxy where Humans can live, then as far as the PCs are concerned, the scale is roughly the same as a single solar system setting. They may be able to cover immense distances at a bound, but there aren't that many places to go. Conversely, a campaign set in a "Dysonized" star system with thousands of space habitats as big as countries can have the feel of a wide-ranging interstellar campaign.

INTELLIGENT BEINGS

Once the scale of the stage is determined, the GM can start to people it with actors. In this case, the actors are the people the characters are likely to meet: the species and societies which exist in the campaign. The range of available actors depends on the scale. A wide-ranging campaign will probably have great diversity, while a narrowly-focused setting probably won't. This isn't a hard and fast rule; Isaac Asimov's *Foundation* series featured a Galactic-scale setting with no aliens at all, while a space station like the ones on *Babylon 5* or *Star Trek: Deep Space Nine* can house all sorts of extraterrestrials in latex makeup.

As mentioned earlier in this book, each alien species should have a role in the campaign, although this is really true only for the ones that are important and developed in detail. The GM can always throw in some "spear carrier" aliens to add a little exotic color to crowd scenes without inventing a whole civilization for them.

MAJOR POWERS

These are the states or organizations which define the campaign's political and social landscape. Their size depends on the overall scale: major powers in a single-city Cyberpunk game are the city government, local crime gangs, the PCs' primary competitors and enemies, a few megacorporations, and maybe the national government. These probably wouldn't even register on the radar of a Space Opera game, in which the major powers are things like interstellar empires and entire species. For each major power, you should at least have an idea of what its goals are, how it interacts with other powers, and what role it can play in the campaign.

Example: *In Jason's Space Opera game, the major powers are the Terran Alliance, the Rim League, the Machine Civilization, and the Psionic Guild. The Alliance wants peace and free trade because the Terrans have a booming economy. The Rim League is a union of minor starfaring races, worried about being swallowed up by the other big powers and fearful of raids by creatures from intergalactic space. The Machine Civilization, a very fast-growing species of intelligent robots, worries about "unpredictable biological units," but considers war irrational and risky. The Psionics want to unify all the organic races into a single mass mind, the "Galactic Mentality." Given those goals, one can see that the Terrans and the Rim League cooperate to limit the expansion of the Machine Civilization, but probably fight like weasels over things like trading rights. The Psionics shift allegiance between the two to gain leverage and influence. The Machines may do the same to prevent the Terrans and the Rim from becoming completely Psionic-dominated.*

RUNNING THE GAME



The GM's job doesn't end when he creates the campaign and develops the setting. Quite the reverse: now he has to actually run the games while his players enjoy what he has created... and help him flesh out the shared fictional universe.

ADVENTURE STRUCTURE

There are two main approaches to adventure design: plotted and unplotted. In a plotted adventure, the GM has a specific story in mind, which the PCs follow to the climax. In an unplotted adventure, there is no plot, merely a situation; what happens is entirely the result of the PCs' actions. There are advantages and disadvantages to both methods.

PLOTTED ADVENTURES

Plotted adventures have the great advantage of a satisfying story structure. The action builds from the hook to the climax, encounters exist to provide tension or move the story along, and the heroes are at the center of events. You can use all the tricks developed by writers over the past three millennia: foreshadowing, suspense, conflict, and catharsis. You can borrow plots and plot ideas from a vast array of sources, from Shakespeare to Ed Wood. You can tailor the opposition to the characters' power level and personalities.

On the downside, plotted adventures are often too rigid in structure — the GM knows where he wants the story to go, and forces the heroes to go there. Players may feel they're being railroaded along, or that their actions don't really have an effect. If they suspect the GM will let them succeed anyway, all suspense is lost. Players often try to use "metagame thinking" to deduce the plot and figure out what their characters should do, rather than acting as their characters would behave in that situation.

To avoid the problem of "railroading," plan out several possible resolutions for the adventure (and for each major scene within the adventure) depending on what the characters do. If the story involves discovering an alien plot to sabotage a space station, the climax can be a battle with the saboteurs, an escape from the damaged station, or a last-ditch attempt to defuse the bomb. And, of course, no matter how many options you prepare,

be ready to abandon all of them when the players think up something that hadn't occurred to you; the most profound truth in gaming is "the players never do what you expect."

UNPLOTTED ADVENTURES

Unplotted adventures, by contrast, have no set storyline. The GM merely establishes a situation and lets the players determine the action. The situation can be dynamic or passive. In a dynamic situation, things happen and it's up to the players to cope with them — the Xenovores are attacking, the Empire is about to collapse, or the like. A passive situation is one in which things are stable (at least until the PCs show up) — pirates are preying on the shipping in one star system, the Empire is oppressing the telepaths, or a drifting starship holds a lost treasure. If there are villains, they follow whatever motives you wish to give them, rather than filling the role of Antagonist in a story. The Universe is there, running along on its own, and the PCs must make their own decisions about what to do and how to do it.

Unplotted adventures have the advantage of feeling realistic — after all, the real world doesn't neatly follow classical dramatic structure, and every person is an NPC to other people. They give the players a great deal of influence over the course of the adventure, and let them choose to do what they enjoy. If you've prepared the setting well, unplotted adventures are a good way to show off the scope and depth of your campaign universe.

But unplotted adventures have their own set of disadvantages. Often the action becomes just a series of petty crimes or treasure grabs. In a dynamic situation, the players may find it frustrating that they are at the mercy of events. You may get overwhelmed by the need to either create new encounters on the fly or prepare a vast amount of background and NPCs which may never get used. Finally, the structure of unplotted adventures can be unsatisfying — the heroes overcome the main opposition early and spend the rest of their time mopping up underlings, or they fail to acquire crucial information or weapons and end up outclassed at the climax.

Plotted and unplotted adventures aren't completely incompatible. Characters may start out in a seemingly unplotted situation, but encounter various hooks for stories.



Depending on which ones they decide to follow up, they can get involved in plotted stories. In the course of going through those story plots, they exist in an unplotted environment, so if they diverge from the story they don't wander off into "blank cubic meters."

Plotting

The most dependable basis for an adventure plot is the tried and true three-act structure, familiar from classic plays, comic books, films, and almost every other type of story. The first act is the adventure hook, in which the heroes become involved in the story and encounter initial obstacles. The second act presents more obstacles for the heroes to overcome (often with an intriguing twist or turn of events), and the third act is the climax and resolution of the story.

THE FIRST ACT: ADVENTURE HOOK

Adventure hooks come in various forms. The simplest is to have an NPC hire or order the heroes to do something. That's a standard hook for James Bond movies or *Star Trek* episodes. It's quick and gets the story moving. Alternately, someone can come to beg the heroes for help — if they're properly heroic, how can they resist? The actions of an enemy can draw the heroes into an adventure whether or not they want to. Many comic books begin this way — a supervillain shows up and starts blasting away at the heroes, and away the story goes. The risk of death concentrates one's attention very well.

Some adventure hooks are situational; almost any circumstance the PCs find themselves in can draw them into an adventure. Being out of money means the heroes need to find a way to earn some cash, so they answer a mysterious ad. An asteroid hurtling toward their planet means someone needs to stop it. The heroes are caught in the crossfire when two rival gangs battle for control of the city. Ready, set, go!

Finally, objects often serve as adventure hooks. A cryptic clue or message can draw the heroes into danger; Alfred Hitchcock loved that method in his films. Another useful Hitchcock hook is "The MacGuffin." A MacGuffin is an object of value or importance to someone. If the heroes have the MacGuffin (or if someone thinks they have it), then all sorts of trouble results from other people trying to buy, steal, or destroy it. In the early part of the film *Star Wars*, R2-D2 and the message/data he carried functioned as a sort of MacGuffin.

Sometimes the adventure hook is not the same as the ultimate goal of the adventure itself. Many times the heroes get involved because they think they understand what's going on, and then learn better and must change their goals as a result of events in the story. As an example, suppose a wealthy patron hires a party of mercenaries to raid a remote outpost. The hook is their mercenary contract. But after a successful raid, their transport malfunctions, and the characters have to travel across thousands of miles of desert to reach safety. Suddenly, the goal is no longer accomplishing the contract, but simple survival. After they return to base, they discover their transport was actually sabotaged, so now their goal is to solve the mystery of who did it and why.

THE SECOND ACT: OBSTACLES

The second act of an adventure focuses on obstacles the heroes must overcome. Obstacles are many and various, but fall into three main categories.

FOES

The first are actual *foes* — people or things specifically trying to make the heroes fail, or do them harm. If the foe wants to kill the heroes or stop them from accomplishing their goal, then he's a villain. If he merely wants to beat them to the goal, or surpass their accomplishments, he's a rival. Finally, there are adversaries — people whose goals are opposed to the PCs' plans even if they aren't aware of them. (In this context, *HERO System* Hunteds can qualify as either adversaries or villains, but Rivals are usually rivals.) If the heroes are trying to get a vaccine across post-apocalyptic North America, villains would be those who don't want the vaccine to reach its destination, rivals would be those who want to beat the party across the continent and thereby win the reward, and adversaries would be the mutant gangs who don't know about any vaccine but do know they want to steal the party's fancy all-terrain vehicle.

At times friends can be foes, if they don't agree with the goal the heroes are pursuing, or have been duped into believing the heroes are a danger. A friend may even betray the PCs, like Dr. Yueh in *Dune*. Sometimes friends are correct, and it's the heroes who've been duped.

FEATURES OF THE SETTING

The second type of obstacles the heroes must face are *features of the setting*, which would exist regardless of the heroes' actions. They include natural obstacles and mysteries.

Natural obstacles are things like hostile weather, sheer distance, dangerous terrain, hungry animals, deadly radiation, and the like. In addition to nature, there is society — laws, regulations, restrictions, social customs, prejudices, and the like. Obviously, natural obstacles are more important in uncivilized areas, while social barriers come into play in populated settings.

Puzzles and mysteries are sometimes features of the setting and sometimes the work of the party's opponents, but in either case make significant and intriguing obstacles. A mystery can either be something the heroes must solve to continue toward the goal, or it can be the key to the goal itself. In situations with changing goals, solving a mystery may be what finally points the heroes at their ultimate objective. The common feature of all mysteries is that they must be solved by thinking rather than force (although sometimes the solution involves a particular use of force). In Science Fiction, an especially important kind of mystery is the scientific puzzle, which turns on an interesting application of natural laws. Gamemasters creating

scientific puzzles can base them on real science or rubber science peculiar to the campaign setting, but it's extremely important to make the puzzle fair and logical, since ultimately it's the players who are going to be solving it. An unfair puzzle just makes people angry.

INTERNAL OBSTACLES

A final kind of obstacle lies within the heroes themselves — *internal obstacles*. Overcoming personal flaws, sacrificing something for the greater good, or learning a lesson are all obstacles, often more difficult to surmount than any horde of armed thugs or diabolical puzzle. In game terms, internal obstacles are often reflected by Complications such as Dependence, DNPC, Enraged/Berserk, Psychological Complication, and perhaps Rivalry. An honorable man who must break his word to achieve his goal faces an internal obstacle; so does a devious one who has to trust others to succeed. Tailoring the internal obstacles to the players is important: some players routinely sidestep their characters' Psychological Complications if they can manage an EGO Roll, while others want to remain true to the characters they created.

THE THIRD ACT: CLIMAX AND CONCLUSION

Once the characters have surpassed or neutralized all the obstacles, it's time for the climax of the story, in which the heroes confront the main villain or surmount the ultimate barrier to reach their goal and win the reward. The goal may not be the one they originally signed up to accomplish, but it is the one which brings an end to this particular adventure.

Climaxes should be, well, climactic. This is the time for the GM to "blow the budget" and strive to make everything as tense and impressive as possible. If the heroes are trying to accomplish a task to foil the villain's plans, put a time limit on them and create all kinds of distractions. If they're battling the villain directly, set the battle in an exotic or impressive location — atop a skyscraper in a storm, on the hull of a starship while everyone wears spacesuits, or inside the whirring machinery of a giant robot. Since this is a roleplaying game, an exciting setting is no more expensive or difficult to arrange than a boring one.

Even if it isn't full of physical action, the climax can be tense and dramatic. If the heroes have to prevent a war or persuade someone, set the scene right on the edge of disaster — the Emperor's battle fleet is only minutes away from attacking the heroes' home planet, and they have to convince him right now that the assassin who killed his wife was an alien shapeshifter disguised as one of the PCs. If someone is on trial, the crucial evidence should arrive during the final summing-up, after the opposition has presented seemingly iron-clad arguments against the heroes.

RANDOM PLOT GENERATOR

Sometimes GMs need a plot in a hurry, or maybe just some way to generate ideas to kickstart their imaginations. For those times, here's a Star Hero Random Plot Generator. Start by rolling a Hook, then determine the Goal and the Obstacles standing in the way. For more complex plots, roll for multiple Goals: the first is what the PCs think they are going to be doing, and then they discover what their real goal is later.

Hook (roll 1d6):

Roll (1d6)	Hook
1	Client (NPC who asks or begs the party to do something)
2	Clue (message or information which inspires the party to act)
3	Enemy (NPC or other threat which menaces the party)
4	MacGuffin (PCs acquire an object of great importance to someone)
5	Patron (NPC who hires or orders the party to do something)
6	Situation (Some event happens which requires the party to react)

Goal (roll 2d6):

1st Die	2nd Die	Goal
1-3	1	Acquire Something
1-3	2	Capture Someone
1-3	3	Defeat an Enemy
1-3	4	Destroy Something
1-3	5	Escape from a Place
1-3	6	Learn a Secret
4-6	1	Prevent a Disaster
4-6	2	Rescue a Captive
4-6	3	Solve a Mystery
4-6	4	Survive a Natural Environment
4-6	5	Travel to a Place
4-6	6	Win a Battle

Obstacles (roll 1d6 for the number of obstacles, then 1d6 to determine the nature of each):

Roll (1d6)	Obstacle
1	Adversary (someone whose goals bring him into conflict with the PCs)
2	Friend (a DNPC or someone normally friendly, opposed to the party for some reason)
3	Nature (hostile features of the setting, creatures, and so forth)
4	Rival (an existing rival or someone who wants to achieve the same goal ahead of the party)
5	Society (the authorities, the culture, laws, infrastructure, and so forth)
6	Villain (someone who specifically opposes the PCs)

Example: *Steve, the GM, needs a plot idea for an epic Space Opera adventure. He starts by rolling the Hook, and gets a 2: a Clue. For the Goal he decides to roll twice, and gets 5, 2: Rescue a Captive, and 4, 1: Prevent a Disaster. He rolls for the number of Obstacles and gets 3; the specific ones are 6: Villain, 1: Adversary, and 5: Society.*

Now Steve has to put these pieces together. The two goals work best in order — when the heroes rescue the captive, they learn of the disaster which must be averted. What sort of disaster is it? Since one of our obstacles is “Society,” that suggests a malfunction in some industrial plant or location under police protection. Steve decides it’s an antimatter-storage facility with a hidden design flaw. If the magnetic containment fails, the antimatter stockpile will detonate in a continent-shattering blast. The captive must be someone who would know of this flaw: an engineer or technician.

That in turn makes the nature of the villain obvious: someone who wants to conceal the design flaw. Steve decides the contractor who built the facility cut corners and embezzled money, and has kidnapped the engineer to prevent him from blowing the whistle.

Steve now assembles the plot. First, the heroes get a cryptic message sent by the captive engineer. They travel to the remote lab where the villain is keeping him prisoner, battle the corrupt contractor and his goons, and liberate the captive. They have accomplished their original goal — but now the engineer warns them about the antimatter facility, giving them a new and more urgent goal.

On the way to the antimatter depot, they are delayed by adversaries: a gang of crooks (maybe a PC’s Hunted) try to ambush and rob them. As they near the facility, the heroes discover the villain sent a warning, portraying them as rebels intent on stealing antimatter to make bombs. The police, the depot’s security forces, and the counterterrorist commandos are all on full alert to stop the party. Meanwhile the rescued engineer warns that the containment fields are breaking down faster than he had expected. The PCs must somehow evade the guards and enter the facility in time to eject the antimatter into space before the containment fields fail.



DEALING WITH DISCONNECTS

Many ideas which work perfectly well in fiction are less successful in roleplaying games. A game is not a movie or a book, and different rules apply. Science Fiction stories and settings come with a complete set of booby-traps and pitfalls waiting to snare unsuspecting GMs.

BUSINESS DIFFICULTIES

Jayne Cobb: *You save his gorram life, he still takes the cargo. Hwoon dahn.*

Captain Malcolm Reynolds: *He had to. Couldn't let us profit. Wouldn't be civilized.*

—not every deal works out for the best in the *Firefly* episode “Bushwhacked”

One favorite cliché of Science Fiction is the struggling merchant crew, flying its rustbucket starship from world to world, barely scraping by. In roleplaying games this kind of existence is hard to maintain: if the characters keep losing money or getting stiffed on deals, the players start to feel as though the GM is picking on them.

This problem often results from mismatched expectations regarding what a campaign featuring a bunch of interstellar traders is all about. To the GM this means “struggling merchant crew having adventures,” while the players may think it means “getting obscenely rich.” Making it clear the characters will just get by is one solution. Another possibility is to keep the bookkeeping “offstage,” either with an NPC as the crusty old merchant

captain, or else by simply telling the players “once again, you’re having money troubles” and letting it go at that. (Of course, if the players and GM all enjoy the minutiae of interstellar trade, the system presented in Chapter Six lets them play out running a speculative trade operation, with risks and benefits.)

CYBERSPACE

A key trope of Cyberpunk Science Fiction is the experience of “cyberspace.” Skilled hackers plug their consciousness directly into the computer network and go adventuring in a virtual environment. This is great fun for the GM and whoever’s playing the hacker character, but the other players may feel left out and bored. The same effect applies when a psionic explores some NPC’s dreamscape, or any time one character does something the others cannot participate in.

In a sense, this is a form of splitting the party (see below); as in that situation the solution is to either find a way to involve the others or to link events in cyberspace to the outside world. A hacker or netrunner may have semi-sentient “utility programs” to help him — let the other players take those roles temporarily. Or try to set up the situation to allow cross-cutting, so the party in the “real world” are fighting off Information Police goons while the netrunner is frantically trying to recover a key file. The film *The Matrix* features this kind of cross-cutting at the climax. Or the GM can somehow provide a method for *all* the characters to enter cyberspace — though the hacker character will clearly be the most powerful party member in there.

If those methods don't work, then perhaps the GM should "cut to the chase" — resolve the cyberspace session with a few quick die rolls and give the results. That keeps things rolling, but can be unsatisfying for the player who's created a computer hacker and wants to go into cyberspace with gun and camera. As a final recourse, the GM can break out extended solo sequences to run while the other players are off getting pizza, or do them between sessions via blue-booking or e-mail.

INFODUMPS

A problem faced both by writers of Science Fiction stories and GMs in Science Fiction role-playing adventures is how to explain the strange and complicated background without bringing things to a screeching halt. In stories, long expository passages are known as "infodumps," and working them into the narrative is a difficult task for writers.

One advantage a GM has over the author of fiction is that he can give the players handouts, but you shouldn't do this with gamers who aren't willing to spend the time to read them — many gamers don't really like having homework assignments. Another useful technique is to explain things as they come up, and not penalize players for being ignorant of the made-up game world — "You see an Imperial Security officer enter the bar, and you know Security frequently employs telepaths; what do you do?"

POSSESSION AND MIND CONTROL

Having characters fall victim to long-term mental domination (or be replaced by an identical duplicate, or succumb to a neuroparasite, or whatever) creates some practical problems for the GM and players. If the GM keeps it a secret from the player, then he must continually dictate the character's actions or demand die rolls to determine what the character can do. The players know something is up and react accordingly. ("Everyone in here for a planning session — except Bob's character!")

If the GM wants to bring the mind-controlled character's player into the secret, he is venturing into the tricky waters of group dynamics and individual personalities. Some players happily run their character as if under sinister mental control; others find subtle (or not-so-subtle) ways to give clues to the other players. Even if the player does go along, playing his character straight, the other players may view him as a "traitor" for keeping the secret from them.

In most cases, the easiest way to eliminate this problem is to ask all the players, at the beginning of the campaign or well in advance of the actual event, if they wouldn't mind a storyline like the ones described above. Of course, that means tipping your hand a little, but if everyone agrees, and if you do it far enough before you run the actual game, that shouldn't cause a problem. If too many players object too strongly to this sort of story, don't run it.

REALITY QUAKES

Time travel, reality-altering psi powers, and intrusions from parallel dimensions can all transform the nature of reality as Humans know it. That much is cool. But how can one portray this in a game? Since everything the players know about the game world comes from the GM, any changes or inconsistencies are likely to be taken as mistakes or "retroactive continuity" on his part. Often it's necessary to hit the players over the head with the fact that a change has taken place: "You look out of the viewport at the familiar skyline of Imperial City, and suddenly realize it isn't familiar at all. The looming spire of the Terran Security Bureau tower is gone, and so is the huge dome of the Residence. Other buildings stand where they did, and with shock you realize reality itself has changed!"

Another potential problem with reality shifts is that the players may not automatically want to change things back — at least not right away. They may want to spend time "playing tourist" in the new conditions. They almost inevitably will want to try to profit from the shift, in terms of knowledge and equipment if not actual money.

To cope with this problem, you need to structure "reality quakes" carefully. Plan the event so you can alert the PCs about what's happened without an obvious infodump. Arrange the circumstances so ontological profiteering becomes difficult or impossible — maybe the shift back to "normal reality" eliminates the powerful new government jobs the PCs acquired, or all the cool new equipment they got their hands on becomes highly unstable due to the reality-shift. And make sure the "revised" reality is definitely an undesirable alternative to the setting the PCs know and love (or at least tolerate).

RELATIONSHIPS

Heroes in fiction fall in love when the author tells them to. If it's important for Captain Kirk to become infatuated with a blue-skinned woman on another planet, then the good captain falls for her like a ton of bricks. Player Characters don't do that. Using die rolls to control a relationship doesn't work for anything more than a brief flirtation. This is a case where the personalities of individual players are important: some gamers happily dive into a doomed romance, while others view it all as mushy stuff that gets in the way of combat.

Genre conventions often include "typical" romance situations: Space Operas lend themselves to grand passions, love that endures beyond death, and a thoroughly romantic approach to romance. Planetary Romance stories follow an almost fairy-tale pattern: hero wins girl (occasionally heroine wins guy), and they live happily ever after until the villain abducts her in the sequel. Cyberpunk and Low Science Fiction have a much more cynical attitude, and abound in casual pickups, android prostitutes, kinky obsessions, and a very unromantic tone. Hard Science Fiction traditionally doesn't have much in the way of romance at all; after all, love's not very scientific.



It's a good idea to respect the genre conventions — would the Jedi Knights of *Star Wars* seem as heroic if they had a James Bond attitude about women?

Much depends on the personalities and maturity levels of the players. A mature or broad-minded group may have no trouble with a fairly explicit situation. Immature gamers may develop a terminal case of snickering when anything of the sort comes up in play. The simplest rule of thumb is to play to the lowest comfort level — if even one member of the group doesn't handle "adult" situations well, draw the curtain and leave all that "off-screen."

SPACE BATTLES

Space battles are always fun in movies and books, but often in roleplaying sessions they turn tedious, for several reasons. In books or movies the combat doesn't have to follow game rules. Everything is maximized for dramatic effect, and the author knows how it's going to come out. In a game, the players usually like to have some control over the outcome, which means you have to resolve the battle as an extended combat, with lots of die rolling and table-checking.

Another problem is that in a game session, one player tends to wind up controlling the ship. The other players either just watch passively, or do nothing but roll dice when ordered to. They can't really contribute ideas — and if they do, the battle gets even slower because every action has to be argued to death first. A related problem is the fact that one or two players (not characters, players) may have more "tactical smarts" than the others, making their characters the stars of the scene whether the characters themselves should know anything about interstellar battles.

So think carefully before including a space battle in your campaign. This is not to say that there shouldn't be space battles in your Star Hero adventures, but you should consider how to set them up and run them so they help the overall game instead of hindering it. Suit the style of battle to the preferences of the players. A bunch of gamers who love working out elaborate plans can come up with a "battle plan" which gets resolved as a contest of *Tactics* or *Combat Piloting Skills* against the enemy commander, with bonuses for a clever plan. Gamers who like combat up close and personal should face lots of boarding actions and Space Marine raids. Groups interested in storytelling and character interaction can simply have the battle described to them, with plenty of bluffing and posturing via viewscreen with the enemy.

SPLITTING THE PARTY

A common situation in all roleplaying is when the PC group has two things to do and the players decide to split up. In films and fiction it's easy to cut back and forth between two groups of characters, because fictional characters don't get bored waiting for their turn to do something. In roleplaying, the characters have players who get fidgety when they are "off camera."

This is especially problematic when one group's actions are a secret from the rest of the party, so the GM and some players are off in another room or passing notes.

The best way to deal with a split party situation is not to let it happen. If that's not possible, keep the separation as brief as you can. If one group's activities don't involve any conflict or roleplaying, summarize it briefly and keep the focus on the more interesting events encountered by the others. You can put aside secret exchanges that only involve a few players for later — unless the events are going to have an immediate effect, you and the players involved can resolve it after the others go home, or by e-mail. If a prolonged separation is unavoidable, the GM can let the other players control NPCs or even villains when their characters are off stage.

TIME TRAVEL

As mentioned in Chapter Nine, time travel creates some major headaches for GMs. In fiction, characters fated to do something obligingly do it, or else circumstances force them. Roleplaying PCs aren't under the "author's" control, and struggle against taking predestined actions. In fact, players often delight in resisting even the most trivial forms of predestination.

On the other hand, players also are quick to "work the system" and squeeze as much advantage out of time travel as they can. They try to have their future selves leave clues (or spare ammunition) in the past to help in the present. They often try to make big money by investing in the past or setting up bank accounts to accumulate millions in interest. They can't resist anachronistic technology — taking modern firepower into the past or stocking up at future gun shops.

You can short-circuit a lot of these potential problems by carefully defining how time travel and causality work, adjusting the mechanics of space and time to suit the tastes of your group. If players don't like predestination and hate to feel "railroaded" by a fixed timeline, set the rules for time travel to allow changing the future, or put them into an organization which prevents this kind of problem by fiat. If the Time Patrol won't let characters learn about their own future, the players can't feel bound by it.

An in-game organization is also a good way to prevent player abuse of time travel. Maybe the rules forbid carrying anachronistic technology, or else the Time Patrol issues a standard sidearm powerful enough to keep the players happy but not unbalance the game. Another method is to invoke some technobabble which forbids moving nonliving items back in time (as in the film *The Terminator*). Finally, the GM can just embrace it: let the players fool around getting wealthy in the past and loading up on future tech, then create adventures which focus on other matters. All the guns and money in the world won't help if the PCs have to arrange a romance between Abelard and Heloise, or track Jack the Ripper in the foggy streets of London.

TOO MUCH TECHNOLOGY

Unique to Science Fiction campaigns is the problem of technology — too much of it, or types that are too powerful. The *characters*, not their equipment, should be the most important thing in the campaign; they should solve problems themselves, rather than simply using a planet-breaker or neural control helmet to conveniently dispose of any difficulties they encounter. See the sidebar on page 188 for more on this subject.

COMPLICATIONS AND HOW TO USE THEM

Stories are about characters, and roleplaying game adventures are no exception. Characters, of course, have personalities — flaws and quirks and personal goals. In the *HERO System*, these are represented by the character's Complications, particularly Psychological Complications, Rivalries, and Hunteds. (Getting points for Complications is partly a way to give players an incentive for creating interesting and complex characters.) You use the Complications of your PCs to enrich the game in a number of ways. They can serve as plot hooks, distractions, sources of conflict, and ways to link the party together. And of course, all the motivations below may apply to villains just as well as heroes.

ACCIDENTAL CHANGE

As a plot hook, Accidental Change can suddenly put the heroes on the run when it reveals their true nature to a society that doesn't tolerate them. If something in the environment keeps triggering a character's change, the party may have to find a way to cure or prevent it. As a distraction or complication, Accidental Change is wonderful — in the middle of a delicate situation one of the character suddenly feels "the change" coming on, and everyone must scramble to cover for him.

If the character's alternate form is a secret to the other characters, Accidental Change can provide a source of conflict. The character's efforts to keep his true nature hidden lead to suspicion or mistaken assumptions, and if the secret gets out the other characters may suddenly have to decide where their loyalties lie.

Finally, if all the characters are subject to the same form of Accidental Change, it gives them a reason to adventure together. Perhaps they're searching for a cure for the mutagenic plague, or for the secret homeworld of the shapeshifter species, or for a planet where super-soldiers aren't feared by the normal population.

DEPENDENCE

"We're done for," he whispered at last. "Oxygen reserve's gone." ...

"With all possible economies," he said, "we can last about twenty days. That means we'll be ten days out of Venus when..." His voice trailed off into silence. ...

The oxygen would last two men for about twenty days, and Venus was thirty days away. One did not have to be a calculating prodigy to see at once that one man, and one man only, might yet live to walk the metal streets of Port Hesperus.

—disaster strikes a two-man freighter and leads to thoughts of murder in "Breaking Strain," by Arthur C. Clarke

If a character in an alien environment depends on something for survival, that typically counts as a Dependence. This most commonly occurs with respect to breathing gases — aliens who breathe water or methane have to carry the proper environment around with them when they interact with air-breathers such as Humans. You should define the default environment for the campaign (almost certainly the oxygen/nitrogen mix Humans breathe), and then let characters who can't survive in the default atmosphere without assistance take a Dependence (assuming they spend more than half of their in-game time in the default atmosphere).

The simplest way to use Dependence is as a plot hook is to confront the characters with a shortage of the vital substance. (In the immortal cartoon "Duck Dodgers in the 24½th Century," Daffy Duck sets out in search of Planet X because the Earth's supply of Illudium Phosdex — the shaving-cream atom — is alarmingly low.) There are few people more motivated than an astronaut who knows his oxygen supply is running out! More subtly, characters probably won't like it if some enemy gains control of the supply, giving him the power to cut them off at will. Finally, NPCs with a Dependence naturally turn to their heroic PC buddies when a shortage develops in something they require.

As a distraction during other events, a Dependence works in much the same way. Do the heroes chase after the bad guy, or detour to refill their oxygen tanks? Perhaps the villains anticipate them, and set up an ambush outside the airlock.

Characters can come into conflict because of Dependences. An addict may have trouble persuading his un-addicted companions that getting his fix of Nova Drug really is more important than stopping the Galactic Tyrant's latest scheme. Aliens may even have Dependences which the other characters find shocking or immoral. If your friend, an alien composed mainly of psionic energy, needs to engage in voyeuristic activities every day to maintain his composure, do you help him find victims?

As a way of connecting party members, a shared Dependence is an interesting and unusual possibility. The only oxygen-breathers on Venus will naturally work together to stop the terrorists who have taken over the only source of the gas, while in a gritty Cyberpunk setting the only dealer with a supply of Metacaine can ask some of his customers to do a little job for him.

DEPENDENT NPC

As a distraction from the main action, DNPCs are excellent. DNPCs are always reliable plot hooks, either because they've gotten into trouble or danger, or because someone has asked them for help in a difficult situation. Continuing villains with a grudge against the heroes naturally try to strike at vulnerable NPCs, or use them as the lure in a trap.

DNPCs work especially well as motivators in more realistic, low-powered campaigns. Saving the universe usually takes precedence over family matters, but an interstellar merchant or mercenary soldier may well decide to go on vacation with a loved one rather than undertake another mission this week. Troublesome DNPCs like animals or small children can wander off at inopportune times.

Within a group of heroes, conflicts over DNPCs can come up in several ways. The simplest is when the other party members don't appreciate one character taking time off to indulge a loved one, or don't want to risk their necks because some fool relative got into trouble. Things can get even more tense when two characters have DNPCs — if one hero wants to spend more time with his family, and another hero's loved one is in trouble, which situation takes precedence?

Finally, DNPCs give the GM a way to get characters together, because they increase the number of possible social relationships. A tough mercenary soldier may not know any scientists, but his little brother at the Academy knows plenty of professors in the science department — one of whom may be the doting uncle of an interstellar explorer who needs a little muscle for his next mission.

DISTINCTIVE FEATURES

As a plot hook, Distinctive Features can come into play through mistaken identity — a character hunted for a crime committed by his clone-sibling. Strange cultures on distant worlds may have prophecies or superstitions about someone with particular features (a real-life example is the explorer Cortez, who fit the description of the mythic Aztec figure Quetzalcoatl, causing confusion and uncertainty among the Aztec leaders).

During an adventure, Distinctive Features function as a distraction to the extent they make it hard for characters to disguise or hide themselves. Heroes who are particularly disturbing in appearance may have trouble when people react with fear or hostility. The heavily cyborged characters of many Cyberpunk settings face this problem:

on the street their chrome limbs and glittering claws look intimidating enough, but at a fancy corporate party they stand out like a beacon.

A character's Distinctive Feature could become a source of conflict within the party. This can range from the comic to the deadly serious. If a character has the Distinctive Feature "intense body odor," his comrades are going to get pretty sick of his company on a long space voyage. And if one of the party is the target of bigotry and hostility because of his looks, do the others stand up for him every time, or let it slide because they've got a job to do?

As a way to get the party together, Distinctive Features is only rarely useful. Characters who are already part of an organization may adopt a common badge or uniform, but that's an effect rather than a cause. Gamemasters could set up a weird adventure in which the characters are clones who are unaware of their origin until they notice how much alike they are.

ENRAGED/BERSERK

Using Enraged/Berserk to represent mental conditioning (see page 85) makes for an interesting plot hook: the character may want to find out who programmed him, or the other heroes may have to race against time to stop their friend from carrying out his programming.

More typical Enraged/Berserks may cause inter-party conflict, especially if the other characters don't share the Enraged character's prejudices, or even have conflicting opinions. If the guy who gets Enraged around Rigellians discovers his best pal has fallen in love with one, things will likely get interesting.

Using Enraged/Berserk to link party members is tricky, but possible. For example, characters with implanted programming may not be aware of it until they all are confronted with the same stimulus and find themselves turning into killing machines. When the dust clears, the characters could band together to learn the source of their mysterious compulsion.

HUNTED

The saga of a man (or woman, or alien, or android) on the run has a long history in fiction, and makes a natural plot hook. It also works in the other direction: the heroes can track a wily foe who continually evades them. The best Star Hero Hunter-Hunted situation is one allowing for frequent flight and escape, which requires proper design of both the PC and the Hunter. Star-traveling merchants can move to a different sector if the heat gets too close, but an office worker in a near-future city has much more trouble getting away. Similarly, a greedy bounty hunter can pursue a PC from planet to planet, whereas the Denebian Guard may not be able to leave its home system. If the campaign involves a lot of moving from world to world, you should not let characters choose Hunters who are restricted to a particular world or sector unless they return there often.



Even when the Hunters are not close on the heroes' trail, the simple fact of having to keep moving and keep hidden is a continuing distraction and source of conflict. Party members who aren't Hunted may resent having to live the life of fugitives to help a friend, and may even have genuine conflicts of loyalty between the desire to obey the law and the desire to help a comrade unjustly accused. If some characters in a game are bounty hunters or lawmen and others are Hunted, the PCs may eventually find themselves Hunting each other!

As the old adage has it, "the enemy of my enemy is my friend," and being chased by the same people is a good way to link the characters in a campaign. They may not like each other, and they may disagree over everything... but they know they have to work together to stay ahead of their common foe.

NEGATIVE REPUTATION

Negative Reputations are a natural source of distractions during other adventures. Just when the villains are getting away, the hero is deluged by a mob of angry parents who think he discriminates against alien children.

Negative Reputation turns into a source of character conflict when the individual's Negative Reputation doesn't match his real personality. Do his comrades become disillusioned when he turns out to be not nearly as much of a "ruthless mercenary" as they'd heard? What if he has a Negative Reputation as a "hotshot pilot" — even though he barely knows how to fly?

A Negative Reputation is a wonderful way to link characters together. It provides a pretext for completely unrelated individuals to get in touch

with each other. (Not unlike the way people in the real world get together.) After all, if one of the heroes has a Negative Reputation as a ruthless mercenary, anyone who needs a ruthless mercenary might contact him. On the other hand, a person known for cowardice, or for inadvertently causing immense collateral damage, won't be high on the calling list when there's a job to do; it may take some effort to convince the other PCs to let him join the group.

PHYSICAL COMPLICATION

Physical Complications in a Science Fiction setting have to be pretty severe, or pretty distinctive, to overcome advanced medicines, medical nanobots, and other high-tech methods of keeping bodies functioning properly. Typical ones, like Blindness or Missing One Limb, aren't applicable in most Star Hero settings; players have to be more imaginative than that. At the very least, they have to explain why, for example, doctors can't cure a character's blindness through implants or neurotechnology, as with Geordi La Forge on *Star Trek: The Next Generation*.

The search for some way to cure a hero's physical handicap can drive the plot of an adventure, as can the quest for revenge on whoever (or whatever) caused it. Within an adventure, the Physical Complications of the heroes can cause interesting problems to overcome. Although in fiction a character's Physical Complications can be a fertile source of dramatic conflict, this isn't true in roleplaying games. Since the player who designed the character wants him to have that Physical Complication, there isn't as much resentment or anger over being handicapped (unless the player is very good at roleplaying).

Heroes who share a common affliction may come together to search for a cure, or perhaps some handicapped rejects from a society of “perfect” Humans could depend on each other for help. A band of wounded military veterans might reunite for a final mission. Finally, the heroes may be given their common Physical Complication by whatever organization employs them: perhaps the Imperial Secret Police keep their undercover agents in line by implanting microscopic time bombs inside their brains. As long as the agents stay in the ISP’s good graces, the timer is reset during debriefing. Characters who defect have only weeks before they go boom. A group of ex-agents who know this certainly have a strong motivation to work together!

PSYCHOLOGICAL COMPLICATION

“Psychological Complication” is effectively just another word for “motivation.” To turn a Psychological Complication into a plot hook, simply put the character into a situation in which achieving his goal comes into conflict with his personality traits. This is, by the way, the quick and easy formula for most fiction of the past thousand years. Hamlet’s goal is revenge. His Psychological Complication is *Needs To Be Sure He’s Doing The Right Thing*. The result is a pile of bodies on the stage at the end of the play.

Things become even more interesting when one character has two Psychological Complications that conflict. For example, on *Star Trek: The Next Generation* and *Deep Space Nine*, Worf often experienced problems when his *Klingon Code Of Honor* conflicted with his *Devotion To Duty*. This forced him to evaluate his priorities, and sometimes to find clever ways out of dilemmas.

If the villain of the piece knows the heroes well enough, he can turn their Psychological Complications against them. If they are greedy for money, he may simply bribe them to look the other way while his nefarious plot goes ahead. If one of the PCs fears rats, the Ministry of Love can torture him by locking him in a rat-infested cell. If the heroes won’t use deadly force, their adversary will dare them to shoot him, then escape while they look on in frustration.

Even if overcoming the heroes’ Psychological Complications isn’t the main plot engine of the adventure, character traits can still distract PCs and create subplots. Again, simply create situations which set off the heroes’ Psychological Complications and enjoy the fun. Will the lecherous good guy interrupt his mission to cruise the singles bars? Will the devoutly religious hero attempt to observe his dietary laws on an alien planet?

Heroes with conflicting Psychological Complications can create lots of juicy roleplaying opportunities, although at times this may go over the line into “constant intra-party bickering.” A scenario that challenges the heroes to find a solution all of them can accept is entertaining; a scenario in which someone’s character has to violate his beliefs leaves at least one player unhappy.

Naturally, people with similar desires or beliefs work together well. Dedicated government agents may all share the *Patriotic or Loyal To The Agency* Psychological Limitations. A band of rebels would all have *Dedicated To Overthrowing The Empire*. If the heroes are all in love with the same person, they will naturally work together when that person is in jeopardy, but at the same time try desperately to undercut and outshine each other.

RIVALRY

Building an adventure on a Rivalry usually means coming up with a plan the Rival has to embarrass or harm the heroes, and then letting them either counter it or get themselves out of trouble. More subtly, a Rival’s plot could involve the heroes in something bigger, something the Rival didn’t know about, so that the two sides have to suspend their feud for a while until the greater menace is defeated.

Rivalries serve as a perennial source of distraction in an adventure. Bold fighter pilots may be battling the Galactic Tyrant’s space fleet, but sometimes that takes second place to outdoing one another in the squadron rankings. This kind of distraction becomes a plot element if the heroes are so busy sabotaging each other that the bad guy gets away.

Perhaps the best use of Rivalries is as a source of conflict and tension among the characters in a group. If the Rivals are both PCs, their dislike for each other will constantly be on display. It may be tempered by grudging respect, or it may be a genuine dislike limited only by the fact that they are on the same side. Characters who aren’t part of the Rivalry may be drawn into the conflict, or may stand apart, amused or disgusted.

Oddly, a Rivalry can be a way to get the characters together in the first place. Rivals will naturally keep tabs on each other, and if one is going off on a dangerous mission that offers the chance to win glory (or profit), the other has to tag along.

SOCIAL COMPLICATION

Social Complications can drive the plot, as a character from an oppressed background struggles for acceptance, or someone with a secret tries to keep it. The heroes don’t necessarily even have to be the ones with the Complication: Human characters can fight for alien rights.

If the characters aren’t trying to change the world, but simply have to live with a Social Complication, the GM can still use the Complication as a story element. How can alien characters convince the Human authorities that a Human is the one to blame for a series of crimes? Obviously they need to get some ironclad evidence themselves, and that’s where Our Heroes come in. Sometimes a Social Complication can even help the PCs — getting downtrodden aliens to talk is much easier when a character is a downtrodden alien himself.



Within a party of heroes, Social Complications can be a fertile source of interaction and conflict. An alien character may need to win the respect of his Human comrades, and later convince them that the injustices his people suffer are real and need correcting. A robot character may in fact be the property of another PC.

Social Complication, like Negative Reputation or Hunted, is a natural way to draw the heroes together. Characters subject to the same persecution come together for mutual protection. A duty to the same organization means superior officers can simply assign the characters to work together.

SUSCEPTIBILITY

The simplest way to use a Susceptibility as a plot hook is to put a character into an environment flooded with whatever he's Susceptible to, then create obstacles to make it hard for him to escape. Will he get away before he succumbs? The character in question can be one of the PCs, or an NPC they must rescue before time runs out. In the course of a larger adventure, encounters involving a character's Susceptibility make good scenes or distraction.

UNLUCK

Unluck as a plot hook is hard to pull off. Perhaps an NPC wants to find a way to "cure" his chronic bad fortune, and hires the party to accompany him on his quest (this can work even if there really is no cure for Unluck in the campaign). Unluck works better as a distraction — the super-competent PCs are plagued by accidents and misadventure despite their skills.

An Unlucky character in the party may well be a source of conflict (see the Biblical story of Jonah for an example). This can also be true of the players as well as the characters — gamers may well start to resent it when all their cool plans fail because of one character's Complication.

VULNERABILITY

Vulnerabilities don't make very good plot hooks, since they don't lend themselves well to the kind of "burning fuse" situation mentioned under Susceptibility. Unless someone's trying to find a cure for an artificial Vulnerability, they work better as an obstacle to overcome in play.

If a character's Vulnerability isn't well known, his reluctance when facing certain attacks may be interpreted as cowardice or treachery by his comrades. On the other hand, there's great potential for real heroism in the same situation — a Chiroptan braving a barrage of sonics to save his comrades, for instance.

THE STAR HERO ENVIRONMENT



Science Fiction lets characters travel to a wide variety of new environments, some of which pose unusual hazards. This section tells how to cope with unusual conditions peculiar to Science Fiction.

Albedo

Albedo refers to the percentage of light (or other electromagnetic radiation) the surface of an object (such as a moon, asteroid, or starship) reflects. The higher an object's albedo, the easier it is to see, since that makes it "brighter." On the other hand, in the dead black of space, an object with a low albedo may be so difficult to see that characters only detect it by colliding with it. An albedo of 1 indicates an object with perfect reflectivity (one that reflects all light falling upon it); an albedo of 0 indicates an object that absorbs all light falling upon it and reflects none. Earth's Moon, for example, has an overall albedo of about 0.12; Mars has an overall albedo of about 0.25. Gamemasters can use the accompanying sidebar to determine the PER Roll modifiers for detecting objects based on their albedos.

In some Science Fiction stories, such as Orson Scott Card's *Ender's Game*, space militaries deliberately keep the albedo of space stations and starships low, to minimize the enemy's ability to detect them. To simulate this, starships, space stations, and other such objects can buy Change Environment to impose penalties to see them. Alternately, GMs could have the object buy a Stealth roll and engage in Skill Versus Skill Contests with characters who try to perceive it.

ALBEDO TABLE

Albedo	PER Roll Modifier
0.81 to 1.0	+4
0.51 to 0.80	+2
0.31 to 0.50	-0
0.21 to 0.30	-2
0.11 to 0.20	-4
0.01 to 0.10	-6

Gravity

When physicists talk about an invisible energy field which permeates the universe and binds it together, they're talking about gravity. One of the weakest of the fundamental forces on a small scale, gravity becomes important when you have masses the size of planets and stars around.

GENERAL RULES

As discussed on page 238, the G force from gravity/acceleration is rated as 5 STR for 1 G, +5 STR for each +1 G thereafter. That rule provides a quick and easy way to evaluate the force of gravity/acceleration in most circumstances, and thus to set a guideline by which to determine how much extra STR a heavyworlder should have, the effects of increasing the artificial gravity on a space station, and so forth. If appropriate, a character should have to make STR Versus STR Rolls simply to move against the force of gravity. If he loses the contest, he can't move (or, at the GM's option, can only move 2m per Phase). That way, security forces can trap characters in "high gravity fields" and so forth.

Heavyworlders have +5 STR above what's needed for the gravity they normally live in to make these rolls easy for them (and to represent their relative STR versus characters accustomed to 1 G). In general, neither they nor other characters should have to roll to move in normal circumstances, or in any situation where the character's STR equals or exceeds the STR of gravity/acceleration.

ENCUMBRANCE

In heavy gravity, a character is not only encumbered by the things he carries, but by his own body. To determine encumbrance in high G, multiply the weight of equipment by the local gravity, then add an amount equal to the character's body weight times (local G - 1). So a 100-kilogram man with STR 10, carrying 10 kilograms of gear in a 1.5 G environment, would calculate his encumbrance as follows: 10 kg of gear times 1.5 G equals 15 kg of encumbrance from equipment. Increased body weight equals 100 kg times (1.5 - 1 = 0.5), or 50 kg. His total encumbrance is 65 kilograms, which means he takes a penalty of -3 to his DCV and DEX rolls, a -4m movement penalty, and burns 2 END per Turn just moving around.

SPACE DUST

Characters landing on worlds like the Moon or Mars may have a serious threat to contend with: dust. The lunar dust experienced by Apollo astronauts was so abrasive that it easily scratched lenses like sandpaper, and so fine that it seeped into space suits where it affected the skin. On one mission the dust scratched through three layers of boot material (similar to Kevlar). It appears to be similar to silica (quartz dust), which if breathed in has serious effects on the Human lung. Mars dust seems to be similar, but Mars has wind so it can also have dust storms. Characters without force-fields or similar rubber science protective gear had best be careful and learn to clean their space suits off thoroughly.

See also page 125 regarding the effects of kicking up dust while walking.



Also, as he soon realized, progress was helped quite a piece by the fact that on Jaimec his weight was down by most of twenty pounds while his luggage was reduced in the same proportion.

—James Mowry discovers a benefit of lower gravity in *Wasp*, by Eric Frank Russell

SOLAR SYSTEM GRAVITIES

Here are the gravities of major objects in Earth's solar system, where Earth's gravity = 1 G.

Object	Gravity
Asteroids	Negligible
Earth	1.00
Moon	0.16
Jupiter	2.60*
Europa	0.13
Ganymede	0.14
Mars	0.38
Deimos	Negligible
Phobos	Negligible
Mercury	0.37
Neptune	1.20*
Triton	0.76
Pluto	0.06
Charon	0.015
Saturn	1.20*
Titan	0.14
Uranus	0.80*
Miranda	0.008
Venus	0.88

*: Indicates gravity as of the cloud-tops; all others are surface gravity.

(See 6E2 46.) Characters can counteract the penalty for high gravity by buying extra STR, possibly with the *Only To Counteract High Gravity Encumbrance Penalties (-1) Limitation* — 5 STR per +1 G suffices to reduce the character's Encumbrance penalty to what he'd experience in 1 G.

In light gravity, the reverse is true: the character can not only multiply the weight of what he's carrying by the local gravity, thus making it lighter, he can also subtract the difference between his own normal weight and his current weight in low gravity. A 100-kilogram man in an 0.75-G environment could not only carry 13 kg of stuff without encumbrance, he could add to that the 25 kg of body weight he doesn't have to carry. So in low G he can move easily with a load of 38 kilograms.

FALLING

High gravity makes things fall harder and faster; low gravity makes them fall slower and land gently. In an environment with different G, multiply falling velocity and damage by the local gravity. In a normal atmosphere, falling objects move at 10m per Segment, and rapidly reach terminal velocity — 60m under standard gravity. Multiply these values by local gravity to determine falling speed and terminal velocity on other worlds. Local air density may reduce this; for atmospheres exerting a pressure of 1.1 atmospheres or greater, divide terminal velocity by the local atmospheres. If there is no air at all, objects continue to accelerate indefinitely, adding (10m x local gravity) to their velocity each Segment. This means very long falls on a low-gravity but airless body like the Moon can be more dangerous than comparable falls on Earth.

FIGHTING

Gravity affects both HTH and Ranged Combat.

HAND-TO-HAND COMBAT

Hand-To-Hand Combat in high or low gravity is more difficult for fighters who aren't used to the environment.

In low gravity, there is an OCV/DCV penalty of -1 in a gravity field of 0.5 to 0.9, -2 in a field between 0.1 and 0.5, and -3 in less than 0.1 G.

Heavy gravity imposes a straight -1 penalty to CV, but that's in addition to the increased encumbrance penalty (see above).

A character can negate the CV penalty for high or low gravity by taking the appropriate Environmental Movement (page 71). However, this does not eliminate the encumbrance penalty.

RANGED COMBAT

Gravity affects the maximum range of projectile weapons. Simply divide range by local gravity to get the new maximum range. Thus, a weapon with a maximum range of 300m in 1 G has a maximum range of only 200m in 1.5 G (300m/1.5), but a maximum range of 400m in .75 G (300m/.75). The Range Modifier doesn't change; it has more to do with perception than with the actual distance the projectile can travel.

Characters using ballistic weapons in a new and unfamiliar gravity should suffer at least a -1 OCV penalty, as shots tend to fall short. One hour's worth of practice (or one actual combat lasting at least 1 Turn) in the new conditions can correct this penalty.

MOVING

He turned and propelled himself through the floating debris toward the hatch to the ballast hold. He did not run: his gait was the unique locomotion of free-fall and weightlessness... thrusts with foot, elbow, and hand against deck, wall, and corner, a slow-motion darting through space like a bat flying underwater.

—Gully Foyle moves in a zero-G environment in *The Stars My Destination*, by Alfred Bester

High and low gravity affect Flight, Leaping, Running, Swimming, and Swinging. As a general rule, don't forget that moving opposite gravity (*i.e.*, straight up, when on a planet) halves a character's gravity-based movement rate; moving in a direction consistent with gravity doubles it. (See 6E2 25.)

FLIGHT

Gravity makes flying more difficult. In high gravity, winged flyers have to go faster to keep aloft, helicopters or thrust-based flying machines have to work harder, and antigravity and other "rubber science" methods of levitation require more power.

In gravities greater than 1 G, divide Flight movement by local gravity, since flyers are burning more power just staying off the ground. Winged craft with Stall Velocity should multiply Stall Velocity by the square root of local gravity (lift is proportional to velocity squared). Maneuvers become more strenuous: climbing (Flying opposite the pull of gravity) requires 2m times local gravity to gain 1m. Thus, a jetpack with 24m of Flight in a 2 G field would only be capable of 12m Flight, and would burn 8m of movement to gain 2m of altitude. This means a jetpack with less than 12m of Flight can't take off in a 2 G environment. Alternately, GMs may rule that any Flight device simply can't operate at gravity levels more than 50% greater than the environment it was designed for (unless they buy extra meters of Flight with a -1 Limitation, *Only To Counteract Gravity Flight Penalty*; these meters allow the device to take off, but do not counteract or add to the modifier for flying with/against the pull of gravity).



In gravities lower than 1 G, Flight gets more complicated. Maximum speed remains unchanged, but it gets easier to maneuver. Climbing uses 2m times local gravity to gain 1m altitude — though the value can never be less than +1m per 1m used to gain altitude. The rules for diving (moving with the pull of gravity) are unaffected; characters still add +1m per 1m moved.

Forms of Flight requiring lift (wings, rotor blades, and the like) depends a lot on atmosphere density, which can affect carrying ability and the ability to stay aloft; see the section on Atmospheres, below.

GLIDING

The Gliding form of Flight requires a local gravity field to work. Beings and gadgets with Gliding can't use it to move in zero gravity, although GMs may let them try to "swim" clumsily through the air at 1-2m or so.

Gliding works fine in heavy gravity — if the local air density is high enough (see below). However, multiply the 2m the character must descend per Phase by local gravity; Gliding characters drop more quickly in high G.

The same rule applies for low gravity — multiply the 2m by local gravity — but in this case the effect is to allow characters to Glide longer/further without losing altitude. For example, on a world with .5 G, a Gliding character only has to drop 1m per Phase (or 2m per two Phases).

GRAVITY AND FLIGHT/SWIMMING

Here's a quick reference table for the effects of gravity on Flight and Swimming. The table rounds off the results for a more even curve of effect.

Normal Movement: divide meters by local gravity

Gravity	10m Movement Equals...
.25	10m
.50	10m
.75	10m
1.0	10m
1.5	6m
2.0	5m
2.5	4m
3.0	3m

Climbing: multiply 1m by local gravity (minimum 1m/1m)

Gravity	Climbing 1m Requires...
.25	1m
.50	1m
.75	1.5m
1.0	2m
1.5	3m
2.0	4m
2.5	5m
3.0	6m



LEAPING

Gravity affects a character's vertical Leaping and horizontal Leaping distance. Divide the character's meters of Leaping by the local gravity level.

Example: *The New Patagonian Pampas-Leaper can normally jump 20m in a 1 G environment. In the Martian Interstellar Zoo, where the gravity is 0.4, the Pampas-Leaper can jump 50m, but on the planet Adamant (local gravity 2 G) it can only cover 10m.*

GRAVITY AND LEAPING

Here's a quick reference table for the effects of gravity on Leaping. The table rounds off the results for a more even curve of effect.

Divide meters of Leaping by local gravity:

Gravity	10m Leaping Equals...
.25	40m
.50	20m
.75	14m
1.0	10m
1.5	6m
2.0	5m
2.5	4m
3.0	3m

SWIMMING

Swimming is affected by gravity much like Flight. In high-G environments, divide Swimming movement by local gravity, and multiply the meters needed to gain 1m when Swimming against gravity by local gravity. In low-G environments, maximum speed and diving speed remains unchanged, but climbing speed improves (multiply the normal 1m per meter climbed by the local gravity).

SWINGING

Swinging, like Gliding, requires gravity to work; in a zero-G situation, characters cannot Swing. In high or low gravity situations, Swinging suffers no net affect; the affect on the downward arc of the swing balances out the affect on the upward arc.

LIFTING

The Lift amount listed on the Strength Table assumes a standard 1 G environment. In high gravity, multiply an object's mass by the local gravity to determine its apparent weight. Thus, a 100 kg barrel on a 1.6 G planet weighs as much as 160 kilograms do on Earth, and so requires STR 14 to get off the ground.

In low gravity, lifting gets easier. Multiply weight by local gravity as above to determine its local weight. This means characters can pick up extremely heavy items in low gravity — a STR 0 person can pick up 250 kilograms in a 0.1 G field! Below 0.1 G, use the guidelines for Zero Gravity, below.

THROWING

Throwing distance in different gravities is simply a matter of multiplying the mass of the thrown item by the local gravity and consulting the Strength Table to determine the thrower's available extra STR based on the increased weight. Then consult the Throwing Table, as usual.

Zero Gravity

The complete absence of gravity imposes its own set of difficulties on characters (some of which are noted above in reference to lighter-than-normal gravity). Since there's no force holding them down, there's also little or no friction on surfaces. It becomes very hard indeed to exert any force unless the character is properly braced.

The standard Skill Roll and OCV penalty for all activity in zero gravity (*a.k.a.* free fall) is -3; the standard DCV penalty is ½ DCV. Characters can overcome this penalty in two ways. First, they can buy the *PS: Zero-G Operations* Skill (page 68). This method is the most "realistic," and is best suited for characters used to normal gravity but trained for zero-G work. Second, they can buy the *Zero-G Training* form of Environmental Movement (6E1 113 and page 71 of this book). This costs 6 Character Points and automatically cancels all Skill Roll and CV penalties caused by zero-G. This method is most appropriate for characters born to a zero-G environment, or who spend virtually all of their time in one (such as Spacers).

FIGHTING

The effects of zero-G on Hand-To-Hand Combat fall into four categories: OCV Penalties, DCV Penalties, Damage Penalties, and Action/Reaction (Knockback). These penalties all apply when the character is in free fall in zero-G. If he's braced against a surface (for instance, if he wears magnetic shoes and stands on a steel surface), they do not apply.

OCV PENALTIES

A character suffers a -3 OCV penalty for all attacks requiring him to have his feet on the ground (such as kicks in Martial Arts packages) performed in zero-G. In some situations the GM may rule that characters cannot use these maneuvers at all. He also suffers a -3 OCV penalty for other HTH attacks, reflecting the general difficulty he has moving and contorting his body in zero-G.

DCV PENALTIES

Characters are at ½ DCV when in zero-G.

DAMAGE PENALTIES

All HTH Combat attacks suffer a minimum of a -1 DC damage penalty when performed in free fall, as they normally benefit from the character's secure contact with a surface or momentum arising from a leap from a surface. This penalty is usually higher (-3 DC), but the GM can adjust the penalty as he sees fit.



ACTION/REACTION (KNOCKBACK)

Combat in free fall should always use the Knockback rules, even if the campaign normally only uses Knockdown rules.

Knockback becomes a very serious problem in zero-G combat. When a character takes Knockback, he continues to move that many meters per Segment until he hits something. If the character has a safety line or tether, he moves until he reaches the limit of the rope and stops. Without a tether, there's a real danger of floating off helplessly into deep space. Characters in that situation can make a DEX Roll once per Phase to attempt to grab objects within Reach and thereby keep from flying away. Victims wearing any sort of zero-G flight pack can bring themselves to a stop using their thrusters.

For characters in free fall, roll 1d6 less than normal to determine Knockback, as if they were flying — which, in essence, they are. Moreover, instead of applying Knockback just to the target, divide it between attacker and target. If an attack does 8m Knockback, then the target doesn't sail back 8m — both attacker and target sail away from one another 4m.

GRAPPLING

Grabbing someone negates OCV penalties for strikes and the Action/Reaction effect (when a character has Grabbed someone and hit him, doing Knockback, neither of them goes anywhere).

LIFTING AND THROWING

Lifting and throwing objects in zero gravity are both easier and harder. A character can theoretically move any mass, and once something is moving it keeps on moving until it hits something. When shoving an object in zero-G, consult the Throwing Table (6E2 81) to determine the character's Extra STR as if making a Standing Throw. The accompanying Zero-G Strength Table gives the velocity per Segment imparted by a braced shove. (If a shove is not braced, divide the meters of velocity between the character and the shoved object, as with unbraced Knockback.) The object continues to move until it hits something.

Stopping something in zero gravity is as hard as starting it. A person trying to halt a moving object in free fall compares the Extra STR (from the Throwing Table, as if making a Standing Throw) to the object's velocity on the accompanying table. Subtract the meters a character could throw the object from its velocity. If the character slows the object to 0m or less, it stops moving. If the character doesn't have the STR to slow the object to 0m of movement, he takes damage from a Move Through attack at whatever the remaining velocity is (the object has STR 0 for Move Through purposes).

Example: *Big John the astronaut has STR 18 and wants to move a 100 kg fuel tank. The Throwing Table indicates he has an Extra STR of 8, which means he can impart a velocity of 30m per Segment to the tank. It goes hurtling across the Space Shuttle's cargo bay to where Little Willie the mission specialist tries to catch it. Willie has STR 8. According to the Throwing Table, Willie has -2 Extra Strength, which means he can slow the tank by 8m per Segment (Willie gets to round in his favor). Subtracting 8m from 30m shows the tank retains a velocity of 12m. That means poor Willie gets hit by a Move Through from the tank moving at its remaining 12m. Crunch! Poor Willie takes 3d6 damage.*

Vacuum

"I've read how people look who die in space — their insides all ruptured and exploded and their lungs out between their teeth and then, a few seconds later, they're all dry and shapeless and horribly ugly."

—Marilyn contemplates what's going to happen to her when she's jettisoned from the ship in "The Cold Equations," by Tom Godwin

Most of the Universe consists of nothing at all. When characters venture out into that nothingness, they'd better have protection. There are four things to worry about in space: lack of air to breathe; lack of pressure; extremes of temperature; and radiation.

Scientists and doctors have debated, and continue to debate, the precise effects of vacuum on an exposed Human body; for obvious reasons, it's difficult to test what happens thoroughly. The information and rules below are based on the best information available as of 2011. Gamemasters who prefer some other interpretation — such as bodies instantly freezing, or instantly exploding into crimson mush due to internal pressure — are free to adopt those interpretations for their games.

BREATHING VACUUM

Characters stuck in space without life support are in trouble. They have no oxygen to breathe. The standard rules for drowning (6E2 130) apply. However, as noted below, attempting to hold one's breath in space can have severe negative consequences.

LACK OF PRESSURE

The Human body is adapted to an environment with external pressure. The Earth's atmosphere presses against every square centimeter of our skin with a force of about 10 Newtons. Take away that pressure, and the body tries to expand to fill the void. However, the Human body turns out to be a pretty good spacesuit, at least for short periods. Skin is strong enough to resist rupturing, so nobody's going to explode in vacuum (though the body swells up to as much as twice its size).

**ZERO-G
STRENGTH TABLE**

Extra STR	Velocity
-25	0.25m
-23	0.33m
-20	0.5m
-18	0.66m
-15	1m
-13	1.5m
-10	2.5m
-8	3m
-5	5m
-3	6m
0	10m
3	15m
5	20m
8	30m
10	40m
13	60m
15	80m
18	120m
20	160m

The chief danger is blood vessels rupturing, especially in the lungs, where there is a vast network of them separated from the air by only a thin membrane. Additionally, eardrums might rupture.

In game terms, a character in a vacuum without Life Support: Safe Environment (Low Pressure/Vacuum) suffers ½d6 Normal Damage, NND, Does BODY, per Segment of exposure to vacuum. Increase the damage to 1d6 per Segment if he holds his breath; the increase represents rupturing of the lungs and the like. Swelling and related problems result in a DEX Drain ½d6, NND, per Segment (to a maximum of -10 points of DEX); the character cannot recover any of the lost DEX until he's recompressed, after which it returns at the usual rate. Roll 3d6; on an 8-, the character suffers eardrum damage (leading to a Physical Complication of -2 [or greater] Hearing PER Roll penalties, or total Deafness if exposure lasts more than three Turns). The result is that most characters should enjoy a period of "useful consciousness" of about 9-12 seconds, and can survive as much as about 90 seconds of exposure.

Because decompression damage is internal, Paramedics is of limited use (impose a Skill Roll penalty of -3). Characters need advanced medical procedures and technology to treat it.

TEMPERATURE

Science Fiction writers frequently refer to "the icy blackness of space" and the like, but in fact vacuum itself has no temperature — it's a near-perfect insulator. What coldness there is in space exists because the trace atoms floating in the vacuum radiate energy into it, causing a chill. Compared to suffocation and loss of pressure, any threat posed by the low temperature is minimal; characters exposed to vacuum die long before they get cold.

A Human exposed to vacuum can only cool off by radiating heat or sweating. This causes a rise in body temperature of 1 Temperature Level per minute of activity (see 6E2 145), or per five minutes of rest. Of course, a person just resting in vacuum has other problems....

A related effect is that unprotected exposure to the ultraviolet rays of a star causes characters to suffer very bad sunburns. See 6E2 143 for more information on sunburn.

RADIATION

Solar and cosmic radiation can be a serious problem in space, even to space travelers in shielded spacecraft. For someone floating in vacuum with just a suit, the danger is very real. See 6E2 153-55 for rules on radiation (both in space and in other Science Fiction environments).

Atmospheres

Earth is the only known planet with air Humans can breathe. Characters venturing to other worlds will encounter a variety of atmospheres, many of them with harmful effects. (See pages 114-17 for more on atmospheres.)

DENSE ATMOSPHERES

Atmospheres denser than Earth's may cause two problems for Humans and other living creatures: pressure and toxicity.

PRESSURE

As indicated on page 117, to determine atmospheric pressure on the surface of a planet, determine the density of the atmosphere relative to that of Earth, then multiply by the surface gravity. For example, on a world with a Standard atmosphere 120% as dense as Earth's, and a surface gravity of 1.3 G, the atmospheric pressure is 156% that of Earth's, or roughly half again as strong.

Earth's average atmospheric pressure at sea level (one atmosphere, or approximately 1000 millibars) is the default for game purposes. At 1 atmosphere or below, a character's normal PD is enough to resist the effects of pressure.

Heavier pressure, such as from descending into a dense atmosphere like Jupiter's or diving deep into the sea, can cause injury and death. As of 2011, the free-diving record for Humans is to 214 meters, where the pressure is about 21 atmospheres (see sidebar) — but without special protection, they can only remain at such pressures for short periods.

See 6E2 158-59 (in the rules for underwater adventuring) for rules pertaining to how much pressure a Human can withstand, how he suffers damage as pressure increases beyond that, and effects such as the bends.

TOXICITY

Where the air pressure is greater than 10 atmospheres, the concentrations of gases become toxic. A character without Life Support (Safe Environment: High Pressure) effectively drowns (use the standard drowning rules).

THIN ATMOSPHERES

In air pressure below 25% Earth normal (.25 atmospheres), a character can't get enough oxygen to stay alive. The drowning rules apply unless he has artificial protection. (In situations with no pressure at all, use the *Lack Of Pressure* rules under *Vacuum*, above.)

Thin air also affects how flying creatures and vehicles stay aloft. Any type of Flight requiring lift from wings, propellers, rotors, or gas bags has its lift reduced in proportion to the lower pressure. In game terms, this means the weight a flying character or vehicle can carry is reduced by the atmospheric pressure — in 25% pressure, reduce its STR to one-fourth of normal for purposes of carrying objects while flying. (See the Encumbrance Table on 6E2 46 for rules regarding the effects of encumbrance on movement.) In atmospheres 10% of Earth's, or thinner (including no atmosphere), any type of Flight requiring lift cannot function at all; there's not enough atmosphere to "push" against.

The Gliding form of Flight works poorly in thin atmospheres, since there's less air to "support" a Gliding character. Multiply the glider's meters of movement by the percentage of air pressure

CREATING PRESSURE IN HERO SYSTEM TERMS

If appropriate, the GM can allow characters to create attacks of high pressure, or high pressure fields, using Change Environment. Each +1 atmosphere of pressure costs 3 Character Points as a combat effect. See 6E2 158 for rules about how high pressure can injure a person, and how it's resisted.



relative to Earth; at 20% or less pressure, Gliding is not possible.

ATMOSPHERIC COMPOSITION

There are dozens of likely atmospheric gases — hydrogen, helium, methane, carbon dioxide, oxygen, nitrogen, ammonia, argon, chlorine, fluorine, and various combinations of them (see page 114). Most of them are poisonous to Humans (even oxygen and nitrogen, if the concentration or pressure are too high). Rather than detailing the effects of each, you can simply divide them into Breathable, Unbreathable, and Poisonous atmospheres. A *Breathable* atmosphere is of course one a character can breathe normally.

Unbreathable atmospheres are any mix of gases not containing free oxygen but also not poisonous. Noble gases like helium and argon are unbreathable, as are carbon dioxide, methane, and pure nitrogen. Characters in an unbreathable atmosphere without appropriate Life Support suffer the same effects as drowning in water. Otherwise, Unbreathable atmospheres aren't harmful. A character with oxygen tanks can operate in an Unbreathable atmosphere without other protection (unless the pressure or temperature demand it).

Poisonous atmospheres, also referred to as *Corrosive*, contain primarily gases that react with Human tissues, killing cells and causing pain. Poisons include pure hydrogen, ammonia, chlorine, fluorine, hydrogen sulfide, nitrogen oxides, and most combinations of those chemicals. Characters in a poisonous atmosphere without protection suffer the effects of suffocation, plus 1d6 Normal Damage, NND, Does BODY, per Turn (damage accumulates on Segment 1) as the toxic gases burn skin and exposed mucous membranes (and corrode equipment). If the character breathes in the poison air, he takes an additional 1d6 Killing Damage, NND, Does BODY, per Phase as the poison sears his lungs and nasal passages. The defense against poisonous atmospheres is Life Support (Self-Contained Breathing) plus some sealed, airtight Resistant Defense such as a spacesuit or a force-field. If the character doesn't have the Life Support, he'll suffocate, but at least the corrosive effects of the atmosphere won't get him.

ATMOSPHERES AND STARSHIPS

Starships may run into several problems in atmospheres.

ENTERING AN ATMOSPHERE

Vehicles entering an atmosphere from space experience heat as the result of friction generated by moving into/through air. Entering an atmosphere causes a ship to suffer 5 BODY damage per Phase; therefore, 5 PD/5 ED (or other defenses providing equivalent Resistant Defense) protects the ship from that effect.

Many ships have the Physical Complication *Cannot Enter Atmospheres* (page 240), because their designers intend them solely for use in space and see no reason to spend the time and money to reinforce them to handle atmospheric pressures.

These ships may be able to make it into an atmosphere, but they'll soon crack under the strain regardless of their defenses.

ATMOSPHERIC PRESSURE

Even ships designed to enter atmospheres may encounter problems when descending deep into one, however. On planets with large or dense atmospheres, the atmospheric pressure increases the further into the atmosphere the ship goes, eventually crushing it if it's not sturdy enough (in much the same way that a submarine going too deep into the ocean gets crushed).

Ships designed to enter atmospheres need two things: a minimum of 5 PD/5 ED (see above) and Life Support (Safe Environment: High Pressure). A ship without the Safe Environment (High Pressure) can stay in up to 5 atmospheres of pressure without difficulty, but suffers 1d6 Normal Damage, NND, Does BODY, per Turn (the damage accrues on Segment 1) for each +1 atmosphere above 5 (or fraction thereof).

In a Space Opera or cinematic setting, Safe Environment (High Pressure) lets a ship withstand any level of pressure without difficulty (though the ship may creak and groan alarmingly, as its hull adjusts to the stress). In "realistic" or Hard Science Fiction settings, things aren't quite so simple. As with Humans, the Safe Environment only offers complete protection up to a point — 50 atmospheres. At that point, for each +1 atmosphere (or fraction thereof) above 50, a spacecraft suffers the damage indicated above (beginning at 1d6, not 46d6) unless it has the proper defense: Safe Environment (High Pressure) *and* a minimum of 1 Resistant PD for every 3 atmospheres of pressure. This defense can come from its hull, defense screens, or any other source. Eventually, though, sufficient atmospheric pressure will crush even the strongest ship.

CORROSIVE ATMOSPHERES

Sufficiently corrosive atmospheres may affect ships. In this case, the GM determines the amount of damage and how quickly it accrues. Typically a ship suffers 1d6 Killing Damage, NND, Does BODY (defense is Resistant Protection or Barrier, either defined as a force-field or the like), per Turn, with the damage accruing on Segment 1. More corrosive atmospheres do more dice of damage.

ATMOSPHERIC INTERFERENCE

In some situations, the composition of a planet's atmosphere, or the effects of weather, may interfere with a ship's ability to use sensors or communications through/into that atmosphere. A Systems Operation penalty of -1 to -3 may apply.

Lieutenant Jadzia Dax: *What are they doing?*

Trade Minister Hanok: *They're hoping the Jem'Hadar won't follow them into the atmosphere.*

Major Kira Nerys: *They'd be smart not to. That's a Class J gas giant. I'm reading wind speeds of over ten thousand kilometers per hour.*

—a trade meeting turns into a deadly game of cat and mouse in the atmosphere of a gas giant in the *Star Trek: Deep Space Nine* episode "Starship Down"

OBJECT DEFENSE AND BODY IN STAR HERO

The Object Table (6E2 171) lists many objects that might appear in Star Hero games. Some (such as large spaceships) are almost exclusively the province of Science Fiction settings; others could occur in many different types of games.

Generally speaking, objects manufactured in Science Fiction settings are sturdier — better made, and of more durable materials — than objects from earlier time periods. They also often weigh less. When determining an object's PD/ED and BODY using the Object Table, consider increasing the ratings of all multi-period objects by 1-2 in each category (sometimes more). When determining the weight of large objects, consider reducing the rulebook's listed weight by as much as one-fifth (20%).

Explosive Decompression

Although sometimes used to describe what happens to the lungs of a person who's exposed to vacuum and holds his breath, in general *explosive decompression* refers to the sudden loss of air and air pressure when a sealed environment (such as a starship's hull) is opened to the vacuum of space. Typically this occurs due to a puncturing of the environment (from, say, a meteor impact, or an enemy ship's laser blast), or when a heroic character deliberately opens an airlock to put out a fire or suck some bug-eyed alien monster out into space.

When explosive decompression occurs, two issues are important: how long before all the air leaks out; and is the outward flow of air strong enough to pull objects or characters out of the ship? While formulae do exist to calculate the loss of a volume of substance through a hole of given size, that's more complex than necessary for all but the hardest of Hard Science Fiction Star Hero games. Instead, use the accompanying Explosive Decompression Table to determine the effects.

DECOMPRESSION STR

The STR of the decompression depends on two things: the size of the rupture in the environment, and the pressure in the environment. First use the accompanying table to determine the STR based on rupture size — the larger the hole, the more air can rush out quickly, resulting in a stronger pull. Then, for each +1 atmospheric pressure (or fraction thereof) in the environment above 1 (1 being Earth-normal average atmospheric pressure, used in Human starships), add +5 STR. Thus, if the interior of a ship is pressurized to 3 atmospheres and develops an Enormous (8m) rupture, the pull of the decompression is equal to 35 STR (base of 25, +10 for the two atmospheres above 1).

The GM determines the size of a hole in a sealed environment's walls/hull. The standard rules for breaking walls (6E2 173) indicate a

Human-sized (*i.e.*, about 2m wide) hole for 1 BODY damage, with the size doubling per +1 BODY thereafter. That rule works fine on the average, but it may not make much sense in the case of a micrometeor or a pinpoint laser blast, so the GM should use his judgment when deciding how big a rupture is.

THE PULL

The pull of decompression affects everything in the environment — people, objects both loose and attached, dust, and so forth. Even a tiny pull can be dangerous; after all, stray computer chips and pieces of paper don't weigh much, yet may contain invaluable data. But what characters are most concerned about is whether they'll be yanked into the deadly depths of space. To save themselves, they must have something to hang onto or brace themselves against (if not, out they go, though the GM may allow a DEX Roll for a character to snag something to hold onto as he flies toward the rupture). Then he engages in a STR Versus STR Roll against the pull every Phase. As long as he keeps winning the contest, he stays put; otherwise, out he goes. If a character is particularly well braced, strapped in, or the like, the GM may give him a bonus to his STR Roll for the contest. The GM should also assign STRs to fixed objects (like desks bolted to the floor) to determine if they come detached; typically an object should have 5 STR for every 1 PD/1 ED it has.

The decompression STR pulls characters and objects at the rate it could make a Running Throw with them (so characters may have more than one chance to grab something and hold on for dear life). It has SPD 6 for these purposes.

THE OUTCOME

If a character gets pulled all the way to the rupture, what happens next depends on the relative size of the rupture and the character. (The same applies to objects, of course.) If the rupture is larger than the character, he goes flying out into space (where he continues traveling at the same direction and velocity every Segment thereafter until something stops him).

If the rupture is smaller than the character, but larger than one-third the character's size, he gets forced violently through the rupture. Convert the decompression STR's damage into an equivalent number of DCs of Killing Damage and apply it to him. (Some gamers refer to this as the "sausage grinder effect.") After he takes the damage once, he's out in space, as described above.

If the rupture is one-third the character's size, or smaller, he takes the decompression's STR damage and then plugs the rupture with his body. Thereafter he takes half the decompression's STR damage per Phase (again, based on SPD 6) until someone saves him, he pries himself away, or the like.

EXPLOSIVE DECOMPRESSION TABLE

Size Of Hole	Rate Of Air Loss	STR Of Decompression
Insectile (0.003m or smaller)	.031 cubic meter/Segment, or less	1
Minute (0.004m)	.032 cubic meter/Segment	2
Minuscule (0.13m)	.064 cubic meter/Segment	3
Tiny (0.25m)	.125 cubic meter/Segment	4
Diminutive (0.5m)	.25 cubic meter/Segment	5
Small (1m)	.5 cubic meter/Segment	10
Human (2m)	1 cubic meter/Segment	15
Large (4m)	2 cubic meters/Segment	20
Enormous (8m)	4 cubic meters/Segment	25
Huge (16m)	8 cubic meters/Segment	30
Gigantic (32m)	16 cubic meters/Segment	35
Gargantuan (64m)	32 cubic meters/Segment	40
Colossal (125m or larger)	64 cubic meters/Segment, or more	45+



VILLAINS AND NPCs



“Mos Eisley spaceport: you will never find a more wretched hive of scum and villainy. We must be cautious.”

—Obi-Wan Kenobi warns Luke Skywalker about the perils of Mos Eisley in *Star Wars*

Perhaps the most important single aspect of any scenario is the villain(s) — the adversaries and enemies the characters encounter or pursue during the course of the game. Closely related to the villain are the NPCs: other characters the PCs encounter who may be helpful, hostile, or annoying. A good villain or NPC can make a lackluster scenario enjoyable, and a poor one can diminish the impact of an otherwise wonderful adventure.

VILLAINS

Quick: think of half a dozen memorable characters from Science Fiction films and stories. Chances are, your list includes people like Darth Vader, Harry Mudd, Khan Noonien Singh, and the Mule. Villains.

A good villain makes a good story. The reader may not care much about the heroes, but everybody loves to root against a good villain. This isn't limited to Science Fiction: Lucifer in Milton's *Paradise Lost* is by far the most striking character in the whole epic poem.

In a Star Hero game, the PCs' adversary often drives the plot, and consequently should be more than just some game stats on a sheet. What makes a good villain? What makes a good Science Fiction villain?

Villain Qualities

In Science Fiction (and other genres, for that matter), good villains have certain qualities that set them apart.

COMPETENCE

The best villains in fiction are competent, often extraordinary in their abilities. They are powerful, clever, and subtle; overcoming them is a worthwhile challenge for the good guys. Think of Darth Vader in *Star Wars*: he can out-plot Princess Leia, out-fly Han Solo, out-fight Luke Skywalker, and has the whole might of the Empire at his beck and call.

A villain who isn't competent isn't very interesting. It hardly seems fair for the heroes to take on somebody weaker than themselves. Note, however, that “power” here doesn't necessarily mean sheer muscle or available firepower. A weak but clever opponent who can maneuver the heroes into a situation where their superior abilities are useless is just as powerful as one who can bat them aside with casual ease.

Exactly how powerful the villain is depends on the campaign's scale and tone, the abilities of the PCs, and the role the GM intends for the villain. Role is perhaps most important. What part will the villain play in the campaign? Is he the Big Bad Guy behind all the heroes' problems? In that case he must be powerful indeed, with underlings and henchmen who can each serve as the main villain of adventures themselves. If he's one of those henchmen, then the villain should be only slightly more powerful than the heroes. If he's only a one-shot opponent in a casual encounter, he can be the same level or even weaker than the PCs.

MENACE

Just being powerful doesn't make a good villain. Blue whales are immensely powerful animals, but nobody's afraid of them because they're shy and don't harm Humans. A villain requires a credible menace: the heroes must believe the villain is not only able, but willing, to cause harm.

The best way to create this sense of menace is to give the villain the chance to demonstrate his power without directly harming the PCs. When the Imperial forces destroy Alderaan at the beginning of *Star Wars*, everyone learns they mean business. Similarly, you could have a villain in your game harm a character's DNPC, kill a favorite NPC, destroy a large chunk of a major city, or reveal information to the characters that makes it plain he could attack them at any time.

STAR HERO PLOT HOOKS

Here are a few Star Hero plot hooks, organized by villain motivation.

DESIRE

- An antiquities collector hires mercenaries to steal a priceless religious relic from an alien temple.
- An AI expanding its processing power is taking over the planet's datanet — and the brains of everyone linked into cyberspace!
- A con man has just “sold” the party's starship to four different customers and skipped out with the loot.
- A dictator plans to invade a neighboring planet rich in resources.
- A military commander fakes reports of alien raids along a peaceful border so he can gain glory leading the counterattack.
- An obsessive fan illegally clones a famous dead actress, but the clone escapes.
- A parasitic alien implants its eggs in several people, including one of the heroes' DNPCs; when the eggs hatch, the larvae will consume the host... but ordinary surgery can't remove them.
- A starship captain is determined to open an ancient alien artifact to learn its secrets.

FEAR

- An alien species must flee its homeworld because its star is going nova, so it's invading nearby systems.
- An astronaut believes many of the people around him are aliens in disguise.
- An energy creature living in Jupiter's radiation belts mistakes a spaceship's radar beams for an attack.
- A growing political movement pressures the government to sterilize all psionics to prevent them from taking over.
- A megacorp covers up evidence that its new implant computer causes psychotic episodes in many users.
- The government sends a military force to destroy an alien artifact because it may pose a danger.
- A native tribe on an alien world captures some explorers, whom they believe to be demons.
- A powerful alien civilization destroys all warlike, dangerous species it encounters — and it's just found Earth.

CONVICTION

- A deep-cover spy works for an enemy species because he respects their stable civilization and sophisticated culture.
- The Cosmic Overmind wants everyone to join it and share the wisdom of the Galaxy; refusal is a sign of illogical thinking.
- A group of space rebels wages a guerrilla war against the Empire.
- A new planetary government orders all citizens to work for the common good... or else.
- A powerful alien empire wants to bring peace to a planet's warring nations by taking over at gunpoint.
- A religious fanatic believes all who link into cyberspace lose their souls.
- A robot leads a campaign to liberate machines from the tyranny of organic life.
- A time traveller believes that by changing history he can make a better future.

SYMPATHY

The best villains have a streak of humanity or at least some admirable traits. They may be people the heroes might have been friends with in other circumstances, or at least enemies they can maintain a grudging respect for. Otherwise, they're just two-dimensional cutouts; it's not hard to hate, or oppose, someone who's unlikeable and villainous in all aspects.

Examples of “admirable” villains abound in fiction. Long John Silver is a vicious pirate, but he's brave, resourceful, and doesn't let young Jim Hawkins come to harm. Darth Vader is a callous, brutal tyrant, but there's a spark of humanity within him that Luke Skywalker, his son, can perceive and use to redeem him. Khan Noonien Singh is a ruthless dictator, but he can be polite and charming if necessary.

MOTIVATION

Hardly anyone gets up in the morning and says “How can I be evil today?” Even the worst villains can justify their own actions to themselves. The motives of villains are the same as those of most people: they want things (desire); they fear things (fear); and they believe things (conviction).

Wanting something is easy to understand. Everyone wants something. Villains may be motivated by a desire for wealth, lust for the opposite sex, a simple urge to survive, or even love for another person or being. Sometimes a villain's desires aren't quite normal — twisted sexual urges, mad plans to conquer the galaxy, or the obsessive pursuit of some object. But other villains can have quite prosaic desires, such as revenge.

Fear is another powerful motive. Most living things fear death, most Humans fear poverty and hardship, a ruler might fear losing power, an official in a tyrannical regime might fear the consequences of failure. Even the most incredibly powerful villain can still have fears: the Galactic Tyrant fears rebels and threats to his throne, and the Cosmic Overmind fears the heat death of the universe. Often people (not just villains) take great risks to avoid or overcome the things they fear; as long as the consequences are not as bad (in their opinion) as the thing they fear, it's a rational choice.

Finally, most Humans have beliefs about right and wrong. Even villains do, although their beliefs may not match everyone else's. People often endure great danger and make tremendous sacrifices in the name of what they believe in; villains may do the same.

These three motives can feed on and strengthen one another. A villain who's greedy for wealth may also fear losing his property and sources of income, and may believe he's doing the right thing by stimulating economic growth and providing employment.



The motives for villains are not necessarily different from those of heroes. Han Solo was greedy for money, and Captain Kirk certainly had an eye for the ladies. What separates heroes from villains is how they go about achieving their goals. Bringing unity and peace to the Galaxy is a noble goal. Exterminating all other species is not a heroic way to accomplish it.

In some campaigns, the distinction between the heroes' motives and those of the villains is all but invisible. Interstellar mercenaries or spies can resort to pretty sleazy methods to accomplish their missions, and some cyberpunk heroes are villains by the standards of their society.

Villain Archetypes

Over the years, Science Fiction stories and films have developed a set of standard villainous archetypes that turn up again and again. Game-masters looking for inspiration can employ them as is, or use them as the basis to create variations or combinations.

Captain James T. Kirk: *But you know how I feel about this. They're animals!*

Captain Spock: *Jim, there is an historic opportunity here.*

Captain Kirk: *Don't believe them. Don't trust them.*

Captain Spock: *They're dying.*

Captain Kirk: *Let them die!*

—Kirk and Spock have different perspectives on the Klingons in *Star Trek VI: The Undiscovered Country*

ENEMY SPECIES

In any setting with a large ongoing conflict, one side can be the designated “bad guys.” Fictional examples include the Klingons from the original *Star Trek* series, House Harkonnen and its minions in *Dune*, the Kzin in Larry Niven's “Known Space” stories, and the minions of Boskone from E. E. Smith's “Lensman” novels; a historical version might be the Nazis. When these guys show up, the heroes know who to fight.

Useful Features: Enemy species or civilizations have lots of resources and minions to throw at the heroes, making them versatile, powerful opponents. Once you introduce them, you can use them again and again, saving you the trouble of creating new enemies. Even if the heroes kill off or capture one leader, you've got an endless supply of replacements to put on the black hat. Moral issues get very simple when the players know who the bad guys are.

Potential Problems: Mowing down an endless series of Space Mongols becomes boring after a while, and the sheer scale and resilience of the bad guys may make the heroes wonder if they're really accomplishing anything. The idea of an “evil species” may have racist overtones, which could either offend players or bring out their less admirable qualities.

Variations: In a “cold war” situation, the heroes may know who their enemies are, but blazing away at them with ray guns could plunge the galaxy into war. Instead, the PCs have to approach the problem subtly; a series of chess-game adventures of plots and counterplots may be entertaining. Giving the villains understandable motives goes a long way toward negating the problem of racism.

GALACTIC TYRANT

Sarah Jane Smith: *Was he really that dangerous?*

The Doctor: *Who, Morbius? ... There was a civilization here once, now look at it. And there are other planets like it, all destroyed by Morbius — nothing but ashes.*

—the Doctor describes the extent of a Galactic Tyrant's evil in the *Doctor Who* episode "The Brain Of Morbius"

For tyrants, there's a depressingly long list of historical examples to draw on. Notable fictional ones include Emperor Palpatine (from *Star Wars*) and Ming of Mongo (from *Flash Gordon*). Tyrants command vast fleets and armies, and tend to remain in their heavily fortified headquarters until the final battle with the heroes. The main difference between an Enemy Species and the minions of a Galactic Tyrant is that the Tyrant holds his empire together by force of will and personality. Without the top man, the Tyrant's legions are easily mopped up, and may even convert to the right side with a little talking-to.

Useful Features: Giving evil a face and a name solves the problem of how to defeat an entire empire — cut off the head and the body will die. A colorful tyrant can be whimsical or motivated by love or revenge. If the heroes learn something about the tyrant's personality and blind spots, they may be able to fool or outmaneuver him.

Potential Problems: A tyrant who's too villainous risks becoming implausible. If the Galactic Emperor casually shoots underlings who fail him, why haven't his underlings conspired to overthrow him? If he annihilates planets that are home to rebel activity, eventually he won't be emperor of anything but a bunch of gravel.

Variations: An hereditary empire might have a whole family of Galactic Tyrants, all busily scheming against each other for the throne — offering plenty of opportunities for wily heroes to divide and conquer. A more sympathetic Galactic Tyrant may become an Honorable Enemy. Sometimes the Tyrant turns out to be nothing but a Puppet of some even bigger and badder opponent. For a more scaled-down tyrant, GMs may want to use the "Napoleon on Elba" option of a former overlord scheming to regain power.

HERO GONE BAD

Luke Skywalker: *How did my father die?*

Obi-Wan Kenobi: *A young Jedi named Darth Vader, who was a pupil of mine until he turned to evil, helped the Empire hunt down and destroy the Jedi knights. He betrayed and murdered your father. Now the Jedi are all but extinct. Vader was seduced by the dark side of the Force.*

—Obi-Wan hints at the dark truth of Darth Vader's origin in *Star Wars*

Maybe the Galactic Tyrant is controlling his mind, maybe he's miffed because he got passed over for promotion, or maybe he just looks better in black. Being a hero is hard work, and even the best may give up and decide that if you can't beat the hordes of Evil, you may as well join 'em. Sometimes even PCs turn to the wrong side.

Useful Features: The great strength of a Hero Gone Bad is that he knows what the good guys are likely to try, and can anticipate and frustrate them. If they have some sort of unique technology or powers, he can counter them. A Hero Gone Bad may well have a personal connection to the PCs, making for good roleplaying opportunities.

Potential Problems: An ex-PC turned villain could simply be too effective as an enemy — he knows the heroes, knows their weaknesses and secrets, and if played properly could do serious damage. This may turn the campaign into a vendetta.

Variations: Ex-heroes are often Honorable Enemies, or may have simply turned Mercenary. Whipping off the Galactic Tyrant's mask to reveal a familiar face can be a stunning climax to the campaign. Maybe the Hero Gone Bad didn't go bad at all — either he's operating under deep cover, ready to switch sides again at the critical moment; or maybe he was bad to the bone all along and only pretended to support the heroes' cause in the first place.

HONORABLE ENEMY

Just because he's on the other side doesn't mean a villain can't be a gentleman. Honorable enemies respect the heroes as worthy opponents even as they try to foil or kill them. Historical examples are common: even amid the carnage of World War I, pilots sometimes dropped flowers over enemy airfields when an ace was killed.

Useful Features: An Honorable Enemy may well grant mercy to defeated opponents, letting them run away to fight another day. When confronted with some genuine evil, an Honorable Enemy could join forces temporarily with his adversaries in the name of common decency. An Honorable Enemy who meets his foes on neutral territory could form friendships or even romantic connections — catnip for dedicated roleplayers.

Potential Problems: It's difficult to make a villain ruthless enough to pose a genuine threat and still keep him likeable. Players sometimes hold grudges against anyone who thwarts them, no matter how honorable. They can also be very Machiavellian, using the Honorable Enemy's own code of honor against him.

Variations: A villain may only pretend to be honorable, abandoning his facade when things get desperate (or when he thinks he's won). A really successful Honorable Enemy can reach Galactic Tyrant rank. Heroes who violate the code of conduct an Honorable Enemy follows may discover he now views them as unworthy opponents — vermin to be destroyed.

MAD SCIENTIST

Sarah Jane Smith: *You're insane, Solon, you're mad!*

Solon: *Oh no, I'm not! That's what they said. But they were jealous, they envied my achievements. When I said I could create life they laughed at me, they mocked me. Only Morbius had the faith to believe in me.*

—Solon reveals his madness in the *Doctor Who* episode "The Brain Of Morbius"

A cliché of early Pulp fiction which nowadays is less common, the Mad Scientist's lineage goes back through the original Dr. Frankenstein to Faust. The size and expense of major research programs has made the lone genius creating wonders in his basement less plausible, but the possibilities of genetic engineering and nanotechnology could revive the Mad Scientist in fiction. A more realistic version is the researcher who cuts ethical corners to complete his experiments.

Useful Features: Mad Scientists can have seemingly magical technology which is otherwise unavailable in the game world. Their demented experiments can create monsters. It's traditional for every Mad Scientist to have a beautiful daughter suitable for romantic attachments.

Potential Problems: Unless handled very deftly, the Mad Scientist is such a creaky old cliché that players may roll their eyes at. The question of "why doesn't he just license these inventions and get rich?" must be answered for the cynical modern gamer.

Variations: Galactic Tyrants sometimes dabble in Mad Science as a hobby, or else keep some Mad Scientists on the staff. In a Cyberpunk setting, the Mad Scientist gets major corporate backing and a squad of loyal security goons. Desperate Rebels may turn to Mad Science in search of a secret weapon.

MERCENARY

There was a group of a dozen or so black-uniformed Kshatryan Imperial mercenaries who formed their own tight little island in the sea of color; on closer look their uniforms, though clean and mended, were not all complete. Odd buttons, shiny seats and elbows, lop-worn boot heels — they were a long, long way from their distant home, it seemed.

—Miles Vorkosigan observes some mercs in *The Warrior's Apprentice*, by Lois McMaster Bujold

The flip side of an Honorable Enemy is the Mercenary. He serves the opposition simply because they pay him, and if Good offers a better price than Evil, he'll happily change sides. Han Solo, in his first appearance in *Star Wars*, was close to being a Mercenary, and his adversaries Greedo and Boba Fett certainly fit that description. *Star Trek's* Ferengi are a whole Mercenary civilization.

Useful Features: It may reassure slightly shady heroes to find a foe with motives similar to their own. A Mercenary with highly marketable skills could wind up serving different master villains, turning up against the heroes when they least expect him. Mercenaries can be bribed in a pinch, and could be motivated to join forces against some menace which threatens the free enjoyment of their wealth. Mercenary villains usually cut and run when the situation looks hopeless.

Potential Problems: The major difficulty with a Mercenary villain is that sufficiently wealthy heroes may be able to simply buy them off; GMs who don't like credit-card diplomacy should beware (or institute a "Code of the Mercenary" system whereby honorable Mercenaries don't abandon a contract until its terms have been met). Unless the Mercenary is powerful, or protected by a heavy helping of Combat Luck or GM's fiat, keeping him alive to bedevil the PCs again and again may prove difficult.

Variations: To make a Mercenary more sympathetic, perhaps his greed has a noble purpose — supporting a loved one, acting as a Robin Hood for the poor folk of the Galaxy, or paying off some helpless person's debts to the Interstellar Mafia. To make him less attractive, give him depraved appetites or a sadistic streak. Since players may expect a Mercenary to redeem himself, the GM can throw them a curve by having him decide to put aside his materialistic goals and support the Galactic Tyrant!

OMNIPOTENT ALIEN

*"I see now, it was too simple a puzzle.
Generosity has always been my... weakness."*

—the enigmatic Q toys with the crew of the *U.S.S. Enterprise-D* in the *Star Trek: The Next Generation* episode "Encounter At Farpoint"

Most alien species aren't far different from Humans in terms of personal power. They may have slightly different physical capabilities, mental powers, or the like, but by and large they're interchangeable with Humans. But sometimes Science Fiction heroes encounter aliens who blow that paradigm out of the water. Like the Q of *Star Trek: The Next Generation*, the Slavers of Larry Niven's "Known Space" stories, or the mysterious aliens watching Earth in Arthur C. Clarke's *Childhood's End*, they possess so much power — either innately, or due to their ultra-advanced technology — that they're effectively omnipotent.

Useful Features: Because he outclasses the PCs so, the Omnipotent Alien can put them in whatever situation he (*i.e.*, the GM) wants. Hurl the characters' starship across the galaxy, transform all the PCs into members of a different species (or gender), create new foes for the PCs to fight — whatever you as GM want, the Omnipotent Alien can provide it, and often in such a way as to raise intriguing moral or ethical issues.

Potential Problems: Because he outclasses the PCs so, the Omnipotent Alien may be regarded as unbeatable. Frustrated and depressed, the PCs don't act as heroes should, but instead give in to the Alien's demands or become silly. And the old Omnipotent Alien chestnut of "grant a Human absolute power and see what he does with it" is as likely to backfire as work in a roleplaying game.

Variations: Make the Omnipotent Alien a member of the characters' own species who's been "elevated" somehow, thus possibly giving them psychological "hooks" with which to oppose him. Or perhaps the Omnipotent Alien is genuinely helpful, not the aloof, condescending "superior being" or wise-cracking gadfly he's usually depicted as. Take the Omnipotent Alien's power away for a while and see how he and the PCs interact.

PUPPET

A Puppet is a villain controlled by another. The fact that he's controlled may be common knowledge, or a deep secret revealed only at the climax. Mundane puppets are people like a weak ruler dominated by his shrewd minister, or a politician who owes favors to a crime syndicate. Science Fiction allows for puppets who really *are* puppets — psionically brainwashed, controlled by brain implants (like Chekov in *Star Trek II: The Wrath of Khan*), or replaced by alien shapeshifters (like several characters in *Star Trek: Deep Space Nine*).

Useful Features: If nobody knows the Puppet is controlled by another, the heroes may struggle to defeat their ultimate enemy, only to discover he's a hapless victim. If the Puppeteer is a weak-willed incompetent, the heroes have to cope with the problem that removing the evil councillor leaves the Puppet in charge by himself. And of course, a sufficiently powerful Puppeteer may decide the heroes themselves make good Puppets.

Potential Problems: Trigger-happy heroes may not let their opponent survive long enough to reveal that he was a Puppet. Mundane Puppets tend to be weak personalities, making them kind of boring as enemies.

Variations: A really shrewd villain may only pretend to be a Puppet, so that when things go bad he can blame his Puppeteer. In a really Machiavellian campaign, there could be several layers of Puppeteers, each pulling the strings of those below him. A Hero Gone Bad may turn out to be a Puppet.

REBELS

Rebels are sometimes heroes, when the government they oppose is evil or tyrannical. But a legitimate state can still have enemies. A look at the evening news may give an idea of the evil people are capable of when they are fighting what they consider oppression.

Useful Features: Rebels often are few in number and poorly equipped, making them good opponents for PCs. They may put millions at risk through acts of terrorism, so that in even a small-scale campaign the heroes can have a major effect on the world. Fanatical terrorists are gaining on the Nazis as the enemy everyone loves to hate.

Potential Problems: The very topicality of adventures involving terrorism and guerrilla warfare can make some players uncomfortable. Practical-minded heroes may simply call the Galactic Patrol and let them handle the rebels (unless the heroes are the Patrol, of course). And as the old saying goes, one man's terrorist is another's freedom fighter — players may find the rebel cause more attractive than the established order the GM expects them to defend.

Variations: Sometimes a rebel turns out to be the Puppet of some rival state, trying to sow chaos and weaken its enemies. If the rebels' motives really are noble, a rebel villain makes a good Honorable Enemy. Historically, rebels often contract with Mercenaries who have useful skills.





ROGUE PSI

Commander Susan Ivanova: *Good old Psi Corps.*

You guys never cease to amaze me. All the moral fiber of Jack the Ripper! What do you do in your spare time, juggle babies over a fire pit? Oops, there goes another calculated risk!

Psi Cop Kelsey: *You're not helping the situation.*

Ivanova: *Lady, you are the situation!*

—Commander Ivanova expresses her opinion of the Psi Corps in the *Babylon 5* episode “Mind War”

The psionic villain, using his insidious mental powers to dominate normals, dates back to the discovery of hypnotism, at the very least. One of the best psionic villains is the creepy Mr. Bester of *Babylon 5*'s Psi Corps, but plenty of others populate the pages of Science Fiction. While telepathy is the most common Rogue Psi power, the anime film *Akira* includes powerful telekinetics run amok. Of course, the term “Rogue Psi” assumes people with psionic powers normally have to follow a set of rules and that mechanisms exist to control them — otherwise “Psi” itself may qualify as a villain category.

Useful Features: Rogue Psi villains make excellent puppet masters, especially if their powers are a secret. Player characters with secret abilities of their own may have to oppose a Rogue Psi without exposing their own powers. If society oppresses psionic individuals, the PCs may sympathize with them, creating a blind spot the Rogue Psi can exploit.

Potential Problems: A powerful psi pitted against non-psionic characters may be too strong to overcome. Conversely, if the psi's powers aren't effective in a confrontation, the PCs can simply shoot him or beat him up.

Variations: If an Enemy Species has psi powers, it may be a nearly unstoppable (and very sinister) foe. A Rogue Psi may well be a Rebel against whatever oppressive measures are used to control mental powers. Psionic tyrants (like Asimov's Mule) can literally rule the Galaxy by force of will, turning captured enemies into loyal servants.

ROGUSH CON MAN

Harry Mudd: *Gentlemen, I'm simply an honest businessman.*

Computer: *Incorrect.*

Harry Mudd: *Blast that tin-plated pot.*

—even technology can see through Harry Mudd in the *Star Trek* episode “Mudd's Women”

Somewhere in the grey area between heroes and villains stands the Roguish Con Man. His motives are unworthy and his methods are unethical... yet you can't help but like the guy. *Star Trek*'s Harry Mudd is one well-done example, the early Han Solo is another; historical figures like Casanova serve as a model. Con Man characters are typically motivated by greed and selfishness.

Useful Features: Con Men opponents are good foils for heroes who are similarly devious and manipulative. They allow the GM to play the villain as intelligently as possible. Since their plots revolve around scams and crooked deals, they make for a less violent campaign.

Potential Problems: Coming up with a good con game to ensnare the PCs is hard work for the GM. Finding the right mix of charm and callous greed is tricky. Above all, it's important to actually make the Con Man likeable, and that can be difficult to pull off.

Variations: A Roguish Con Man doesn't have to be just in it for the money; a silver-tongued enemy spy can work the same way for ideological motives. They make good puppetmasters for Puppet villains. A Roguish Con Woman with devastatingly attractive looks becomes a Femme Fatale.

SPACE PIRATES

Simon Tam: *What happens if they board us?*
Zoe Washburn: *If they take the ship, they'll rape us to death, eat our flesh, and sew our skins into their clothing. And if we're very, very lucky, they'll do it in that order.*

—the *Serenity* has a near-encounter with a band of Reavers in the pilot of the television show *Firefly*

Although piracy is often dismissed as impractical (if not impossible) in Hard Science Fiction and other “realistic” settings, Space Pirates are a common feature in some types of Space Opera, Retro-Science Fiction, and other subgenres. The omnipresent ship-based commerce and (in many cases) widely spread-out law enforcement makes piracy a potential danger, and the romantic attitude many people have toward historical pirates makes it easy to carry those feelings into a fictional future setting.

Useful Features: Pirates can be as ruthless or as Robin Hood-esque noble as the GM wants them to be. They can also have just about any sort of ships and technology he prefers, ranging from ramshackle vessels barely held together by spare parts obtained through their raids, to state-of-the-art fast cruisers designed specifically for piracy.

Potential Problems: If you've seen one Space Pirate, in a lot of ways you've seen them all. If the GM wants to use Space Pirates on a relatively frequent basis in the campaign, he has to find a way to make them a little different each time — something that renders them dramatically refreshing and exciting, rather than predictable and dull.

Variations: Instead of pure Space Pirates, they could be Space *Privateers*, with letters of marque from some interstellar government (and some reason to suspect the PCs' ship is a valid target). Pirates who are actually slavers are even more evil — and more deserving of a blaster-bolt between the eyes — than the regular variety.

NON-PLAYER CHARACTERS

The world isn't divided evenly into heroes and villains. Most people in a campaign setting are simply non-player characters — NPCs.

In most cases what you need for a good, enjoyable NPC is a realistic, well-developed character. But that isn't always true. Realistic, well-developed NPCs tend to take over the story, leaving the heroes as spectators. It's actually more effective

to keep many of your NPCs one-dimensional, but make them into memorable one-dimensional characters. Give them a distinctive habit or a manner of speaking for the heroes to remember. Players often forget NPC names, but they recall “the stuttering guy” or “the man with the onion.”

NPCs have the same motivations as villains — desires, fears, and beliefs — and these motives provide a good way to give them a little personality. The PCs can bribe a security goon who's greedy, but one who joined up because he believes order is an absolute good reacts poorly (to say the least) to bribe offers. Obviously, spear-carriers and faceless hordes don't all need to be this well-developed, but it's worth coming up with one or two motivations for any NPC the heroes directly interact with.

Important NPCs need as much care and feeding as villains — a hero's DNPC, Rival, or Hunter should have some independent goals and a recognizable identity. Dependent NPCs usually are nice people (though one can have a good deal of fun with a hero who feels protective of a cranky or irritating NPC). Rivals should have a mix of good and bad traits, and above all should be competent enough for the Rivalry to mean something — if the hero always wins, it's scarcely a Rivalry.

If a hero is Hunted, the GM should give some thought to the motives of the Hunters. This is true even if it's a large organization. *Why* is the Imperial Intelligence Service tracking the character? What do they want him for? Even when the Hunter is a group, it's useful to give that group a face in the form of a “case officer” or some other member of the group who is the one the heroes have the most dealings with. So when free-lance explorer Jamaica Jones is hunted by the Imperial Intelligence Service, the IIS officer in charge of the operation is Captain Zorm. Other IIS operatives may track Jones's movements or intercept her communications, but it's Zorm who questions her about the missing alien artifacts, Zorm who kidnaps Jamaica's clone sister to lure her into a trap, and Zorm who tracks her through the dark tunnels of the lost alien city.

NPC Archetypes

These are some standard character types who turn up again and again in Science Fiction stories and film. Gamemasters can use them as-is, or play against the stereotype by creating NPCs very different from these.

THE ALIEN SPECIES

As noted in Chapter Six, entire alien species sometimes play NPC-like roles in the campaign. See page 157 for more details.

THE CRUSTY OLD ADMIRAL

A dependable standby in all Space Opera games, the Crusty Old Admiral is the authority figure who sends the heroes out on missions, must be warned about the intergalactic menace, and sometimes needs rescuing from insidious perils.

11

“It's a trap!”

—Admiral Ackbar states the obvious in *Return Of The Jedi*

The Admiral is short-tempered, grey-haired, and usually conceals a twinkle in his steely eyes. In classic Science Fiction the Crusty Old Admiral was always a man, but more recent books and films have featured women just as gruff and overbearing as their male predecessors. The Crusty Old Admiral and other authority figures are a godsend to GMs, since they can order the heroes into an adventure point-blank.

Variations: In dark settings the Crusty Old Admiral may turn out to be a traitor, or plotting to make himself Emperor, or both. Even if his motives are good, the Crusty Old Admiral may be too suspicious of old enemies, too willing to use force instead of diplomacy, or too dismissive of things like civil rights and due process. Take away his Admiral's uniform and he becomes the Crusty Old Colony Governor or Sector Administrator. In Cyberpunk games he gets a greying ponytail and a vocabulary studded with Marxist jargon as the Crusty Old Activist.

THE DOCTOR

When you've been shot by the Mind Police, or need a new face to evade the Interstellar Mafia, or want to get some alien goop analyzed without tipping off the authorities, it's time to visit your friendly Doctor. On Galactic Patrol ships, the Doctor sometimes serves as the informal advisor for everyone on board, including the captain. In Cyberpunk settings, the street doc wears dreadlocks and lost his license because he wouldn't knuckle under to the corps. Post-apocalyptic Doctors have a carefully-hoarded supply of antibiotics and strong opinions about sanitation. Many Doctors take a dim view of technology, even as they make use of advanced medical gadgets.

In Star Hero campaigns, the Doctor is often just a faceless "repair station" for heroes after they shoot it out with the villains. Gamemasters can make Doctors more vivid by giving them strong opinions and personality quirks the players can remember. Using the Doctor as a plot hook is one way to make him (or her) come alive. Medical professionals know a lot of confidential information about people — sometimes more than is healthy...

Variations: Doctors sometimes dabble in Mad Science, both for good and evil. Historically, frauds often promised miracle cures and claimed medical degrees; a fake doctor on a frontier planet may be the only medical care available.

THE GOOD BUSINESSMAN

A staple in many of Robert Heinlein's stories and a key figure in Campbellian Science Fiction (particularly Earthbound Science Fiction), the Good Businessman is a capitalist with common sense. He disdains political, religious, and social pressures in favor of free markets and the competent individual's ability to use his own resources as he sees fit for the benefit of himself and others. He's out for all he can get, but not to the extent of putting society or other people at peril.

The Good Businessman isn't a frequent NPC in most Star Hero campaigns, but if nothing else he sometimes shows up to provide a counterpoint to the various incompetent, criminal, or evil bureaucrats and industrialists the PCs may have to face. In a Cyberpunk setting he may be enough of a rarity to inspire whole legions of followers.

Variations: On a space station or in a far-flung colony the Good Businessman may become the Good Administrator. In a Space Opera campaign he transforms into the Good Diplomat, who believes that the right combination of reason, pragmatism, and enlightened self-interest can solve any quarrel or dispute.

THE SECURITY OFFICER

Tax-Notifier: *Huh, Godot must've plowed through this tinker-toy security with his eyes shut. I wonder if they even knew he was here.*

[Several injured but well-armed Security Officers show up]

Security Officer #2: *Oh, we figured it out. This time we'll do much better.*

Buck Godot *[off to one side where he remains unobserved]:* *Yes, that's right... send more security to Station 10!*

—Buck uses Omniscient's security team to delay his Tax-Notifier in issue #1 of *Buck Godot: The Gallimaufry*, by Phil Foglio

When someone in a Science Fiction story calls the cops, this is who shows up. Security officers may wear red shirts, white armor, or blue uniforms, but their job is always the same — they keep the peace and enforce the law. In lawless settings the Security boys are there to serve whoever has power — corporations in Cyberpunk worlds, warlords in Post-Apocalyptic campaigns, or the Galactic Tyrant in Space Operas. They tend to be large, humorless, and bad shots... and distressingly short-lived, even when they're working for the good guys.

While it's traditional for Security goons to be faceless and say little besides "Halt!" and "Unnh!", a clever GM can personalize them and add a little depth to encounters. If the heroes have gotten to know Ensign Kowalski over a few game sessions, they'll be genuinely upset and vengeful when the Superego Monster eats his cerebellum.

Variations: The best Security Officers enforce the law and obey it themselves, respecting the rights of the accused even as they pursue lawbreakers tirelessly. Less admirable cops serving tyrants or villainous corporations may be little better than thugs. A few walk the fine line in between — doing their best to preserve order but a little weak on things like Miranda rights. Psionic Security Officers become the scary Mind Police. Security robots are even more humorless and worse shots than their Human analogues. In a Planetary Romance setting, Security Officers become Guards, whose job description is mostly seizing people.

THE STREETWISE KID

Ever since Tom Sawyer and Huck Finn, meddling kids have been uncovering villainous plots, acting as the eyes and ears of grown-up heroes, and generally having a ball getting into trouble. If Streetwise Kids have families at all, they're massively dysfunctional, so that no bothersome parents object to their child staying out all night or going on pick-up commando raids with live ammo. Streetwise Kids have high DEX and remarkable skill at acting, lying, and conning grown-ups. They often have well-developed abilities at picking pockets, shoplifting, and climbing walls. Combat Luck is very common. Cyberpunk Kids have fantastically high skills at computer hacking and programming, while Space Opera Kids exhibit precocious scientific or starship piloting abilities.

Gamemasters can use Streetwise Kids as an occasionally reliable source of information, victims to be rescued, or even as the innocent-looking stooges of the villains. Most people are protective of the young, which makes it that much more wrenching when a Streetwise Kid falls into the clutches of a serial killer or alien parasite.

Variations: Planetary Romance Kids are known as Urchins, and may be the only ones who believe the heroes are really from another planet. Kids with psionic powers may be a lot more formidable than they appear, and can turn into Rogue Psis if the heroes aren't careful; wild talents are surprisingly common among psionic outcast children. To give the players a nasty surprise, borrow from contemporary headlines and make the Streetwise Kid a deadly and conscienceless killer.

THE SUPPLIER

The Finn was a fence, a trafficker in stolen goods, primarily in software. In the course of his business, he sometimes came into contact with other fences, some of whom dealt in more traditional items of the trade.

—from *Neuromancer*, by William Gibson

Whatever you want to buy, he's got it. Legality is no obstacle as long as the price is right. In a Space Opera setting he runs a trading post on the frontier; in Cyberpunk games he has a shop down in the city's lowest levels, his address known only to the top hackers and samurai. Frontier traders are often generalists, but starbase or big-city Suppliers usually specialize in a single type of commodity — guns, drugs, software, or rumors.

Suppliers tend to be shifty-eyed, cynical, and furtive. They follow two rules: get payment in advance; and don't get involved. But when the situation is desperate and defeat seems inevitable, the Supplier disappears into his back room to bring out the heavy-duty special merchandise he's been saving for emergencies.

Suppliers are handy NPCs for GMs, as they can release just enough information to steer the players in the right direction, without giving them the whole story ("Sorry, you didn't pay me for that.") As a plot hook, the Supplier is ideal for putting the heroes together with someone who wants to hire them (perhaps in exchange for a cut of their fee...).

Variations: Sometimes the shady Supplier with his finger on the pulse of black-market trade turns out to be an agent for either the Rebels or the Galactic Patrol. Sometimes he's working for both. A Supplier whose trade is genuinely immoral — dangerous drugs, slaves, stolen organs — can be a questionable ally for heroic characters.

THE TECHNICIAN

Captain Malcolm Reynolds: *Kaylee! What the hell is goin' on in the engine room? Were there monkeys? Some terrifying space monkeys maybe got loose?*

—Mal is a little upset that his ship isn't being properly looked after in the *Firefly* episode "The Train Job"

Science Fiction settings usually have lots of machines, and someone has to operate and repair those machines. Technicians can be civilian engineers, military techs, highly-trained mission specialists, brilliant programmers, or grimy street techs. In Post-Apocalyptic settings, they may be the only ones left who understand ancient machinery. Whatever the setting, technicians are usually portrayed as being more comfortable around machines than people, sometimes with eccentricities a mad scientist would envy. Occasionally one is a beautiful woman (and potential romantic interest for the PCs) once you clean the grease and grime off her face and change her out of a spaceman's jumpsuit into more presentable clothing. Regardless, when the chips are down and the clock is ticking, the Technician can work miracles, re-engineering starships or computer networks on the fly to save the day.

Technician NPCs can be a good GM's mouthpiece when the PCs need to learn some details of the setting's technology. The GM can also use an NPC technician to keep vital systems running when the plot demands it.

Variations: In many Science Fiction settings, Technicians may be specialized repair robots. This usually doesn't improve their social skills any, but it does provide them with all kinds of nifty built-in tools and gadgets. Give a Technician some combat training and a utility belt full of high-tech toys and he becomes the Specialist, an essential part of any special-ops military unit or espionage team. Combine a Technician and a Supplier and you get a Street Tech, who'll fix your cyber-arm and sell you the latest in illegal Finnish hacking software — cash only.



CHAPTER TWELVE



ARGOS EXPLORATION



ARGOS EXPLORATION

ARGOS EXPLORATION

To help you get your Star Hero campaign started, here are five sample Player Characters — the members of Argos Exploration — and five adversaries they might encounter. All of them are from Hero's "Terran Empire" setting for Star Hero, but you can easily adapt them to your own universe. You can find out more about the Terran Empire in the appropriately-named *Terran Empire* sourcebook.

Because GMs may need to adapt these characters to a wide variety of settings and situations, their lists of "Equipment Carried" are fairly short and simple. In addition to listed items, they could certainly have just about any commonly-available piece of technology the GM needs them to have.

Membership: Robert Avilla, Jennifer DeGraff, Jason Grigori, Segaro Krez'shul, and Kiritha Tal

Background/History: Argos Exploration looks on paper, and tries to pass itself off in person, as a "freelance exploration and mercantile firm" — a small company of bold explorers and traders who "prospect" among the stars of the Galaxy for inhabitable planets, new trade routes and markets, and other such things of value. But while it is that, in truth it's also a refuge for a number of kind-hearted scoundrels who've found themselves on, one might say, less than the best of terms with the Imperial authorities.

Argos was founded by Robert Avilla, a free trader and gambler with a reputation for taking on dangerous trade runs, and even engaging in a bit of smuggling and other shady dealings. Then he ran afoul of a notorious Hzeel arms merchant named Zee'gansh, from whom he won a prodigious sum of money in a card game Zee'gansh had rigged. Zee'gansh exposed some of Avilla's less-than-legal activities to the Imperial Security Police, and had him framed for other crimes he wasn't responsible for. Unwilling to spend the rest of his life on an Imperial prison-world, Avilla realized he needed to disappear.

Using his skills, and a few contacts he'd developed over the years, Avilla created a new identity (Kaithon Argosina, a Human merchant and explorer), used Zee'gansh's money to buy a ship (the aptly-named *Jackpot*), and set up Argos Exploration as a way of making money and preserving his freedom to move about the Galaxy. But he realized he needed to make Argos look legitimate; a one-man company wouldn't provide much cover for very long.

His first "employee" came along in the form of Segaro Krez'shul, a Mondabi con artist and thief whose life Avilla had saved. Feeling bound by the obligations of honor, Krez'shul appointed himself Avilla's "bodyguard," and the two became fast friends. Argos now had an "executive assistant."

Since Argos had a ship, it needed a crew. For a pilot, Avilla could think of no one better than his ex-wife, Jennifer DeGraff. While the two of them had learned long ago they couldn't live together, they never seemed to remain away from one another for very long — and she was an ace pilot, no question about that. Seeking to escape some legal entanglements of her own, DeGraff was glad to go to work for Argos Exploration.

For the position of ship's engineer, Avilla tapped his old friend Jason Grigori, whom he'd known since the time the two of them formed an impromptu team during a barfight and ended up as the only two people left standing when the dust settled. A hard-drinking, hard-working, hard-fighting, wise-cracking genius of a mechanic, Grigori loved to travel and see new sights, so the Argos job suited him perfectly.

It then occurred to Avilla that his exploration company probably needed an *explorer* — a scientist versed in planetology and the skills of surveying worlds. After scouring a number of Imperial universities, he found Kiritha Tal, a young Perseid woman with an unconventional outlook on life and a thirst for adventure. Eager for a job that wouldn't bore her, Tal accepted Avilla's offer to join the *Jackpot's* crew.

Argos Exploration has maintained its payroll of five for a couple of years now as the team journeys into uncharted regions of space, engages in free trading, and occasionally gets mixed up in some rather unusual adventures. Often just one step ahead of the law, the Argosians have somehow

managed to come out ahead in all of their escapades. They're having a fine time and making good money, so they plan to keep on doing exactly what they're doing. They're always on the lookout for "bold new opportunities," as Avilla likes to say.

Group Relations: Kindred souls brought together by circumstance and a mutual love of free travel and adventure, the members of Argos Exploration get along quite well. Although Avilla is the *Jackpot's* captain, and nominally "first among equals," the group actually runs more like a democracy. Profits are split evenly five ways, and everyone has a say in major decisions.

Other than the unwelcome attentions of the Imperial authorities and other enemies they've made, only two things trouble the Argosians. The first is the relationship between Avilla and DeGraff. Still attracted to one another, but with personalities that frequently clash, they often end up quarrelling. Even though these fights are rarely serious, they sometimes cause stress and strain within the crew. Second is the fact that they have to keep some of the truths about Argos from Kiritha Tal. The young, and in some ways still naive, Perseid isn't so blind as to think Argos Exploration doesn't engage in some questionable activities, but she's not aware of "Kaithon Argosina"'s true identity or all of his background. Sooner or later, she's bound to find out, and Avilla worries about how she'll react. He's also concerned she may unknowingly alert the Imperial Security Police to his presence without meaning to. So far, none of the things he fears have come to pass, but you never know what may lurk just over the galactic horizon....

Tactics: The members of Argos prefer *not* to fight if possible; they'd rather avoid anyone who intends them harm, or at worst find a way to talk themselves out of any predicament they've gotten into. But when push comes to shove and blasters are drawn, they're skilled and dangerous combatants. Krez'shul and Grigori usually prefer hand-to-hand fighting (though they're good shots as well). While they mix it up with the enemy, the others usually try to get behind cover and support them with blaster fire. DeGraff can sometimes call upon her psionic powers to help in combat situations, but because they're so difficult for her to use Avilla rarely counts on them.

Campaign Use: Argos Exploration makes a good ally or rival for a group of similarly-minded PCs. Its members, though not exactly squeaky clean, are good-hearted people who don't use their criminal skills to steal from innocent people, wreck lives, or cause serious harm to anyone who doesn't deserve it. The authorities may assign a group of PCs associated with the Imperial government to capture them, while a group one with little or no respect for the Empire's officials may team up with the Argosians for an adventure or two. A friendly — or not-so-friendly — rivalry, or romantic relationships, may develop between the members of the two groups.

ROBERT "KAITHON ARGOSINA" AVILLA

Background/History: As a restless young man growing up on Sigma Draconis III, Robert Avilla yearned to see the wider Galaxy, so when he turned 18 he joined the Imperial military. Based on his aptitude tests and performance evaluations, he was assigned to the Imperial Scout Service — just what he wanted. He spent a year learning how to fly starships and astronavigate, and then for the rest of his hitch surveyed various regions of space for the Terran Empire.

When his term of service was up, he decided he'd had enough of military discipline, so he mustered out and joined a group of free traders. His time with them was educational, but ultimately no more satisfying than being a scout — he still had to follow orders and curb his desire to do what *he* wanted. He took out his frustrations through gambling, drinking, and general misbehavior, which didn't help his reputation among his fellow traders.

After several years, Avilla's conduct became too much for his bosses to tolerate, so they fired him. He drifted into the underworld and got involved in smuggling and other unsavory activities. This wasn't exactly what he wanted to do, either, but he had a lot more personal freedom than he did as a normal free trader. He almost got caught by the Imperial Security Police a few times, but somehow he always came out free and clear, with nothing but a few suspicious notes in his growing Imperial file.

During one of his smuggling runs, he had the misfortune to encounter some pirates. He tried to run, but in the end they caught him, beat him, and took his cargo. After that, no one would trust him; somehow the word got out that he'd been working with the pirates to cheat his employer.

That's when Lady Luck stepped up and kissed him smack on the lips. Figuring he had nothing to lose, he took all of his remaining money to a casino on Shalagar VII and got into a high-stakes card game. Then he started winning... and winning... and winning. He knew he should cash out and thank his lucky stars, but he just couldn't do it — the smug Hzeel across the table kept taking too many pots from him, and he was determined to win once and for all.

Eventually, it came down to him and the Hzeel, an arms dealer named Zee'gansh. Raise followed raise, until literally billions of credits were in play and the entire casino had gathered around to watch. Avilla called, and the Hzeel triumphantly laid down his cards: a golden rhombus! The crowd looked sorrowfully at Avilla as Zee'gansh reached for the money — only to gasp in astonishment as Avilla showed that he held a diamond rhombus!

ROBERT "KAITHON ARGOSINA" AVILLA

Val	Char	Cost	Roll	Notes
10	STR	0	11-	Lift 100 kg; 2d6 HTH damage [1]
18	DEX	16	13-	
15	CON	5	12-	
18	INT	8	13-	PER Roll 13-
11	EGO	1	11-	
20	PRE	10	13-	PRE Attack: 4d6
7	OCV	20		
6	DCV	15		
3	OMCV	0		
4	DMCV	3		
4	SPD	20		Phases: 3, 6, 9, 12
5	PD	3		Total: 8 PD (3 rPD)
5	ED	3		Total: 8 ED (3 rED)
5	REC	1		
30	END	2		
12	BODY	2		
30	STUN	5		Total Characteristics Cost: 114

Movement: Running: 14m

Cost Powers

2 **Fast On His Feet:** Running +2m (14m total) **END** 1



Perks

2 Deep Cover (Kaithon Argosina)

Talents

6 Combat Luck (3 PD/3 ED)
3 Striking Appearance +1/+1d6

Skills

3 Bureaucratics 13-
3 Combat Piloting 13-
3 Disguise 13-
1 Electronics 8-
2 Gambling (Card Games) 13-
3 High Society 13-
2 AK: Centauri Trade Routes 11-
2 KS: Imperial Scout Service 11-
1 Mechanics 8-
2 Navigation (Space) 13-
3 Persuasion 13-
1 SS: Planetology 8-
3 Sleight Of Hand 13-
3 Stealth 13-
3 Streetwise 13-
4 Systems Operation (Communications Systems, Radar, FTL Sensors) 13-
5 Trading 14-
8 TF: Commercial Spacecraft & Space Yachts, Industrial & Exploratory Vehicles, Military Spacecraft, Personal-Use Spacecraft
6 WF: Beam Weapons, Energy Weapons, Small Arms

Total Powers & Skills Cost: 71

Total Cost: 185

175 Matching Complications (50)

20 **Hunted:** Imperial Security Police (Infrequently, Mo Pow, NCI, Capture)
15 **Hunted:** Zee'gansh (Infrequently, As Pow, NCI, Kill)
5 **Negative Reputation:** wanted criminal (Frequently, throughout the Empire; about 20 billion people are aware of Reputation)
10 **Psychological Complication:** Wanderlust (Common, Moderate)
15 **Social Complication:** Secret Identity (maintains the cover of "Kaithon Argosina") (Frequently, Major)

Total Complications Points: 50

Experience Points: 10

SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min Shots
Mark II-K Laser Pistol	+1	+1	2d6	+0	10	32
Pocket Blaster	+0	-1	1d6	+0	6	8

Armor

Type 2 Force-Field Belt (8 PD/8 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer; nightsight monocular; quick disguise kit; deck of cards; 100-1,000 credits' worth of the local currency

Avilla knew opportunity when he saw it. Rather than waste the money on foolish luxuries, he decided it was time to turn himself around and get on with living the life he'd always envisioned. With some help from his friend Segaro Krez'shul, he created a new identity — Kaithon Argosina, merchant and explorer — and used his winnings to buy a small ship which he christened the *Jackpot*. Then he set up Argos Exploration, and ever since he's been enjoying a life of adventure, excitement, and profit.

Personality/Motivation: Avilla is a classic “rogue with a heart of gold.” Although he often finds himself slightly on the wrong side of the law, his intentions are usually good, and he doesn't commit crimes that hurt people who don't deserve it. Really, all he wants is to live his life free of unnecessary entanglements or Imperial interference. He wants to go where he pleases, when he pleases. He loves to see and experience new things, making him an enthusiastic (if not formally trained) explorer and free trader. Getting him to sit still in one place for much longer than a month is difficult.

Quote: “Okay, what have you gotten us into *now*?”

Powers/Tactics: Avilla's been in his share of barfights and blaster battles, but he's not a fighter — he'd rather avoid, outrun, or talk himself out of trouble. If forced to fight, he'll often fight sneaky, using concealed weapons or underhanded tactics; he cares about winning, not nobility or honor.

In most combats, Avilla gets behind cover as soon as possible, then shoots at the most obvious targets. He favors unorthodox tactics, such as tricking an opponent into thinking he's facing twice as many people as he really is, and has something of a flair for thinking them up.

Appearance: Robert Avilla is a handsome Human male in his early 30s, standing 6'2” tall with a broad, muscular build. He has dark hair, which he keeps short and well-styled, and is clean-shaven. When he expects to encounter important people or conduct business, he wears appropriate attire that's stylish but not overly expensive. When he's lounging around the *Jackpot* or on an exploration mission, he dresses more comfortably — typically in dark pants, matching shirt, and well-polished boots, and sometimes with a jacket or vest if appropriate or necessary.

THE JACKPOT

For Avilla's ship, the *Jackpot*, you can use the Merchant Ship on page 248. Just install a few unlisted (and possibly illegal) “upgrades” — a little more speed, an extra weapon or two, or the like — to make it distinctive.

JENNIFER DEGRAFF

Background/History: Born and raised on Epsilon Indi III, better known as Margrave's World after its discoverer, Jennifer DeGraff tested as psionic-positive while still in school. Following Margravite tradition, her inner wrists were tattooed with a purple square moline cross, so everyone would know she possessed mental powers.

Eager to leave her homeworld, which she considered sort of a boring backwater, Jennifer attended piloting school. While still a student, she met Robert Avilla, a cadet at the Imperial Scout Service Academy. The two fell in love, and after a whirlwind courtship, were married. That soon proved to be a mistake. Although they *were* in love, they just couldn't live together for long periods of time, or really get along well. They soon obtained a divorce, though they remained in contact and periodically saw each other after that.

Based on her high scores at piloting school, Jennifer got a pilot's job with the Alphadyne Mercantile Combine, a large corporation. She soon developed a reputation as a skilled, even slightly daredevil, starship jockey — though her risk-taking cost her more than a few jobs, too. She enjoyed the work, though it got monotonous at times.

Things took a turn for the worse when Alphadyne discovered she was psionic — a fact she'd carefully failed to mention on her employment application. She was soon transferred to the company's psionics division, where she sat in on important business meetings to monitor whether the parties with whom Alphadyne was negotiating were telling the truth. She loathed the job; it was distasteful and boring.

One day, while monitoring a high-level meeting concerning the acquisition of an Altairan manufacturing corporation, Jennifer picked up thoughts from one of the Alphadyne executives that revealed some highly illegal conduct by the company in regard to this deal, and other deals. Shocked, Jennifer reported the executive... only to find out his superiors, and for that matter the directors of the corporation, were aware of it! They'd *sanctioned* the criminal conduct, not only for those deals but on many other occasions. And now that Jennifer knew about it, they'd have to see that she didn't talk... ever.

Jennifer ran, but without having a good place to hide, she found the Alphadyne “bounty hunter” teams always just a few steps behind her. Then she heard from Robert again. He was starting up a new exploration business, and needed a pilot. Would she be interested in the job?

JENNIFER DEGRAFF

Val	Char	Cost	Roll	Notes
10	STR	0	11-	Lift 100 kg; 2d6 HTH damage [1]
16	DEX	12	12-	
15	CON	5	12-	
15	INT	5	12-	PER Roll 12-
18	EGO	8	13-	
15	PRE	5	12-	PRE Attack: 3d6
5	OCV	10		
5	DCV	10		
6	OMCV	9		
6	DMCV	9		
3	SPD	10		Phases: 4, 8, 12
4	PD	2		Total: 7 PD (3 rPD)
4	ED	2		Total: 7 ED (3 rED)
5	REC	1		
35	END	3		
10	BODY	0		
30	STUN	5		
				Total Characteristics Cost: 96

Movement: Running: 12m



Cost Powers END

11	Telepathic Probe: Telepathy 8d6	4
	Activation Roll 14- (-¼), Concentration (0 DCV throughout Extra Time and probing the subject's mind; -1), Extra Time (1 Turn; -1¼), Limited Normal Range (30m; -¼)	
12	Mental Attack: Mental Blast 2d6	3
	Constant (+½); Activation Roll 14- (-¼), Concentration (½ DCV throughout; -½), Extra Time (Full Phase; -½), Limited Normal Range (30m; -¼)	

Talents

6 Combat Luck (3 PD/3 ED)

Skills

9	Combat Piloting 15-
1	Cryptography 8-
1	Electronics 8-
1	Gambling (Card Games) 8-
2	AK: Centauri Trade Routes 11-
1	KS: Alphadyne Mercantile Combine 8-
4	Navigation (Space) 13-
3	Persuasion 13-
1	SS: Planetology 8-
3	Stealth 13-
9	Systems Operation (Communications Systems, FTL Sensors, Radar, Sensor Jamming Equipment) 14-
3	Trading 12-
6	TF: Commercial Spacecraft & Space Yachts, Industrial & Exploratory Vehicles, Personal-Use Spacecraft
6	WF: Beam Weapons, Energy Weapons, Small Arms

Total Powers & Skills Cost: 79

Total Cost: 175

175 Matching Complications (50)

5	Distinctive Features: Margravite psionic's tattoos (Easily Concealed, Noticed And Recognizable)
25	Hunted: Alphadyne Mercantile Combine (Frequently, Mo Pow, NCI, Capture/Kill)
15	Psychological Complication: Thrillseeker (Common, Strong)
5	Social Complication: Psionic (Infrequently, Minor)
10	Susceptibility: to strong mental emanations within 8m, takes 1d6 per Turn (Uncommon)

Total Complications Points: 50

Experience Points: 0

SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min Shots
Mark II-K Laser Pistol	+1	+1	2d6	+0	10	32
Pocket Blaster	+0	-1	1d6	+0	6	8

Armor

Modified Type 1 Force-Field Belt (6 PD/6 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer; Personal HoloChamber™ goggles

Personality/Motivation: Jennifer, like many pilots, has a well-deserved reputation as a thrillseeker. She dislikes anything that's routine, boring, or ordinary; she wants excitement and danger (though not too much of the latter). She's got a strong streak of "No problem, I can do it!" confidence that causes her shipmates to become concerned whenever there's an asteroid field blocking their flight path. Her favorite phrase, "Nothing to worry about!", is guaranteed to make them worry.

One of the reasons Jennifer accepted Avilla's job offer is that she's still attracted to him (as he is to her, just not quite as strongly). Although she knows getting involved with him would be stupid, and that he's really not good for her, she can't help how she feels. In any dangerous situation, she's likely to rescue or help him first, even if some other Argosian needs her help more.

Quote: "Sit tight! We'll be through this in a minute. Nothing to worry about!"

Powers/Tactics: Jennifer DeGraff is a skilled, experienced pilot with a natural gift for astrogation and spaceflight. But she's got something other, equally-skilled pilots don't: psionic powers. She has two low-level abilities, telepathy and the power to induce mental pain ("You're a headache in more ways than one," as Avilla sometimes tells her). She may develop additional powers in time, or improve the ones she has. Unfortunately, her psionic defenses aren't well-developed (*i.e.*, she has no Mental Defense). This makes it difficult for her to block out strong mental emanations near her, which cause her intense pain. ("Strong mental emanations" include the use of any Mental Power, the use of most other powers with a "psionics" special effect, and sometimes even the presence of *extremely* strong minds.)

Because her psionic powers take time to work and aren't really powerful, DeGraff rarely uses them in combat. Instead, she prefers to rely upon her fast reflexes and good aim. She has no hand-to-hand combat skills to speak of.

Appearance: Jennifer DeGraff is an attractive 28-year-old Human female, short (5'4") and of slight build. Her blonde hair is a little longer than shoulder length; she keeps it tied back in a ponytail so it doesn't get in her way during zero-g situations. Both of her inner wrists sport a small purple tattoo of a square moline cross, marking her as a psionic to those who are aware of Margravite customs. Jennifer typically wears a dark blue pilot's jumpsuit, with sleeves that end halfway down her lower arm so they never interfere with working a starship's controls.

JASON GRIGORI

Background/History: A gifted engineer with a knack for making any system, no matter how jury-rigged or bizarre, work properly, Jason Grigori had no difficulty finding a job working on starships after he graduated from technical school. *Keeping* a job was another matter. He just didn't seem to fit in anywhere. During the day he was constantly grumpy, and at night he mostly seemed to spend a lot of time drinking, frequently getting into barfights in the process. With behavior like that, it wasn't easy to hold on to a job, so he drifted from ship to ship and world to world, getting by on the strength of his skills instead of his personality.

One night, in a bar on a space station orbiting a mining world on what was at the time the Imperial frontier, he picked a barfight bigger than even he could handle. Over a dozen Humans and aliens were about to start pounding him into the ground when another Human, a rakish looking free trader, said, "This doesn't look like even odds. I think I'll join him." By the time he and the other man — Robert Avilla — were done, the other fighters were all unconscious, and the two of them had become fast friends. Though their careers took them to different parts of the Galaxy, they kept in touch and periodically ran into each other.

A few years later, Grigori heard from his old friend again. Avilla had gotten himself a ship somehow and needed an engineer. The first person he thought of was Jason. Preferring to have a boss he was simpatico with, instead of the ones who constantly nagged and berated him, Grigori walked out on his job at the time (for an unsavory group of pirates, who've sworn revenge for the trouble he caused them) and became a part of Argos Exploration.

Personality/Motivation: Most of the time, Grigori is a quiet loner who gets grumpy, even surly, if people try to talk to him or otherwise distract him from his work — he's only truly pleasant with people he genuinely likes, such as Avilla or Segaro Krez'shul. Though he's not rude, he doesn't have as much tact as he should, and is quick to make his dislike of a situation or person evident through facial expressions and clipped comments. When working, he prefers to be left alone, with only the ship's computer playing classical music far too loudly to keep him company.

The only time Grigori "comes alive" is when he's drinking. He has a prodigious capacity for alcohol, which rarely seems to impair him (in fact, he says he does some things, such as fighting, better when he's been drinking). After he's had a few, he's prone to mischief and often picks fights. He loves a good scrap, be it with fists or lasers, and it's often hard to drag him away from a battle even when he knows it would be smarter to leave.

Quote: "Yeah yeah, fix the food processing unit, I got it. Go away."

JASON GRIGORI

Val	Char	Cost	Roll	Notes
15	STR	5	12-	Lift 200 kg; 3d6 HTH damage [1]
15	DEX	10	12-	
18	CON	8	13-	
18	INT	8	13-	PER Roll 13-
10	EGO	0	11-	
15	PRE	5	12-	PRE Attack: 3d6
5	OCV	10		
5	DCV	10		
3	OMCV	0		
3	DMCV	0		
4	SPD	20		Phases: 3, 6, 9, 12
8	PD	6		Total: 8 PD (0 rPD)
6	ED	4		Total: 6 ED (0 rED)
7	REC	3		
35	END	3		
15	BODY	5		
36	STUN	8		

Total Characteristics Cost: 105

Movement: Running: 12m

Cost Powers

8 **Brawling:** HA +2d6
Hand-To-Hand Attack (-¼)

END

1



Talents

4 **I Can Drunk Just As Good Fight!:** Environmental Movement (no penalties when drunk)

Skills

10 +1 with All Combat

5 Computer Programming 14-

3 Demolitions 13-

5 Electronics 14-

1 AK: Centauri Trade Routes 8-

2 KS: Obscure Tech Specs And Trivia 11-

3 Inventor 13-

1 Lockpicking 8-

5 Mechanics 14-

3 Security Systems 13-

3 Stealth 12-

9 Systems Operation (Communications Systems, Environmental Systems, Medical Systems, FTL Sensors, Radar, Sensor Jamming Equipment) 13-

2 TF: Personal-Use Spacecraft

6 WF: Beam Weapons, Energy Weapons, Small Arms

Total Powers & Skills Cost: 70

Total Cost: 175

175 Matching Complications (50)

15 **DNPC:** Napoleon (his pet *sokar*) (Infrequently, Incompetent)

15 **Hunted:** Yorgen Vlar's pirate band (Infrequently, Mo Pow, Kill)

10 **Hunted:** Dargen (Infrequently, As Pow, Hurt/Kill)

15 **Psychological Complication:** Loves A Good Fight (Common, Strong)

10 **Psychological Complication:** Perpetually Grumpy (Common, Moderate)

Total Complications Points: 50

Experience Points: 0

SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min Shots
Mark VII Laser Rifle	+2	+2	3½d6 (AF5, AP)	+1	12	64
Mark II-K Laser Pistol	+1	+1	2d6	+0	10	32

Armor

Type 2 Force-Field Belt (8 PD/8 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer; portable toolkit; some spare parts

Powers/Tactics: In combat, Grigori is a straightforward and aggressive fighter. He'll pick the biggest guy he can find and light into him with fists (if possible), or look for the best shot and then start shooting (if not). If Avilla can get him to stop *acting* and start *thinking*, he often finds clever ways to use his engineering skills in battle that would ordinarily get drowned out by his love of fighting.

Appearance: Jason Grigori is a male Human, age 31, with short black hair and a short black beard. He's 5'9" tall and weighs about 200 pounds (he's a little pudgy, but not overly so). He usually wears a typical spacer's jumpsuit with lots of pockets, plus a broad belt with a toolpack attached to it, but if he's going to spend the day working somewhere hot (like the access conduits near the engine) he'll usually ditch the jumpsuit in favor of a light shirt and shorts. He's often accompanied by Napoleon, his pet *sokar* (a friendly squirrel-like mammal from one of the Lalande worlds).

Jason is a coffee addict. If he doesn't have a mug of coffee in his hand, there's sure to be one on a table near him.

SEGARO KREZ'SHUL

Background/History: Born into a poor family in a poor neighborhood of the capital on Mon'da, Segaro Krez'shul got involved in petty crime as a teenager. Although big and strong, and therefore good at "muscle" work and protection rackets, he preferred to use his mind and agile hands rather than his fists whenever possible. Slowly but surely he drifted away from street crime and into confidence games and fraud.

He was on his way to what might have been a brilliant career as a grifter when he made the mistake of pulling a scam on a Mon'dabi associated with a large organized crime group on his homeworld. The "mark" brought a few "friends" over to teach Segaro a lesson... a *permanent* lesson. Segaro fled, hopping from world to world as he tried to keep ahead of his bloodthirsty pursuers.

But he couldn't run forever. They finally caught up to him in an alley on Vardel IV and were about to kill him when Robert Avilla, who saw what he thought was an innocent Mon'dabi being attacked by thieves, came to his rescue. Together they defeated the thugs and got away from Vardel IV without any serious repercussions.

Touched by Avilla's rescue, and believing he owed the Human his life, Segaro chose to become the free trader's constant companion, assistant, and "bodyguard." They worked together well, with Segaro's con-man skills complementing Avilla's abilities as a smuggler. When Avilla decided to go into business as Argos Exploration, Segaro came right along with him.

Personality/Motivation: Segaro Krez'shul is a clever, cagey individual who prefers to rely on his wits and guile rather than his muscles. He's perfectly capable of projecting an air of physical menace, or even fighting, if necessary — he'd just rather not if he can find a more "sophisticated" way to avoid his problems. He still uses his grifting skills whenever he gets the chance; as a result, more than a few people are pursuing him to get back their money or take revenge. (In game terms, the GM should roll the "scam victim" Hunted, and if the roll succeeds, one of these people has caught up to Segaro and causes trouble for him somehow during the adventure.)

Segaro hates to be fooled or outwitted. His self-image makes him think he's smarter than other people, and being proved wrong infuriates him. He may attack then and there, or may bide his time and take revenge later.

Although he's not normally that honorable a person, for some reason Segaro feels honor-bound to Robert Avilla because Avilla saved his life. He's protective of his "boss," and tries not to let him go into any threatening situation without coming along to help keep Avilla safe. He'd gladly risk his life for Avilla's if necessary... though he prefers to arrange things so it's *not* necessary.

Quote: "Why didn't you *tell* me we had a proton inductor? If I'd known that, I could've thought of something to keep us out of this mess!"

Powers/Tactics: Segaro is big and strong, able to use his size and muscles to hit fast and hard if he has to. He's also a good shot with a blaster. However, he'd rather use his smarts than his fists if he can. He may spend more time maneuvering for a clever shot, or trying to concoct a plan to trick the enemy, than he ought to, leaving himself and his friends exposed when more direct action would eliminate the problem.

Segaro finds that many non-tailed humanoids forget about his tail. It's not very manipulable, but in a battle it can hit just as hard as a fist. In some cases he may get a Surprise Move bonus the first time he hits someone with it.

Appearance: Segaro Krez'shul is a light-scaled Mon'dabi male. He's 29 years old, stands 6'4" tall, and weighs nearly 250 pounds. He usually dresses in typical Mon'dabi fashion — sandals, blousy pants, and a blousy cross-breasted tunic that comes down to the mid-thigh.

SEGARO KREZ'SHUL

Val	Char	Cost	Roll	Notes
20	STR	10	13-	Lift 400 kg; 4d6 HTH damage [2]
16	DEX	12	12-	
20	CON	10	13-	
13	INT	3	12-	PER Roll 12-
10	EGO	0	11-	
18	PRE	8	13-	PRE Attack: 3½d6
6	OCV	15		
5	DCV	10		
3	OMCV	0		
3	DMCV	0		
3	SPD	10		Phases: 4, 8, 12
8	PD	6		Total: 8 PD (1 rPD)
6	ED	4		Total: 6 ED (1 rED)
8	REC	4		
40	END	4		
18	BODY	8		
44	STUN	12		Total Characteristics Cost: 116

Movement: Running: 12m

Cost Powers

Cost	Powers	END
3	Mon'dabi Bite: HKA 1 point No STR Bonus (-½)	1
8	Brawling: HA +2d6 Hand-To-Hand Attack (-¼)	1
1	Mon'dabi Skin: Resistant (+½) for 1 PD/1 ED	0
3	Mon'dabi Senses: +1 PER with all Sense Groups	0
5	Tail: Extra Limb (tail) Inherent (+¼); Limited Manipulation (-¼)	0

Skills

3	Bribery 13-
3	Computer Programming 13-
3	Conversation 13-
2	Forgery (Documents) 13-
2	Gambling (Card Games) 13-
2	KS: Mon'dabi Underworld 11-
1	Lockpicking 8-
3	Persuasion 13-
3	Shadowing 13-
3	Sleight Of Hand 12-
3	Stealth 12-
3	Trading 13-
2	TF: Personal-Use Spacecraft
6	WF: Beam Weapons, Energy Weapons, Small Arms

Total Powers & Skills Cost: 59

Total Cost: 175

175 Matching Complications (50)

5	Distinctive Features: scars on neck, left leg, tail (Easily Concealed, Noticed And Recognizable)
15	Enraged: if tricked or fooled (Uncommon), go 11-, recover 11-
15	Hunted: Mon'dabi organized crime group (Infrequently, Mo Pow, NCI, Limited Geographical Area, Kill)
10	Hunted: one of his scam victims (Infrequently, As Pow, Capture)
5	Negative Reputation: wanted criminal (Frequently, throughout Mon'dabi space, parts of the Empire, and elsewhere; about 20 billion people are aware of Reputation)
15	Psychological Complication: Protective Of Robert Avilla (Common, Strong)
10	Psychological Complication: Prefers Brains Over Brawn (Common, Moderate)

Total Complications Points: 50

Experience Points: 0

SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min Shots
Pocket Blaster	+0	-1	1d6	+0	6	8
Mark II-K Laser Pistol	+1	+1	2d6	+0	10	32

Armor

Modified Type 1 Force-Field Belt (6 PD/6 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer; precision writing implements (for Forgery); lockpicking equipment; two or three different decks of cards



KIRITHA TAL

Background/History: Ever since she was a little girl, climbing cliffs and exploring forests on her native Dorvala, Kiritha Tal wanted to be a scientist — a planetologist, someone who looks for, explores, and studies new worlds. When she was older, she was smart enough and fortunate enough to win a scholarship to the prestigious Sendravian Scientific University to study a wide variety of scientific subjects, with an emphasis on planetology and related matters. While there she met and married her husband Jennor, and they had a daughter.

Tal nearly gave up her studies when Jennor was killed in a rockslide during a student field expedition, but eventually worked through her grief and returned to the University. When she completed her degree and was ready to start working, she found that most of the job opportunities available were boring assignments for the Imperial government. Then Kaithon Argosina came along, looking for an adventurous soul to join his small exploring and trading company, Argos Exploration. Intrigued not just by the nature of the job, but by him, she interviewed and was hired.

Since then, Tal's been an important part of the Argos staff, since she's got more formal scientific training than all the rest of them combined. She usually leads the company's exploratory missions. Sometimes, when her parents aren't able to take care of her daughter Nalee, she brings her along on Argos trips.

As a result of her activities as a member of the *Jackpot's* crew, Tal has made herself a few enemies. One is her boss's nemesis, Bertrand Devereaux, a Human who envies her skills as a planetologist (and resents her usefulness to Avilla). Another is the Intelligence Bureau of Vaxandros Prime, which is convinced, because of the way one of Segaro's scams backfired, that she's some sort of spy. Lastly, the Imperial Planetological Society has raised some questions about her credentials as a professional planetologist, and keeps hounding her to file more accurate reports and answer the Society's questions about her qualifications and activities.

Personality/Motivation: Unlike the other Argos employees, most of whom are motivated by money (to at least some degree) and a desire for adventure, Tal is driven by her scientific curiosity. She loves exploring, not because she's restless or on the run, but because discovering a new world and unraveling its mysteries fascinates her. She sometimes sidetracks the company's missions to look into some phenomenon that's strange or interesting, but of no monetary value.



Tal also displays a certain degree of recklessness that even the daredevil DeGraff worries about sometimes. She's prone to acting on the spur of the moment, and leaping before looking — a trait that's almost gotten her seriously hurt a time or two. Usually a reminder of her daughter is enough to curb any unjustified “enthusiasm.”

Quote: “Everybody fan out! There's a deposit of sarvenite around here somewhere. If we can find it, we can stake a claim.”

Powers/Tactics: Tal may be reckless, but she has no desire to fight. The other Argosians have taught her how to fire blasters and similar weapons, and she'll back them up in a pinch if she has to, but her preferred reaction to that sort of danger is to cower behind cover.

By virtue of her training in field medicine, Tal has become Argos's *de facto* “doctor,” even though her medical knowledge is scant. She finds she enjoys the subject, and has entertained thoughts of someday returning to school to study medicine.

Appearance: Kiritha Tal is, at age 24, the youngest member of Argos Exploration. She's 5'6" tall, with the blue-black skin of a Perseid from the equatorial regions of Dorvala. She keeps her straight hair cut short, but well-styled. She usually wears field clothes when planetside (unless circumstances call for more formal garb), and a jumpsuit on the ship.

KIRITHA TAL

Val	Char	Cost	Roll	Notes
10	STR	0	11-	Lift 100 kg; 2d6 HTH damage [1]
18	DEX	16	13-	
16	CON	6	12-	
13	INT	3	12-	PER Roll 12-
12	EGO	2	11-	
15	PRE	5	12-	PRE Attack: 3d6
4	OCV	5		
5	DCV	10		
3	OMCV	0		
4	DMCV	3		
4	SPD	20		Phases: 3, 6, 9, 12
4	PD	2		Total: 7 PD (3 rPD)
10	ED	8		Total: 13 ED (5 rED)
5	REC	1		
30	END	2		
10	BODY	0		
26	STUN	3		

Total Characteristics Cost: 86

Movement: Running: 14m
Swimming: 6m

Cost	Powers	END
1	Perseid Physiology: Resistant (+½) for 2 ED	0
5	Perseid Eyes: Sight Group Flash Defense (5 points)	0
2	Fast On Her Feet: Running +2m (14m total)	1
1	Strong Swimmer: Swimming +2m (6m total)	1

Talents

6	Combat Luck (3 PD/3 ED)
3	Lightning Calculator

Skills

3	Climbing 13-
3	Computer Programming 12-
5	Cramming
3	Deduction 12-
3	Electronics 12-
1	AK: Centauri Trade Routes 8-
2	KS: Perseid Politics 11-
2	KS: Sendravian Scientific University 11-
3	Paramedics 12-
3	Stealth 13-
4	Systems Operation (Communications Systems, FTL Sensors, Radar) 12-
1	Trading 8-
2	TF: Personal-Use Spacecraft
6	WF: Beam Weapons, Energy Weapons, Small Arms
3	Scientist
4	1) SS: Planetology 14-
1	2) SS: Anthropology 11-
1	3) SS: Archaeology 11-
1	4) SS: Astronomy 11-
1	5) SS: Biology 11-
1	6) SS: Botany 11-
1	7) SS: Chemistry 11-
1	8) SS: Geology 11-
1	9) SS: Physics 11-
1	10) SS: Zoology 11-

Total Powers & Skills Cost: 75**Total Cost: 161****175 Matching Complications (50)**

15	DNPC: Nalee (her young daughter) (Infrequently, Incompetent)
15	Hunted: Vaxandrosian Intelligence Bureau (Infrequently, Mo Pow, NCI, Limited Geographical Area, Capture)
10	Hunted: Imperial Planetological Society (Infrequently, Mo Pow, NCI, Watching)
15	Psychological Complication: Scientific Curiosity (Common, Strong)
10	Psychological Complication: Reckless (Common, Moderate)
10	Rivalry: Professional, with Bertrand Devereaux (Seeks To Harm Tal)

Total Complications Points: 50**Experience Points: 0****SUGGESTED EQUIPMENT**

Weapon	OCV	RMod	Damage	STUN	STR	Min	Shots
Mark II-K Laser Pistol	+1	+1	2d6	+0	10	32	

Armor

Modified Type 1 Force-Field Belt (6 PD/6 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer; field science kit (including hand-held scanner); field medical kit

VILLAINS



Here are a few of the adversaries and antagonists the members of Argos Exploration have encountered during their travels and adventures. Most of them have access to resources such as groups of Imperial Security Police officers, gangs of thugs, or squads of hired goons, so any one of them should be able to challenge the entire group of PCs if necessary.

MAJOR ALLYSSA BARTH

Background/History: Smart, self-confident, and aggressive, Allyssa Barth attended the Imperial Security Police Academy after finishing her secondary education, and graduated at the top of her class. After several boring and dangerous assignments on Karilath IV (where she earned the enmity of the Gha'krl organized crime “family” because of her unflinching efforts to topple it), her success record led to a posting back on Earth as part of the I.P.’s Interstellar Organized Crime Task Force.

While working with the TF, Barth got involved in a case against one Robert Avilla because of his smuggling activities. After he “disappeared,” Barth (now a Major) lost track of him for several years. She’s now received reports that make her think one “Kaithon Argosina” of Argos Exploration is, in fact, Avilla. She has spent a lot of time and money tracking Argosina, trying to trip him up and prove he’s Avilla. So far she hasn’t succeeded, but she *knows* she’s right; it’s just a matter of proving it....

Personality/Motivation: Major Barth is a tough, hard-nosed cop known for her scrupulous honesty. She wouldn’t even think of ignoring regulations, doing something other than in the “by the book” way, or taking a bribe. Her incorruptibility makes her perfect for operations against organized crime (or groups of PCs!). Unfortunately, her frank nature also tends to make her blunt and tactless, which has kept her from advancing further in the I.P. or forming many lasting personal relationships.

Quote: “No, that’s all wrong. They’ll see through that in a minute. We should do it *this* way....”

Powers/Tactics: Major Barth has received the standard Imperial Security Police training with energy weapons and hand-to-hand combat, which she’s supplemented by studying karate. She prefers to avoid violence (primarily by approaching arrestees only when backed up by overwhelming force), but if forced to fight is aggressive and imaginative on the battlefield.

Although she’s a formidable combatant, what makes Major Barth really dangerous are her devotion to duty and her ability to call on the resources of the Imperial Security Police if she needs them. In essence she represents the strength of the Imperial government, not just a single adversary for the PCs to overcome. If necessary she can call up squads of heavily-armed special operations officers, or the like, to help her catch criminals.

Campaign Use: Major Barth embodies and personifies the threat the Terran Empire poses to any group of PCs that isn’t strictly law-abiding (*i.e.*, virtually any group of PCs), particularly for campaigns set in the mid-to-late 2600s (when the Empire has descended into corruption, decadence, and oppression). At the same time, her honesty makes her a somewhat sympathetic figure; she’s no more likely to enforce an illegal order against the PCs than she is to take a bribe from them, which may eventually lead her to work with the PCs to topple the Empire.

If Major Barth’s not tough enough for your campaign, boost her physical Characteristics a bit, give her a few more Skills (and perhaps Skill Levels), and provide her with better equipment. If she’s too tough already, get rid of her Martial Arts and her Combat Skill Levels.

As a Hunter, Major Barth is tenacious, versatile, and aggressive, as Robert Avilla has already learned. But unlike many I.P. cops, she won’t abuse her authority, plant evidence on suspects, or engage in any other underhanded police tricks — she’s a completely by-the-book officer.

Appearance: Allyssa Barth is a Human female, mid-30s, 5’10”, in excellent shape due to frequent workouts and martial arts training. She’s attractive, in a severe sort of way, with brown hair cut short. When on duty, she wears her uniform; off-duty she favors casual clothes.

MAJOR ALLYSSA BARTH

Val	Char	Cost	Roll	Notes
15	STR	5	12-	Lift 200 kg; 3d6 HTH damage [1]
16	DEX	12	12-	
15	CON	5	12-	
14	INT	4	12-	PER Roll 12-
11	EGO	1	11-	
15	PRE	5	12-	PRE Attack: 3d6
6	OCV	15		
6	DCV	15		
3	OMCV	0		
4	DMCV	3		
4	SPD	20		Phases: 3, 6, 9, 12
6	PD	4		Total: 9 PD (3 rPD)
4	ED	2		Total: 7 ED (3 rED)
6	REC	2		
30	END	2		
10	BODY	0		
30	STUN	5		Total Characteristics Cost: 100

Movement: Running: 14m



Cost Powers END

Martial Arts: Karate

Maneuver	OCV	DCV	Notes
4 Ateimi Strike	-1	+1	2d6 NND(1)
4 Block	+2	+2	Block, Abort
4 Dodge	+0	+5	Dodge all attacks, Abort
4 Knifehand Strike	-2	+0	HKA ½d6 (1½d6 with STR)
4 Punch/Snap Kick	+0	+2	5d6 Strike

2 **Fast On Her Feet:** Running +2m (14m total) 1

Perks

- 10 Contacts (GM's choice)
- 8 Fringe Benefit: Interstellar Police Powers
- 6 Fringe Benefit: Membership (Major in Imperial Security Police)
- 4 Fringe Benefit: Security Clearance

Talents

- 6 Combat Luck (3 PD/3 ED)

Skills

- 5 +2 with Imperial Security Police Weapons
- 3 Bureaucratics 12-
- 3 Computer Programming 12-
- 3 Criminology 12-
- 1 Forensic Medicine 8-
- 3 Interrogation 12-
- 2 AK: Karilath IV 11-
- 2 KS: Criminal Law 11-
- 2 KS: Interstellar Organized Crime 11-
- 2 PS: Law Enforcement Agent 11-
- 3 Stealth 12-
- 3 Streetwise 12-
- 2 TF: Personal-Use Spacecraft
- 6 WF: Beam Weapons, Energy Weapons, Small Arms

Total Powers & Skills Cost: 96

Total Cost: 196

175 Matching Complications (50)

- 5 **Distinctive Features:** Imperial Security Police Uniform (Easily Concealed, Noticed And Recognizable)
- 20 **Hunted:** Gha'kri Mob (Frequently, Mo Pow, NCI, Limited Geographical Area, Kill)
- 10 **Hunted:** Imperial Security Police (Infrequently, Mo Pow, NCI, Watching)
- 25 **Psychological Complication:** Scrupulously Honest (Very Common, Total)
- 20 **Social Complication:** Subject To Orders (Very Frequently, Major)

Total Complications Points: 50

Experience Points: 21

SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min	Shots
Mark II-T Laser Pistol	+1	+2	3d6	+0	8	8	24
Stun-Rod	+0	—	6d6 NND	—	8	—	—

Armor

Type 2 Force-Field Belt (8 PD/8 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer; handcuffs; uniform and badge/identification

BERTRAND DEVEREAUX

Background/History: Descended from a long line of wealthy industrialists, Bertrand Devereaux had the misfortune to be born at a time when the family's coffers were nearly empty due to centuries of mismanagement and foolish spending. Even worse, he had no head for business or numbers; his interests ran to history, art, and literature. Despite this, his father made it clear the responsibility for rebuilding the family's wealth lay on his shoulders.

After studying archaeology and art at university, Devereaux decided there was more than one way to skin a cat. Industry and finance weren't the only ways to get rich; he'd read dozens of stories about explorers and scientists who made themselves fabulously wealthy by discovering a rich new world, or an ancient civilization whose art comes into vogue among collectors. Determined to re-create their success, he embarked on a career as a freelance explorer/archaeologist.

He spent much of his family's remaining money trying to make his "business" a success, to no avail. He finally cast professional ethics away and began trafficking in illegal antiquities, forged art, and other such illicit goods. That's a career he's proven quite skilled at. Though a few of his deals have gone sour (one ex-client, Jenak iv Gerasha, wants to kill him because Devereaux tried to swindle him), most have come off without a hitch. He's on his way back to wealth and power, and he doesn't intend to stop until he gets there.

During his career, Devereaux has encountered many other "freelance explorers" like himself, some honest, others not. Robert Avilla is an old adversary; the two have competed for the same prize many a time, with Devereaux usually losing out to the dashing "merchant." He's determined to defeat Argos Exploration once and for all... some day.

Personality/Motivation: Devereaux has a genuine appreciation for art and antiquities, and enjoys collecting them. Unfortunately, his desire to rebuild the family fortune (resulting not only from personal greed, but family pressure) wars with his collector's mania most of the time. Should he keep a unique and intriguing relic... or sell it for hundreds of thousands of credits? Usually avarice wins, but not always.

Devereaux is terrified his peers in high society will discover what he does to make money. (Some already know, because they're his clients, and they certainly won't reveal their own complicity in interstellar crime.) If word got out that he was, in essence, a smuggler and forger, he'd be banned from polite society, and that's something he couldn't tolerate. If necessary, he'll kill to keep his secret.

Quote: "Ah, yes, you have an excellent eye. That drinking-cup is of early Toractan manufacture; it was used by priests in religious ceremonies. Very rare... very valuable."



Powers/Tactics: Devereaux has no combat skills to speak of (though he knows how to fire a gun, and has a steadier aim than most people). He'll run from a fight if he can, or try to talk his way out of it. He'll surrender rather than risk harm to his person.

Campaign Use: The GM can use Devereaux as a competitor for PC groups engaged in similar occupations, and as a colorful NPC if not. If one of the heroes has an interest in art, he may encounter Devereaux in a museum, perhaps striking up a friendship with him before learning who and what he really is. If the PCs have a connection with the authorities, a friend in the Imperial Security Police may ask for their help in exposing and catching the wily pseudo-archaeologist.

Appearance: Bertrand Devereaux is a Human male in his early 40s (he refuses to reveal his exact birthdate, and Imperial records are strangely silent on the matter). His sandy blonde hair is thinning on top and starting to grey throughout, and that, combined with his rather long nose and thin face, give him a vulturine appearance that's not entirely undeserved, though most people would call him "aristocratic-looking." While he seems somewhat frail, in truth he's pretty energetic and muscular for a man his age due to spending so much time in the field. He usually wears a field jacket or vest over sturdy but comfortable outdoor clothes.

BERTRAND DEVEREAUX

Val Char Cost Roll Notes

10	STR	0	11-	Lift 100 kg; 2d6 HTH damage [1]
14	DEX	8	12-	
14	CON	4	12-	
20	INT	10	13-	PER Roll 13-
18	EGO	8	13-	
20	PRE	10	13-	PRE Attack: 4d6

4	OCV	5		
5	DCV	10		
3	OMCV	0		
3	DMCV	0		
3	SPD	10		Phases: 4, 8, 12

4	PD	2		Total: 4 PD (0 rPD)
4	ED	2		Total: 4 ED (0 rED)

5	REC	1		
30	END	2		
12	BODY	2		
30	STUN	5		Total Characteristics Cost: 79

Movement: Running: 12m

Cost Perks

6	Contacts: defined by GM
5	Money: Well Off

Skills

3	Bribery 13-
3	Concealment 13-
3	Conversation 13-
2	Cryptography 13-; Translation Only (-½)
1	Electronics 8-
4	Forgery (Art Objects, Documents) 13-
2	Gambling (Card Games) 13-
3	High Society 13-
2	KS: Art History 11-
2	KS: History 11-
2	KS: Literature 11-
3	Persuasion 13-
2	PS: Appraising 11-

3	Stealth 12-
3	Streetwise 13-
4	Survival (Mountains, Temperate/Subtropical, Tropical) 13-
2	TF: Personal-Use Spacecraft
6	WF: Beam Weapons, Energy Weapons, Small Arms
3	Scientist
2	1) SS: Anthropology 13-
2	2) SS: Archaeology 13-
1	3) SS: Astronomy 11-
1	4) SS: Biology 11-
1	5) SS: Chemistry 11-
2	6) SS: Planetology 13-
1	7) SS: Physics 11-

Total Powers & Skills Cost: 74

Total Cost: 153

175 Matching Complications (50)

15	Hunted: Jenak iv Gerasha (Infrequently, Mo Pow, Kill)
10	Hunted: Imperial Security Police (Infrequently, Mo Pow, NCI, Watching)
5	Negative Reputation: man who can obtain illegal antiquities (Frequently, throughout parts of the Empire, and elsewhere; about 20 billion people are aware of Reputation)
15	Psychological Complication: Greedy; Determined To Rebuild Family Fortune (Common, Strong)
10	Psychological Complication: Collector's Mania (Common, Moderate)
5	Rivalry: Professional, with Argos Exploration
5	Social Complication: Harmful Secret (career as illegal antiquities dealer) (Occasionally, Minor)

Total Complications Points: 50

Experience Points: 0

SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min	Shots
Pocket Blaster	+0	-1	1d6	+0	6		8

Armor

None

Gear: Hand computer; field science kit; lucky *threedel's* foot

DARGEN

Background/History: Dargen doesn't talk much about his background — in fact, he doesn't even tell most people his family name. Supposedly his family's been associated with the Nakeerash mob for several generations, and there wasn't any question he'd "join the family business" when he got old enough.

Fortunately, Dargen grew up not only big and strong, but smart. He quickly moved from strong-arm work to leading gangs, a task he excelled at. He was doing well, earning a lot of credits for his bosses, succeeding at every mission — until he ran into Argos Exploration. Thanks to Robert Avilla and friends, a sweet little scam Dargen had going on Vinarcus fell apart, costing the family a lot of money and Dargen a lot of prestige. When he tried to express his "displeasure" to the Argosians, a fight resulted in which Jason Grigori got lucky and beat Dargen bloody... for which Dargen has sworn an equally bloody revenge.

Personality/Motivation: Dargen is an amoral, brutal thug — smart and cunning, to be sure, but a thug nevertheless. He has no scruples whatsoever; theft, violence, and even murder are all casual acts to him. Though it's often slow to wake, he has a fearsome temper, and holds grudges a long, long time.

But Dargen's brutality doesn't make him stupid or predictable. He wouldn't have gotten as far as he has in the Nakeerash family if he wasn't smart enough to know his way around some sophisticated con games and other criminal schemes. Player Characters who think they can deal with him by returning violence for violence may soon be unpleasantly surprised at his deviousness.

Quote: "This was a *simple job*, but you had to go and butt yer noses into it. Now I've gotta kill you. What a mess."

Powers/Tactics: Dargen prefers to use his fists and strength in combat; he hits hard and fast, enjoying the crunch of bone when he connects with a good roundhouse. But he's good with a blaster, too, and is pretty quick to draw his if he thinks his opponent is armed. Hit first and hit hard, that's his motto — that way the other guy won't get to hit back at all. Dirty tricks, underhanded blows, and unfair advantages are all part of his stock in trade.

Because he's a gang leader in the Nakeerash family, Dargen usually has a gang of up to two dozen criminals at his beck and call. You can include just about any sort of gangster in that group to make Dargen a better opponent for the PCs.

Campaign Use: Dargen is a pretty simple, combat-oriented opponent for the PCs. Though he's tougher than the average street thug because of his intelligence and organized crime connections, he's still best used as a straightforward enemy for the PCs to encounter and enjoy defeating.

If Dargen's not a powerful enough enemy for your PCs, bulk up his Characteristics some (or perhaps give him Dirty Infighting as a Martial Art), and give him Contacts and Followers to call upon. If he's already too much of a challenge, reduce his STR, CON, and DEX a few points each.

As mentioned above, Dargen holds grudges, so it wouldn't be out of character for him to start Hunting a hero that crosses his path — even on an 11- or 14-, if he's been badly enough humiliated or defeated. His early attacks will be brutal assaults and the like, gradually transforming into clever scams and distractions as he realizes force alone won't get the job done.

Appearance: Dargen is a Human male 32 years old. Although big and beefy — he stands 6'2" tall and weighs about 225 pounds, most of it muscle — he's quick and graceful when he moves; he knows how to use his size to his advantage. He has dirty blonde hair and a matching beard. He frequently smokes Centauran cigarettes, and wears expensive but comfortable clothing.

GHENAK VAA'RESH

Background/History: Ghenak Vaa'resh was born on Mon'da, in the same neighborhood as Segaro Krez'shul. He grew up big, tough, and mean. It didn't take long for him to get involved with local gangs, and then organized crime. That's where his talent for finding and killing people was first discovered. Put him on someone's trail, and that person was as good as dead, his boss said... and he was right.

Eventually Vaa'resh got tired of working for other people and left Mon'da to become an interstellar bounty hunter. He's done well enough at it to earn a reputation throughout the Empire, and to buy himself a small ship, the *Mal'eeth*. But his track record hasn't been perfect. A few "improprieties" with some of his jobs have got the Imperial Security Police watching him closely, and the Alphadyne Mercantile Combine is convinced a "botched" job that resulted in the death of Vaa'resh's quarry was actually part of a scheme to steal valuable trade secrets. As soon as it has "proof," it will send other bounty hunters after Vaa'resh... equipped with "dead or alive" orders!

Personality/Motivation: Ghenak Vaa'resh is cold-hearted, hard, and brutal — qualities his job demands and rewards. He's suspicious and cautious, and that, combined with his hair-trigger reactions, sometimes makes it difficult to deal with him.

DARGEN

Val	Char	Cost	Roll	Notes
20	STR	10	13-	Lift 400 kg; 4d6 HTH damage [2]
18	DEX	16	13-	
18	CON	8	13-	
13	INT	3	12-	PER Roll 12-
10	EGO	0	11-	
18	PRE	8	13-	PRE Attack: 3½d6
6	OCV	15		
6	DCV	15		
3	OMCV	0		
3	DMCV	0		
4	SPD	20		Phases: 3, 6, 9, 12
8	PD	6		Total: 8 PD (0 rPD)
7	ED	5		Total: 7 ED (0 rED)
8	REC	4		
35	END	3		
15	BODY	5		
40	STUN	10		

Total Characteristics Cost: 128

Movement: Running: 12m

Cost Powers

8 **Brawling:** HA +2d6
Hand-To-Hand Attack (-¼)

END

1



Perks

4 **Fringe Benefit:** Membership (in Nakeerash organized crime family)

Skills

- 10 +1 with All Combat
- 3 Combat Piloting 13-
- 1 Demolitions 8-
- 1 Electronics 8-
- 4 Gambling (Card Games, Sports Betting) 13-
- 3 Interrogation 13-
- 2 KS: Nakeerash Organized Crime Family
- 3 Lockpicking 13-
- 3 Security Systems 13-
- 3 Stealth 13-
- 3 Streetwise 13-
- 2 TF: Personal-Use Spacecraft
- 6 WF: Beam Weapons, Energy Weapons, Small Arms

Total Powers & Skills Cost: 56

Total Cost: 184

175 Matching Complications (50)

- 20 **Hunted:** Imperial Security Police (Infrequently, Mo Pow, NCI, Capture)
- 10 **Negative Reputation:** hard-core, violent criminal (Frequently, throughout parts of the Empire, and elsewhere; about 20 billion people are aware of Reputation) (Extreme)
- 20 **Psychological Complication:** Amoral (Very Common, Strong)
- 5 **Rivalry:** Professional, with another gangster

Total Complications Points: 50

Experience Points: 9

SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min	Shots
Mark II-K Laser Pistol	+1	+1	2d6	+0	10		32
Brass Knuckles	+0	—	+2d6 N	—	—		5

Armor

Type 2 Force-Field Belt (8 PD/8 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer; 100-500 credits' worth of local currency



GHENAK VAA'RESH

Val	Char	Cost	Roll	Notes
25	STR	20	14-	Lift 800 kg; 5d6 HTH damage [2]
20	DEX	20	13-	
20	CON	10	13-	
13	INT	3	12-	PER Roll 12-
12	EGO	2	11-	
20	PRE	10	13-	PRE Attack: 4d6
8	OCV	25		
7	DCV	20		
3	OMCV	0		
4	DMCV	3		
4	SPD	20		Phases: 3, 6, 9, 12
10	PD	8		Total: 10 PD (1 rPD)
7	ED	5		Total: 7 ED (1 rED)
9	REC	5		
40	END	4		
18	BODY	8		
40	STUN	10		

Total Characteristics Cost: 173

Movement: Running: 16m

Cost Powers

Cost	Powers	END
3	Mon'dabi Bite: HKA 1 point No STR Bonus (-½)	1
1	Mon'dabi Skin: Resistant (+½) for 1 PD/1 ED	0
4	Fast On His Feet: Running +4m (16m total)	1
3	Mon'dabi Senses: +1 PER with all Sense Groups	0
5	Tail: Extra Limb (tail) Inherent (+¼); Limited Manipulation (-¼)	0

Perks

10	Contacts (GM's choice)
5	Money: Well Off
Talent	
3	Lightsleep

Skills

20	+2 with All Combat
3	Combat Piloting 13-
3	Computer Programming 12-
3	Electronics 12-
3	Fast Draw (Small Arms) 13-
2	Gambling (Card Games) 12-
3	KS: Bounties 12-
3	Lockpicking 13-
1	Mechanics 8-
2	Navigation (Space) 12-
2	PS: Bounty Hunter 11-
3	Security Systems 12-
3	Shadowing 12-
3	Stealth 13-
3	Streetwise 13-
5	Systems Operation (Communications Systems, FTL Sensors, Radar, Sensor Jamming Equipment) 12-
4	TF: Military Spacecraft, Personal-Use Spacecraft
8	WF: Beam Weapons, Common Melee Weapons, Energy Weapons, Small Arms

Total Powers & Skills Cost: 108

Total Cost: 281



175 Matching Complications (50)

15	Hunted: Alphadyne Mercantile Combine (Frequently, Mo Pow, NCI, Watching)
10	Hunted: Imperial Security Police (Infrequently, Mo Pow, NCI, Watching)
5	Negative Reputation: violent, dangerous bounty hunter (Frequently, throughout parts of the Empire, and elsewhere; about 20 billion people are aware of Reputation)
15	Psychological Complication: Code Of The Mercenary (Common, Strong)
15	Psychological Complication: Vengeful (Common, Strong)

Total Complications Points: 50

Experience Points: 106

SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min	Shots
Mark VII Laser Rifle	+2	+2	3½d6 (AF5, AP)	+1	12		64
Mark II-T Laser Pistol	+1	+2	3d6	+0	8		24
Mark II-K Laser Pistol	+1	+1	2d6	+0	10		32
Frag Grenades	+0	RBS	3d6 X	+0	RBS		4
Combat Knife	+0	+0	1d6	1d6-1	—		8 (Can Be Thrown)

Armor

Type 2 Force-Field Belt (8 PD/8 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer; a surly attitude

As a professional bounty hunter, Vaa'resh abides by a professional code that mandates he do his best to complete a job, obey all of his employer's instructions, and reveal his employer's identity only with permission or to a duly-authorized law enforcement officer. He does a good job living up to this code, most of the time. He only has difficulties when his vengeful streak gets in the way — sometimes he's so eager to hurt someone who's hurt him that he forgets what his employer wanted.

Quote: “See this warrant? It says I can bring you in “dead or alive,” reward's the same. Decisions, decisions....”

Powers/Tactics: Vaa'resh is quick, strong, and clever, a dangerous opponent in just about any battle. He prefers to use his blaster, but he's got big, strong fists and knows how to use them if he has to. If possible, he'll try to “talk his way out” of a battle, but only until he can get a decent shot without fear of being shot at in return. He has no honor; he cares only about winning.

Vaa'resh owns a small, agile ship, the *Mal'eeth*. Although it's not heavily armed, it has enough weapons mounted to let him fight off larger ships. It also comes equipped with the best stealth technology he can afford.

Campaign Use: Vaa'resh is a pretty tough opponent for most individual PCs, though you may have to give him some “backup” if he's got to face an entire PC group on his own (or arrange the situation to his advantage somehow). He might also make a useful underworld contact for the PCs.

If you need Vaa'resh to be tougher, give him some Martial Arts and increase some of his Characteristics a little. If he's already too strong, shave some points off his main Characteristics.

Vaa'resh's vengefulness makes him a good candidate to Hunt a PC who defeats him. He'll usually pursue the matter vigorously (*i.e.*, on at least an 11-), and call on all his contacts and friends throughout the Empire to help him get the job done.

Appearance: Ghenak Vaa'resh is a 6'8" Mon'dabi with a scarred face and a bad attitude. Instead of typical Mon'dabi garb, he wears a dark green jumpsuit with a broad leather belt and matching bandolier. He usually carries at least one weapon, if not more; even in situations where he can't openly carry a blaster or knife, he probably has one or two small weapons concealed on his person.

ZEE'GANSH

Background/History: Zee'gansh got involved in gambling early — as a child, he ran errands for the pit bosses who operated an illegal casino near his home on Shendara III. He was pretty good at the games himself, often winning tidy sums of money when he was allowed to play.

He might have gone on to become a professional gambler, if not for a stroke of good luck. He got into a game with a drunken trader and won his entire cargo — stolen weapons — from him. After getting some help from friends who'd been in the military, Zee'gansh sold all the guns for an enormous profit. He used that money to buy other weapons for other customers, and so on, and so on....

Today, several decades later, Zee'gansh has established a vast interstellar arms empire and is fabulously wealthy. Although most of his business is entirely aboveboard, he's got nothing against selling on the black market, which has aroused the suspicion of the Imperial Security Police (though they can't prove anything yet). As long as a customer has money and doesn't cause trouble, Zee'gansh is happy to deal with him. But his no-holds-barred business practices have earned him more than a few enemies, including Draconis Defenseworks, a large military contractor determined to get rid of him.

Unfortunately, the gambling tables haven't always been as kind to Zee'gansh as they were back in his childhood. He still gambles frequently; he has a hard time passing up any sort of game or bet. One night a few years back, he got into a card game with a Human named Avilla. Though the game was rigged — Zee'gansh was *supposed* to win easily — Avilla somehow turned the tables on him, winning billions of credits. Convinced Avilla somehow cheated, Zee'gansh has sworn to get revenge... and get back his money.

Personality/Motivation: Zee'gansh is a bitter, lonely, grasping Hzeel who cares about no one and nothing but himself and his profits — except perhaps for the turn of the cards, for he dearly loves to gamble. On a few occasions his adversaries have gotten out of his clutches by challenging him to a game and beating him, but he still can't resist the lure of the casino.

Zee'gansh *hates* to suffer any sort of defeat or insult. He's used to getting his way in just about everything, and anyone who denies him (as Avilla did) gets put on “the list.” The list is long, and he enjoys concocting schemes to remove people from it permanently. His vengeance, though it may be long in coming, always arrives, and is never pleasant.

Quote: “Don't play me for a fool. I can get twice that price in the Selvi system. Pay up, or I'm taking the goods elsewhere.”

ZEE'GANSH

Val	Char	Cost	Roll	Notes
8	STR	-2	11-	Lift 75 kg; 2½d6 HTH damage [2]
12	DEX	4	11-	OCV: 4/DCV: 4
13	CON	3	12-	
20	INT	10	13-	PER Roll 13-
14	EGO	4	12-	ECV: 5
15	PRE	5	12-	PRE Attack: 3d6
4	OCV	5		
3	DCV	0		
3	OMCV	0		
5	DMCV	6		
2	SPD	0		Phases: 6, 12
3	PD	1		Total: 6 PD (3 rPD)
3	ED	1		Total: 6 ED (3 rED)
5	REC	1		
25	END	1		
10	BODY	0		
28	STUN	4		Total Characteristics Cost: 43

Movement: Running: 12m

Cost Powers

Cost	Powers	END
4	Hzeel Eyes: +2 PER with Sight Group	0
15	Lucky Bastard: Luck 3d6	0

Perks

- 30 **Contacts** (GM's choice)
- 15 **Money:** Filthy Rich
All the Followers, Bases, and Vehicles he needs

Talents

- 6 **Combat Luck** (3 PD/3 ED)

Skills

- 3 **Computer Programming** 13-
- 3 **Conversation** 13-
- 8 **Gambling** (Card Games, Board Games, Sports Betting) 14-
- 5 **KS: Interstellar Arms Market** 15-
- 1 **KS: Fine Art** 8-
- 3 **Security Systems** 13-
- 3 **Streetwise** 13-
- 7 **Trading** 14-
- 4 **TF: Military Spacecraft, Personal-Use Spacecraft**
- 6 **WF: Beam Weapons, Energy Weapons, Small Arms**

Total Powers & Skills Cost: 113

Total Cost: 156

175 Matching Complications (50)

- 15 **Hunted:** Draconis Defenseworks, Inc. (Infrequently, As Pow, NCI, Kill)
- 10 **Hunted:** Imperial Security Police (Infrequently, Mo Pow, NCI, Watching)
- 15 **Psychological Complication:** Vengeful (Common, Total)
- 10 **Psychological Complication:** Compulsive Gambler (Common, Strong)

Total Complications Points: 50

Experience Points: 0

SUGGESTED EQUIPMENT

Weapon OCV RMod Damage STUN STR Min Shots

None

Armor

Type 2 Force-Field Clothes (8 PD/8 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer; expensive clothes; deck of cards



Powers/Tactics: Zee'gansh doesn't fight; he hires other people to fight for him. He knows how to use most types of blasters — he enjoys testing out his own products from time to time — but he has no intention of risking his own neck in battle.

Campaign Use: Zee'gansh is a sort of “master villain” for use in Star Hero campaigns. Not as overpowering or deadly as the Terran Empire or other governments, he nevertheless presents a significant threat to most groups of PCs due to his vast wealth and resources. All they have to do is defeat him once, and he'll never leave them alone.

Zee'gansh isn't intended to overpower or outfight the PCs. If you need to make him more “powerful,” do so in social or political ways: give him more Contacts and resources to draw upon, rather than personal combat skills. If he's already too powerful, cut down on his wealth and resource base a little.

Zee'gansh's vengeful nature makes it quite likely he'll start Hunting one or more PCs after they thwart him. He usually Hunts on at least an 11-, but not always; it depends on how badly he feels the sting of the “humiliation” of losing. He starts out simple, with squads of assassins and bounty hunters, but progresses to more sophisticated tactics like ruining credit ratings if that doesn't work.

Appearance: Zee'gansh, like other Hzeel, is short, blue-skinned, large-eyed, and has a sort of gnarled look that makes him appear older (to Humans) than he actually is. He wears finely-tailored Hzeel male garb, which consists of a shirt-like upper garment, a short cloak-like garment worn over it, and a kilt-like lower garment that's cut lower in the back than in the front. His voice is harsh and rasping.

MINION GALLERY



The following “generic” character sheets represent typical NPCs and enemies Star Hero PCs might encounter, such as security officers, space pirates, and free traders. As always, you should change or supplement them as desired. (For robots, alien creatures, and similar opponents, see *The HERO System Bestiary*.)

DOCTOR

Val	Char	Cost	Roll	Notes
8	STR	-2	11-	Lift 75 kg; 1½d6 HTH damage [1]
10	DEX	0	11-	
8	CON	-2	11-	
13	INT	3	12-	PER Roll 12-
10	EGO	0	11-	
13	PRE	3	12-	PRE Attack: 2½d6
3	OCV	0		
3	DCV	0		
3	OMCV	0		
3	DMCV	0		
2	SPD	0		Phases: 6, 12
2	PD	0		Total: 2 PD (0 rPD)
2	ED	0		Total: 2 ED (0 rED)
4	REC	0		
15	END	-1		
10	BODY	0		
20	STUN	0		Total Characteristics Cost: 1

Movement: Running: 8m

Cost Powers

-4 **A Little Slow:** Running -4m (8m total)

Perks

20 **Contacts:** in the galactic medical community

END

Skills

- 12 **Devoted To His Craft:** +3 on all rolls to resist attempts to deprive people of medical care, take patients away from him, or make him compromise his medical ethics.
- 3 Computer Programming 12-
- 1 Electronics 8-
- 5 AKs/CKs of GM's choice
- 2 KS: Hobby 11-
- 7 Paramedics 14-
- 3 PS: Doctor 12-
- 3 Scientist
- 4 1) SS: Biology 14-
- 2 2) SS: Chemistry 12-
- 4 3) SS: Medicine 14-
- 4 4) SS: Surgery 14-
- 2 5) SS: Virology 12-
- 2 6) SS: Xenobiology 12-

Total Powers & Skills Cost: 70

Total Cost: 71

100 Matching Complications (30)

- 20 **Psychological Complication:** Hippocratic Oath (Common, Total)
- 10 Additional Complications (typically Physical Complication, Psychological Complication, Rivalry, or Social Complication)

Total Complications Points: 30

Experience Points: 0

SUGGESTED EQUIPMENT

Weapon OCV RMod Damage STUN STR Min Shots
None

Armor
None

Gear: Hand computer; field medical kit; field medical scanner



FREE TRADER/MERCHANT

Val	Char	Cost	Roll	Notes
10	STR	0	11-	Lift 100 kg; 2d6 HTH damage [1]
12	DEX	2	11-	
12	CON	2	11-	
13	INT	3	12-	PER Roll 12-
12	EGO	4	11-	
15	PRE	5	12-	PRE Attack: 3d6
4	OCV	5		
4	DCV	5		
3	OMCV	0		
4	DMCV	3		
2	SPD	0		Phases: 6, 12
3	PD	1		Total: 2 PD (0 rPD)
3	ED	1		Total: 2 ED (0 rED)
5	REC	1		
20	END	0		
10	BODY	0		
20	STUN	0		Total Characteristics Cost: 32

Movement: Running: 12m

Cost Perks

- 10 **Contacts:** people he knows along the trade routes
- 20 **Vehicle/Base:** a small trader's ship, or a shop

Skills

- 3 Bribery 12-
- 3 Bureaucratics 12-
- 3 Charm 12-
- 5 Combat Piloting 12- (or put +5 points toward Base)
- 3 Computer Programming 12-

- 3 Conversation 12-
- 1 Electronics 8-
- 10 AKs/CKs of GM's choice
- 2 KS: Hobby 11-
- 3 KS: The Market 12-
- 4 Languages: 4 points' worth
- 1 Mechanics 8-
- 2 Navigation (Space) 12- (or put +2 points toward Base)
- 3 Persuasion 12-
- 3 PS: Trader 12-
- 2 SS: Astronomy 11-
- 2 WF: of GM's choice
- 7 Trading 14-
- 2 TF: Commercial Spacecraft & Space Yachts

Total Powers & Skills Cost: 92

Total Cost: 124

100 Matching Complications (30)

- 20 **Psychological Complication:** Always Looking For Major Deals And Other Good Sources Of Income (Very Common, Strong)
- 10 Additional Complications (typically Physical Complication, Psychological Complication, Rivalry, or Social Complication)

Total Complications Points: 30

Experience Points: 24

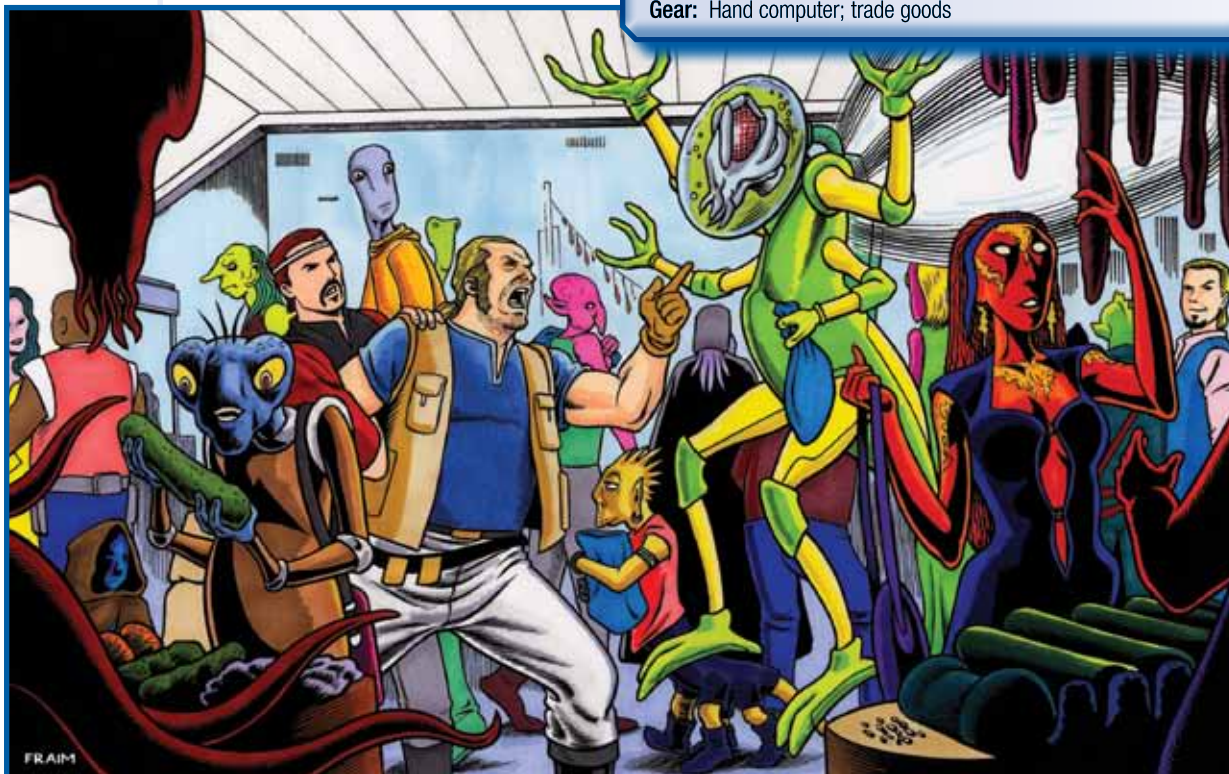
SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min	Shots
Mark II-K Laser Pistol	+1	+1	2d6	+0	10		32

Armor

None

Gear: Hand computer; trade goods





PROSPECTOR

Val	Char	Cost	Roll	Notes
10	STR	0	11-	Lift 100 kg; 2d6 HTH damage [1]
14	DEX	8	12-	
13	CON	3	12-	
13	INT	3	12-	PER Roll 12-
10	EGO	0	11-	
13	PRE	3	12-	PRE Attack: 2½d6
4	OCV	5		
4	DCV	5		
3	OMCV	0		
3	DMCV	0		
3	SPD	10		Phases: 4, 8, 12
3	PD	1		Total: 3 PD (0 rPD)
3	ED	1		Total: 3 ED (0 rED)
4	REC	0		
25	END	1		
10	BODY	0		
24	STUN	2		Total Characteristics Cost: 42

Movement: Running: 12m

Cost Powers

6 **Legs Usable As Hands:** Extra Limbs (2)
Inherent (+¼)

Perks

20 **Vehicle:** a small prospecting/mining ship

Talents

6 **Environmental Movement:** Zero-G Training

Skills

- 1 Computer Programming 8-
- 3 Combat Piloting 12-
- 2 Electronics 10-
- 10 AKs/CKs of GM's choice
- 4 KSs related to job/profession
- 2 KS: Hobby 11-
- 1 Mechanics 8-
- 2 Navigation (Space) 12-
- 2 PS: Miner 11-
- 3 PS: Prospector 12-
- 2 SS: Astronomy 11-
- 2 SS: Geology 11-
- 2 WF: of GM's choice
- 3 Trading 12-
- 2 TF: Industrial & Exploratory Vehicles

Total Powers & Skills Cost: 73

Total Cost: 115

100 Matching Complications (30)

- 20 **Psychological Complication:** Always Looking For "The Big Strike" (Very Common, Strong)
- 10 Additional Complications (typically Physical Complication, Psychological Complication, Rivalry, or Social Complication)

Total Complications Points: 30

Experience Points: 15

EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min	Notes
Mark II-K Laser Pistol	+1	+1	2d6	+0	10	32	

Armor

None

Gear: Hand computer; ore testing kit

SCIENTIST/TECHNICIAN

Val	Char	Cost	Roll	Notes
10	STR	0	11-	Lift 100 kg; 2d6 HTH damage [1]
10	DEX	0	11-	
10	CON	0	11-	
13	INT	3	12-	PER Roll 12-
10	EGO	0	11-	
10	PRE	0	11-	PRE Attack: 2d6
3	OCV	0		
3	DCV	0		
3	OMCV	0		
3	DMCV	0		
2	SPD	0		Phases: 6, 12
3	PD	1		Total: 3 PD (0 rPD)
3	ED	1		Total: 3 ED (0 rED)
4	REC	0		
20	END	0		
10	BODY	0		
20	STUN	0		

Total Characteristics Cost: 5

Movement: Running: 12m



Cost Skills

8	Scientific/Technical Genius:	+2 with all science- and technology-oriented Skills
3	Computer Programming	12-
3	Electronics	12-
3	Inventor	12-
4	AKs/CKs of GM's choice	
4	KSs related to job/profession	
2	KS: Hobby	11-
3	Mechanics	12-
7	Paramedics	14-
3	PS: Scientist <i>or</i> Technician	12-
3	Security Systems	12-
8	Systems Operation (Communications Systems, Environmental Systems, Medical Systems, FTL Sensors, Radar)	12-
3	Scientist	
15	SSs of GM's choice	

Total Powers & Skills Cost: 69

Total Cost: 74

100 Matching Complications (30)

- 15 **Psychological Complication:** one appropriate to the profession, such as *Scientific Curiosity* or *Prefers Technology To The Company Of People* (Common, Strong)
- 15 Additional Complications (typically Physical Complication, Psychological Complication, or Social Complication)

Total Complications Points: 30

Experience Points: 0

SUGGESTED EQUIPMENT

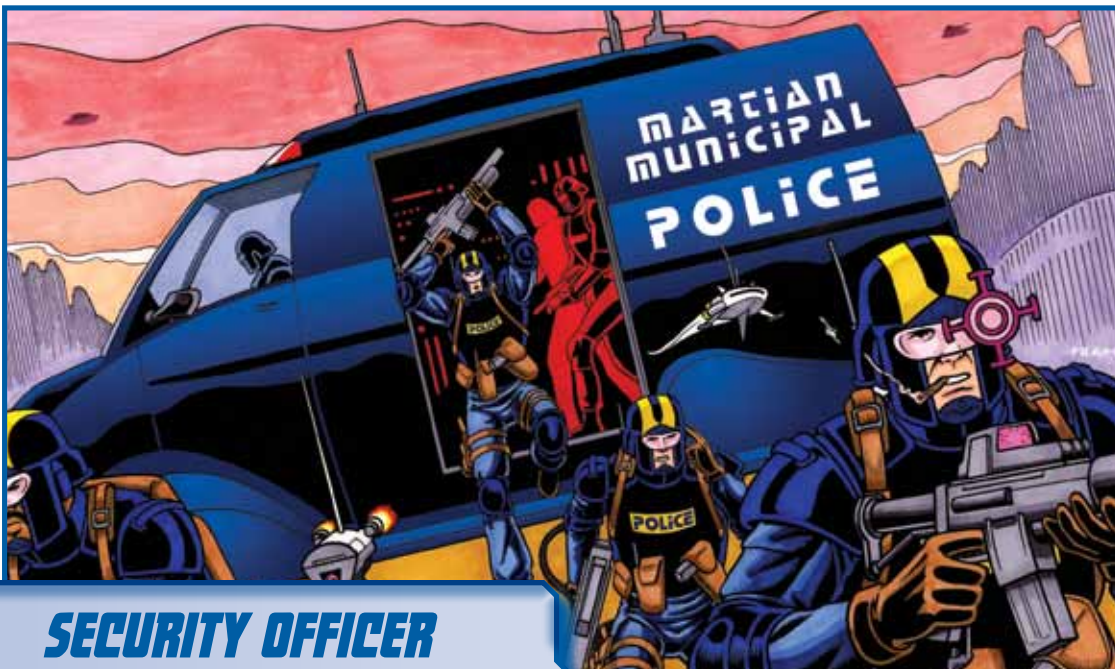
Weapon OCV RMod Damage STUN STR Min Shots

None

Armor

None

Gear: Hand computer; field kit appropriate to mission or profession



SECURITY OFFICER

Val	Char	Cost	Roll	Notes
13	STR	3	12-	Lift 150 kg; 2½d6 HTH damage [1]
14	DEX	8	12-	
13	CON	3	12-	
13	INT	3	12-	PER Roll 12-
10	EGO	0	11-	
15	PRE	5	12-	PRE Attack: 3d6
6	OCV	15		
6	DCV	15		
3	OMCV	0		
4	DMCV	3		
3	SPD	10		Phases: 4, 8, 12
5	PD	3		Total: 5 PD (0 rPD)
5	ED	3		Total: 5 ED (0 rED)
6	REC	2		
25	END	1		
10	BODY	0		
24	STUN	2		Total Characteristics Cost: 76

Movement: Running: 12m

Cost Perks

- 2 Fringe Benefit: Membership (member of law enforcement agency)
- 5 Fringe Benefit: Planetary Police Powers

Skills

- 3 Criminology 12-
- 1 Forensic Medicine 8-
- 3 AK: character's "beat" 12-
- 2 KS: Criminal Law 11-
- 2 KS: Hobby 11-
- 2 KS: The Law Enforcement World 11-
- 3 PS: Security Officer 12-
- 3 Stealth 12-
- 3 Streetwise 12-
- 4 TF: GM's choice
- 6 WF: Beam Weapons, Energy Weapons, Small Arms
- 6 **Choose two Skills from this list:** Bureaucratics, Combat Piloting, Computer Programming, Concealment, Conversation, Deduction, Persuasion, Security Systems, Shadowing

Total Powers & Skills Cost: 45

Total Cost: 121

100 Matching Complications (30)

- 5 **Distinctive Features:** Uniform (Easily Concealed; Noticed And Recognizable)
- 10 **Hunted:** police agency he works for (Infrequently, Mo Pow, NCI, Watching)
- 20 **Social Complication:** Subject To Orders (Very Frequently, Major)

Total Complications Points: 30

Experience Points: 21

SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min	Shots
Mark II-T Laser Pistol	+1	+2	3d6	+0	8		24

Armor

- Body Armor (6 PD/6 ED, Activation Roll 14-)
- Type 2 Force-Field Belt (8 PD/8 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer; badge/identification



SPACE MARINE

Val	Char	Cost	Roll	Notes
15	STR	5	12-	Lift 200 kg; 3d6 HTH damage [1]
15	DEX	10	12-	
15	CON	5	12-	
13	INT	3	12-	PER Roll 12-
13	EGO	3	12-	
15	PRE	5	12-	PRE Attack: 3d6
7	OCV	20		
6	DCV	15		
3	OMCV	0		
5	DMCV	6		
4	SPD	20		Phases: 3, 6, 9, 12
6	PD	4		Total: 6 PD (0 rPD)
6	ED	4		Total: 6 ED (0 rED)
8	REC	4		
40	END	4		
14	BODY	4		
36	STUN	8		Total Characteristics Cost: 120

Movement: Running: 14m

Cost Powers **END**
 2 **Fast:** Running +2m (14m total) 1

Perks
 4 Contacts (4 points' worth)
 3 Fringe Benefit: Military Rank

Skills
 20 +2 with All Combat
 1 Bureaucratics 8-
 1 Computer Programming 8-
 1 Electronics 8-
 2 KS: The Military/Mercenary/Terrorist World 11-
 2 KS: Space Marine History And Customs 11-
 2 PS: Space Marine 11-

3 Stealth 12-
 1 Systems Operation 8-
 3 Tactics 12-
 6 WF: Beam Weapons, Energy Weapons, Small Arms
 6 6 points' worth of Skills from the following list:
 Autofire Skills, Bureaucratics, Climbing, Combat Driving, Combat Piloting, Combat Skill Levels, Computer Programming, Concealment, Cryptography, Demolitions, Electronics, Fast Draw, Interrogation, Martial Arts, Mechanics, Navigation, Paramedics, Persuasion, Security Systems, Skill Levels, Survival, Systems Operation, Weapon Familiarity, Weapon-smith, any Background Skill, Contacts

Total Powers & Skills Cost: 57
Total Cost: 177

100 Matching Complications (30)
 5 **Distinctive Features:** Uniform (Easily Concealed; Noticed And Recognizable)
 10 **Hunted:** Space Marines (Infrequently, Mo Pow, NCI, Watching)
 20 **Social Complication:** Subject To Orders (Very Frequently, Major)

Total Complications Points: 30
Experience Points: 77

SUGGESTED EQUIPMENT

Weapon	OCV	RMod	Damage	STUN	STR	Min Shots
Military Laser Rifle AF5, AP	+3	+3	3½d6	+1	14	125

Armor
 Powered Armor (15 PD/15 ED, plus associated systems like boosts to STR and other Characteristics, HRRP, Flight or Leaping from jetpack/bootjets, and so on)

Gear: Hand computer



SPACE PIRATE

Val	Char	Cost	Roll	Notes
13	STR	3	12-	Lift 150 kg; 2½d6 HTH damage [1]
13	DEX	6	12-	
13	CON	3	12-	
10	INT	0	11-	PER Roll 11-
10	EGO	0	11-	
15	PRE	5	12-	PRE Attack: 3d6
5	OCV	10		
5	DCV	10		
3	OMCV	0		
3	DMCV	0		
3	SPD	10		Phases: 4, 8, 12
4	PD	2		Total: 4 PD (0 rPD)
4	ED	2		Total: 4 ED (0 rED)
5	REC	1		
25	END	1		
12	BODY	2		
30	STUN	5		Total Characteristics Cost: 60

Movement: Running: 12m

Cost Skills

- 8 +1 with Ranged Combat
- 1 Computer Programming 8-
- 3 Combat Piloting 12-
- 1 Electronics 8-
- 8 AKs/CKs of GM's choice
- 4 KSs related to job/profession
- 2 KS: Hobby 11-
- 1 Mechanics 8-
- 1 Navigation (Space) 8-
- 2 PS: Space Pirate 11-
- 2 PS: Zero-G Operations 11-
- 3 Stealth 12-
- 1 Systems Operation 8-
- 6 WF: Beam Weapons, Energy Weapons, Small Arms
- 3 Trading 12-
- 2 TF: Commercial Spacecraft & Space Yachts
- 6 6 points' worth of Skills from the following list:
 Autofire Skills, Bureaucrats, Climbing, Combat Driving, Combat Piloting, Combat Skill Levels, Computer Programming, Concealment, Cryptography, Demolitions, Electronics, Fast Draw, Interrogation, Martial Arts, Mechanics, Navigation, Paramedics, Persuasion, Security Systems, Skill Levels, Survival, Systems Operation, Weapon Familiarity, Weapon-smith, any Background Skill, Contacts

Total Powers & Skills Cost: 54

Total Cost: 114

100 Matching Complications (30)

20 **Hunted:** law enforcement agency or military (Infrequently, No Pow, NCI, Capture/Kill)

20 **Psychological Complication:** Greedy And Amoral (Very Common, Strong)

Total Complications Points: 30

Experience Points: 14

EQUIPMENT


Weapon	OCV	RMod	Damage	STUN	STR	Min	Notes
Mark II-K Laser Pistol	+1	+1	2d6	+0	10	32	

Armor

Type 2 Force-Field Belt (8 PD/8 ED) (1 Continuing Fuel Charge lasting 1 Hour)

Gear: Hand computer





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 The *Star Trek* roleplaying games from Last Unicorn Games and Decipher, Inc.



AUTHORS' FAVORITES

As a closing note, we thought it would be fun to list our top five favorites of various types of Science Fiction. If you haven't read these stories or watched these movies, we heartily recommend them!

JIM'S FAVORITES

Jim's Top Five Favorite Novels

THE PLAYER OF GAMES, BY IAIN M. BANKS (1988)

One of the best examples of the "postmodern space operas" of the past couple of decades. This is a great introduction to Banks's "Culture" series, as well as being a genuine thriller. Gamers should be particularly flattered that the hero is chosen for a dangerous mission because he's the best wargamer around.

STARTIDE RISING, BY DAVID BRIN (1983)

This novel catapulted Brin into the first rank of Science Fiction writers. It's got pretty much everything: vast alien civilizations at war, ancient mysteries, a starship on the run, a planet with strange inhabitants, talking dolphins, and more. It introduced the concept of "uplifting" — creating intelligent species out of clever animals via genetic engineering.

RENDEZVOUS WITH RAMA, BY ARTHUR C. CLARKE (1972)

One of the seminal "Big Dumb Object" stories, this is a fascinating tale of exploration as a crew of astronauts investigates a huge alien spaceship passing through the solar system. The sheer scale and indifference of the aliens gives the story an almost Lovecraftian tone. It spawned several sequels which lack the original's appeal.

THE NOTE IN GOD'S EYE, BY LARRY NIVEN AND JERRY POURNELLE (1974)

A ripping space opera in the old school, as a vast all-human galactic empire has its first encounter with aliens. Both sides have secrets, and the characters strive to balance duty, decency, and self-preservation. Many of the concepts in this novel became standard furniture in Science Fiction roleplaying games.

NEUROMANCER, BY WILLIAM GIBSON (1984)

The first novel of Gibson's "Sprawl" series, this book blew the windows out of the Science Fiction world when it first appeared. It was a runaway bestseller and made Cyberpunk the dominant branch of the field for a decade. Every street ninja game character with a chrome hand owes William Gibson a debt of gratitude.

Jim's Top Five Favorite Short Stories

"A LITTLE KNOWLEDGE," BY POUL ANDERSON (1971)

A space adventure based on solid world-building and alien design. Anderson is a great model for GMs trying to create Hard Science Fiction scenarios.

"STORY OF YOUR LIFE," BY TED CHIANG (1999)

A first contact story centering on alien linguistics and how understanding a new language changes how you see the world.

"TIME CONSIDERED AS A HELIX OF SEMI-PRECIOUS STONES," BY SAMUEL R. DELANY (1968)

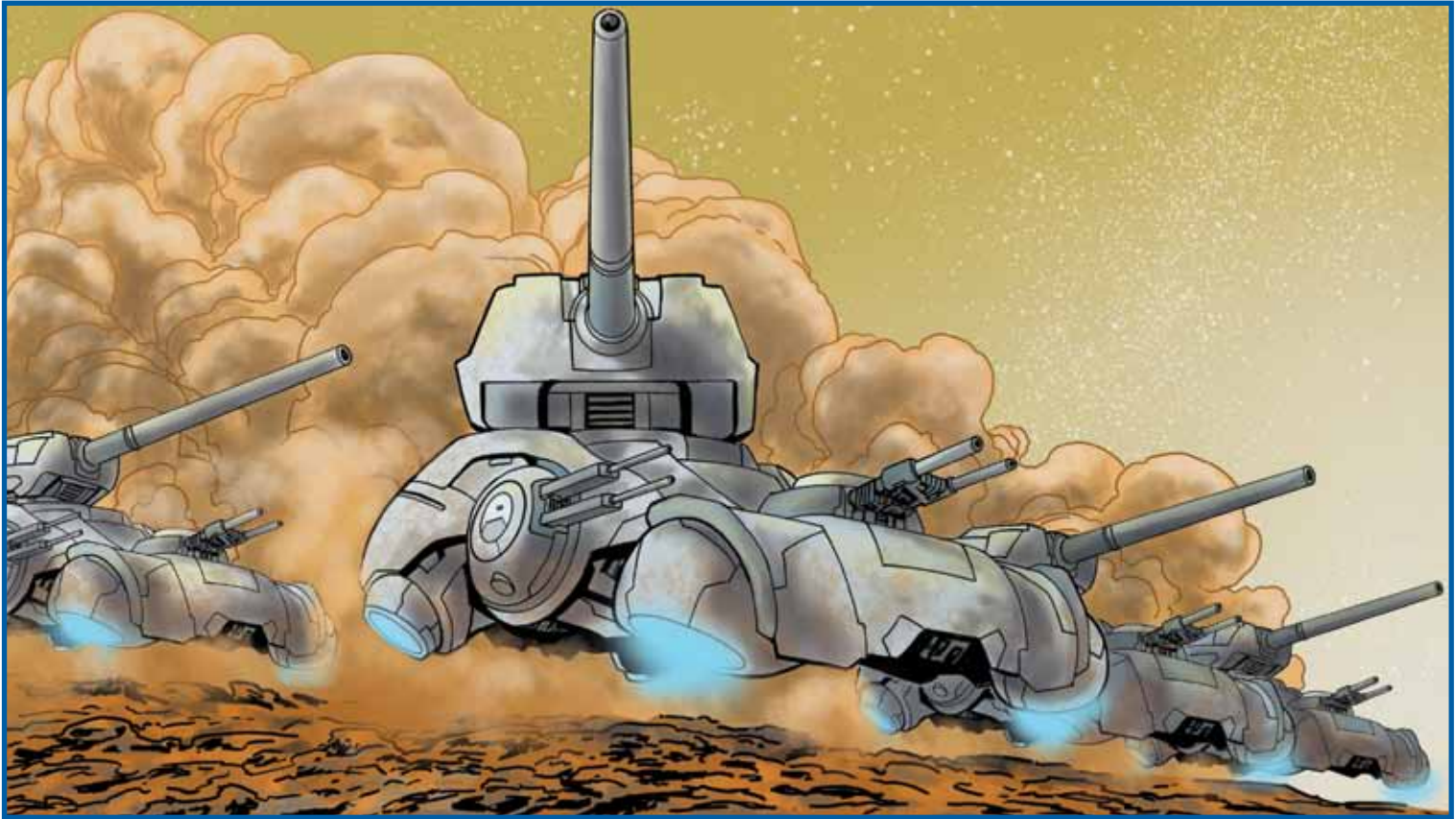
With this story Delany invented Cyberpunk Science Fiction, and it took everyone else fifteen years to notice.

"NIGHT ON MISPEC MOOR," BY LARRY NIVEN (1974)

A space mercenary finds himself in serious trouble on an alien world. This one works as both a science puzzle and a horror story.

"THE DRAGON MASTERS," BY JACK VANCE (1962)

At first glance it looks like Fantasy, but this is actually pure Science Fiction. A good model for off-beat Human societies and alien contact.



Jim's Top Five Favorite Movies

ALIEN (1979)

A marvelous fusion of Science Fiction and Horror, *Alien* was among the first films to show the future as a lived-in, blue-collar place instead of the glossy plastic “World of Tomorrow.” The alien monster is right out of H.P. Lovecraft, and the contrast makes it much scarier. The plot and character interactions are a model for countless roleplaying adventures.

BLADE RUNNER (1982)

William Gibson, the author of *Neuromancer* (see above), once said he tried to watch this movie but fled because it was too much like the things in his own imagination. *Blade Runner* is the original Cyberpunk movie, and holds up even after thirty years. If possible, see the Director's Cut which corrects some foolish changes made for the original cinema release.

SERENITY (2005)

A cult classic based on the beloved but short-lived television series *Firefly*, this is basically someone's roleplaying campaign put on film. There's a crew of misfits in a rickety spaceship, passengers with secrets, sinister agents in pursuit, cannibal space pirates, and even a critical failure at an inopportune moment. It took old tropes from Space Opera and old tropes from Westerns and combined them into something new.

STAR TREK II: THE WRATH OF KHAN (1982)

Widely considered the best of the Star Trek movies, this is a splendid old-school space opera. It has space battles, vengeful supermen, planet-busting weaponry, and a thumping good score. All the acting is cranked up past 11, the story is straight out of Captain Hornblower, and it saved the Star Trek franchise from fading into obscurity.

STAR WARS: THE EMPIRE STRIKES BACK (1980)

Quite simply the greatest space opera film ever. Darth Vader is powerful and devious, Yoda is wise and inscrutable, the heroes are brave but outmatched, the bounty hunters are scum, the princess and the rogue fall in love, and there's a giant space worm. What more can anyone ask for?

STEVE'S FAVORITES

Note: In making these choices I've tried to stick to more or less "mainstream" Science Fiction. I've excluded Post-Apocalyptic and Dystopia stories as being worthy of their own lists. Similarly, I've excluded most action-adventure sorts of movies with Science Fiction touches (such as *Terminator 2* and *Predator/Predator 2*), which to me are as much (or more) akin to Dark Champions as to Star Hero.

Steve's Top Five Favorite Novels

DUNE, BY FRANK HERBERT (1965)

The Science Fiction epic to end all Science Fiction epics, in my opinion. It's got everything: compelling characters (dozens of them); an amazing, lushly-developed setting dripping with details based on years of research; cruel, clever, and implacable villains; and a hero striving to attain the greatest prize of all: the galaxy. You can read *Dune* again and again and again, enjoying it thoroughly every time and picking out new details and allusions that escaped you despite your previous readings. The other *Dune* novels are interesting, but decidedly different in tone; I'm sorry Herbert wasn't inspired to write more in this vein.

FRIDAY, BY ROBERT HEINLEIN (1982)

There are those who claim the quality of Heinlein's writing declined in his later years, and perhaps there's some truth in that. Nevertheless I thoroughly love this, one of his last novels — the story of an "artificial person" employed as a professional courier in the shadowy world of future espionage, and how she makes her way through an often difficult and dangerous life. It lacks the gravitas of many of his earlier works, but that has never diminished my enjoyment of it one whit.

RINGWORLD, BY LARRY NIVEN (1970)

The ultimate "Big Dumb Object" story — an immensely fun blend of Hard Science Fiction and Planetary Romance. Many a time reading this I've wanted to create a similar Star Hero campaign, but I fear it could never live up to the wonder of Louis Wu, Speaker-To-Animals, and their companions' adventures on the Ringworld. The first sequel, *The Ringworld Engineers*, is also a fun read (and provides lots of useful additional detail on the Ringworld itself); the other sequels never appealed to me much.

STARSHIP TROOPERS, BY ROBERT HEINLEIN (1959)

The *ne plus ultra* of Military Science Fiction and the novel that first gave us powered armor. It combines a *bildungsroman* with scathing social criticism in a way that makes it fascinating, compelling reading, over and over again.

WASP, BY ERIC FRANK RUSSELL (1957)

This novel is unfortunately a bit obscure, and I believe now out of print, but used copies are easy enough to come by. It tells the story of James Mowry, a Human recruited to become a "wasp" — a spy/saboteur dropped on a planet of the Sirian Empire (with which Humanity is at war) so he can use his bag of dirty tricks to hinder the planet's authorities' ability to aid the Sirian war effort. According to Jack L. Chalker's introduction to the 1986 Del Rey edition, Russell worked in British military intelligence during World War II, where he and others dreamed up ways to bedevil the Nazis. Some of these ideas (including many that were never used) found their way into the plot of *Wasp* (in much the same way that fellow intelligence-gener Ian Fleming used them for James Bond).

RUNNERS-UP

Neuromancer and the rest of the "Sprawl Trilogy" by William Gibson; *Childhood's End* by Arthur C. Clarke; *Snow Crash* by Neal Stephenson; *Hothouse* by Brian Aldiss; *Ender's Game* by Orson Scott Card; and a whole bunch by Jack Vance, including the *Cadwal Chronicles* trilogy, the "Demon Princes" novels, and the *Planet Of Adventure* quadrilogy.

Steve's Top Five Favorite Short Stories

"SECOND DAWN," BY ARTHUR C. CLARKE (1951)

Arthur C. Clarke is far and away my favorite Science Fiction short story writer — the way he writes just pulls you into the situations and characters, and there's almost always a clever twist ending, like a delicious dessert after a fine meal. He wrote so many good ones — "The Star," "The Sentinel," "The Nine Billion Names Of God," "Hide And Seek," "Superiority," "I Remember Babylon," "Death And The Senator," and far more I don't have room to list here — that picking just one of them was difficult. I chose "Second Dawn" for several reasons. It's one of the first, if not *the* first, Science Fiction short stories I ever read (and in the first Science Fiction book I remember buying), and it's stuck with me ever since. It's a rich tale about a strange alien species having new vistas opened for it by acquiring the ability to manipulate objects with their previously-useless forelimbs, and thus learning to develop and use technology. Wondrous stuff!

“THE COLD EQUATIONS,” BY TOM GODWIN (1954)

This is hands-down the most profoundly moving Science Fiction short story I’ve ever read. It’s about a young girl who has to be jettisoned from a rescue ship’s airlock after she stows away, because the ship won’t have enough fuel to reach its destination otherwise. It’s the ultimate expression of the Hard Science Fiction theme that the universe is a hostile, dangerous place that kills those who aren’t knowledgeable and competent enough to cope with it.

“POLITY AND CUSTOMS OF THE CAMIROI,” BY R. A. LAFFERTY (1967)

When I was in high school, some friends of mine who knew of my interest in both Science Fiction and politics gave me for my birthday an Isaac Asimov/Martin Greenberg-edited anthology, *Election Day 2084*, containing Science Fiction stories about politics. There are a lot of great stories in the collection, but the one that I love the most is this gem by R. A. Lafferty, concerning a Human culture where any three people can make a law and societal responsibility is taken to extremes that I suspect would make even Heinlein blanch. Fun and food for thought.

“DOGFIGHT,” BY MICHAEL SWANWICK AND WILLIAM GIBSON (1985)

The collected Cyberpunk short stories of William Gibson, *Burning Chrome*, contains a lot of excellent fiction, but my favorite is this collaboration with Michael Swanwick. It tells the story of a petty criminal who’s so determined to beat the local champion in a 3-D holographic dogfighting game that he sacrifices everything to win... and then discovers the true price he’s paid. There are no street samurai or cyberspace cowboys, but it’s pure, unalloyed Cyberpunk nevertheless.

“THE MOON MOTH,” BY JACK VANCE (1961)

There’s no Science Fiction writer more talented at creating weird alien societies and customs than Jack Vance, and this often-anthologized story is one of the best examples of his matchless ability. It depicts a culture where all communication is conducted by playing instruments and singing (with the choice of instrument indicating the formality and nature of the speech), and everyone wears elaborate masks based on myth and legend rather than show their true faces. Our hero is a diplomat forced to contend with the difficulties these customs cause as he tries to apprehend a Human murderer hiding on the planet. Sheer, unadulterated fun from beginning to end.

RUNNERS-UP

Many others by Arthur C. Clarke (see above for a partial list); many others by Jack Vance (including the Magnus Ridolph mysteries, “Three-Legged Joe,” and “The Augmented Agent”); several by Larry Niven (including “The

Jigsaw Man,” “The Warriors,” “There Is A Tide,” and “Cloak Of Anarchy”); “Johnny Mnemonic” and “Burning Chrome” by William Gibson; and probably many others that simply aren’t springing to mind as I write this — I tend to prefer short stories to novels when reading SF.

Steve’s Top Five Favorite Movies

ALIEN/ALIENS (1979, 1986)

I don’t feel I can really separate these two because (a) they form a continuing story and (b) are both so good that I can’t bear to leave either out. One is mostly a Horror Science Fiction story and the other mostly action-adventure Science Fiction, but both are superb viewing.

GALAXY QUEST (1999)

What Science Fiction fan can resist this movie? It’s a clever, funny story combined with a loving tribute to Science Fiction fandom. It’ll have you making up episodes and continuity from the fictitious TV show it’s based on just for fun.

HEAVY METAL (1981)

The first large fandom convention I ever went to was called Atlanta Fantasy Fair (if memory serves), which I attended in the early Eighties with two good friends. We were wandering around looking for something to do one night when we noticed that *Heavy Metal* was being shown in the theater at the convention center. When I said I’d never seen it, they immediately dragged me in to watch it — and I’m glad they did. I’ve loved it ever since; it remains funny, clever, and just plain entertaining no matter how often you view it. It’s not exactly “pure” Science Fiction, but I think it’s close enough for the purposes of this list.

STAR TREK II: THE WRATH OF KHAN (1982)

The best Star Trek film made, and for my money possibly the best Science Fiction film ever made, period. Nearly every other Trek film is at best forgettable (and at worst simply awful), but this one has it all: it’s a great Science Fiction story, a great Star Trek story, and a great action-packed adventure. I’ve waited thirty years so far for someone to create a better Science Fiction film, and I expect I’m going to have to keep on waiting.

THE STAR WARS TRILOGY (1977, 1980, 1983)

I’m not as big a Star Wars fan as a lot of gamers, but even I have to admit that these movies (again, I don’t feel I should separate them because they tell one long story) possess a magic and adventuresomeness no Science Fiction fan should miss, or forget.

RUNNERS-UP

2001: A Space Odyssey; *2010: The Year We Make Contact*; *Back To The Future*; *Blade Runner*; *Contact*; *Forbidden Planet*.



INDEX

- 61 Cygni (star): 140-41
- Abbreviations: 5
- Absolute Time Sense (Talent): 71
- Absorption (Power): 73
- Acceleration, starships and: 218
- Access to technology, controlling: 188
- Accidental Change (Complication): 84, 300
- Achernar (star): 141
- Acquiring equipment: 206
- Action/reaction in zero gravity: 309
- Action-adventure (other genre and SF): 41
- Advanced Tech (Perk): 69
- Advanced technologies: 184
- Advantages: 82
- Adventures: 293
- Aid (Power): 74
- Airlocks: 233
- Albedo: 117, 305
- Aldebaran (star): 141
- Algol (star): 141
- Alien civilizations: 143-80
- Alien invasion (Military SF element): 25
- Alien Physiology (Physical Complication): 87
- Aliens (Science Fiction element): 9
- Aliens aplenty (Space Opera element): 32
- Alien scarcity (Low SF element): 24, 145
- Alien Species (NPC archetype): 157, 320
- Alien technologies: 184
- Alien visitors (Earthbound SF element): 19
- Ally (alien NPC role): 157
- Alpha Centauri (star): 140
- Altair (star): 141
- Alternate histories: 264
- Always On (Limitation): 83
- Ammonia: 114, 119
- Amphibians (alien body type): 152
- Analyze (Skill): 67
- Ancients, the (Post-Apocalyptic element): 29
- Android/Robot Template: 44
- Androids (Science Fiction element): 14, 44, 196
- Andromeda Galaxy: 93
- Animals (planetary resource): 123
- Anomalies, planetary: 107
- Anomalies, stellar: 102
- Anonymity (Perk): 69
- Antares (star): 141
- Antimatter power: 202
- Antimatter rockets: 221
- Apport (example psionic power): 279
- Architecture, alien civilizations and: 179
- Arcturus (star): 141
- Area Of Effect (Advantage): 82
- Areography: 134
- Argos Exploration (sample PCs): 323-34
- Argosina, Kaithon: 325
- Ariel: 138
- Armor: 191
- Armor for starships: 231
- Art, alien civilizations and: 179
- Asteroid Population Table: 125
- Asteroids: 125-26, 135
- Astronomical Unit (AU): 98
- Atlas: 137
- Atmospheres
- Generally: 114-17, 310-11*
- As an environmental factor: 310-11*
- Starships in: 311*
- Atmospheric Composition Table: 115
- Atmospheric Density Table: 115
- AU: 98
- Auxiliary power systems: 217
- AVAD (Advantage): 82
- Avilla, Robert: 325
- Axial tilt: 113
- Background Skills: 67
- Barnard's Star (star): 140
- Barrier (Power): 74
- Barth, Major Alyssa (sample villain): 335
- Base (Perk): 70
- Battles in space (Military SF element): 26
- BD +5o 1668 (star): 140
- Beam weapons: 228
- Beamed power: 200
- Beanstalks: 220
- Being Human (campaign theme): 284
- Bellatrix (star): 141
- Below Earth and sea (Earthbound SF element): 19
- Belters: 54, 135
- Betelgeuse (star): 141
- Bibliography: 352
- Big Dumb Objects (Science Fiction element): 9, 28, 126, 244
- Biotechnology: 197-98
- Black holes: 101
- Black zone: 106
- Blast (Power): 75
- Blasters: 10, 32, 190
- Blobs (alien body type): 152
- Blue zone: 106
- Bodiless Beings (alien body type): 152
- Body armor: 191
- Body control (category of psionic powers): 267
- Botanoid Template: 44
- Bounty Hunter Template: 55
- Brain Hacking (example psionic power): 279



- Brain Link, Interstellar (example psionic power): 280
- Bright Or Giant Star Table: 100
- Bright Quasar 3C 273: 142
- Brown dwarfs: 102
- Business difficulties (potential disconnect): 297
- Bussard ramjets: 223
- Buying equipment: 206
- Campaign creation and design: 284-92
- Canals on Mars: 135
- Caninoid Template: 45
- Cannot Enter Atmospheres (Physical Complication): 240, 311
- Canopus (star): 141
- Capella (star): 141
- Carbon: 119
- Carbon dioxide: 114
- Carbon oxides: 114
- Cargo prices: 167
- Cartography, stellar: 95, 104
- Causality: 257
- Ceres: 136
- Champions (other genre and SF): 40
- Change Environment (Power): 76
- Chaotic history: 261
- Character creation: 43-88
- Characteristics
Characters: 65
Vehicles: 215
- Characteristics (Power): 76
- Characters, computers or robots as: 193, 196
- Charon: 139
- Chemical rockets: 221
- Chlorine: 114
- Chryse Planitia: 134
- City worlds: 113
- Civilizations, alien and future: 143-80
- Clairsentience (Power): 76
- Classes of minds: 274
- Classifying planets: 121
- Climate: 117-18
- Climate Types Table: 118
- Clinging (Power): 76
- Cloak And Dagger (campaign subject): 288
- Cloaking devices: 234
- Clones (Science Fiction element): 10, 197
- Cold fusion: 202
- Cold sleep (Low SF element): 23, 223
- Colonies (Low SF element): 24, 120
- Colonies Table: 120
- Colonist Template: 56
- Colony Creatures (alien body type): 152
- Colony planets: 163
- Combat
Gravity and: 306, 308
Starship: 239
- Comedy (meta-genre): 36
- Comets: 96, 126
- Comic Relief (alien NPC role): 158
- Communications Systems for starships: 234
- Components of atmospheres: 114-15, 311
- Competent Men of Science (Hard SF element): 21
- Complexity of life: 120
- Complications
Characters: 84, 300
Starships: 240
- Composition, planetary: 110
- Computers: 10, 192-95
- Concentration (Limitation): 83
- Constitution (Characteristic): 65
- Constraints on FTL travel: 224
- Contemplative (alien NPC role): 158
- Contemplative Culture Template: 49
- Controls for starships: 239
- Convective zone of a star: 130

Corporations (Cyberpunk element): 16
 Corrosive atmospheres: 311
 Counterworlds: 107
 Crafts (planetary resource): 123
 Creating characters: 43-88
 Creating starships: 209-40
 Crime, alien civilizations and: 175
 Criminal Culture Template: 50
 Crossbreed characters: 46
 Cube Roots Table: 111
 Cuisine, alien civilizations and: 179
 Cultural Antagonist (alien NPC role): 158
 Cultural stereotypes and fusion: 146-47
 Cultural Templates: 49
 Culture, alien civilizations and: 179
 Currency: 164
 Cybernet, the (Cyberpunk element): 17
 Cyberpunk (Science Fiction subgenre): 16, 285
 Cyberpace: 16-17, 78, 195, 297
 Cyberware (Cyberpunk element): 18
 Cyborgs: 52

 Damage Negation (Power): 76
 Damage Over Time (Advantage): 82
 Damage Reduction (Power): 76
 Danger Sense (Talent): 71
 Dargen (sample villain): 339
 Dark Champions (other genre and SF): 41
 Dark matter: 94
 Darkness (Power): 76

Decompression, explosive: 312
 Defense Powers: 73
 Defenses for starships: 231
 Defensive technology: 191
 DeGraff, Jennifer: 327
 Deimos: 135
 Delayed Effect (Advantage): 82
 Delta-V: 220
 Demolitions (Skill): 67
 Deneb (star): 141
 Dense atmospheres: 115, 310
 Density
 Atmospheres: 115, 310
 Planetary: 110
 Dependence (Complication): 84, 300
 Dependent NPC (Complication): 84, 301
 Devereaux, Bertrand (sample villain): 337
 Dexterity (Characteristic): 65
 Diameter, planetary: 111
 Diet, alien: 152
 Diggers (alien body type): 152
 Dilated time effect: 227
 Dimensions: 95
 Diplomat Template: 56
 Disasters, planetary: 163
 Disconnects, dealing with: 297
 Dispel (Power): 76
 Distinctive Features (Complication): 85, 301
 Diversity of alien populations: 178
 Docking systems: 233
 Doctor
 Example NPC: 345
 NPC archetype: 321
 Template: 57
 Does BODY (Advantage): 82

Drain (Power): 76
 Drake Equation: 92
 Drama, alien civilizations and: 180
 Dream Hacking (example psionic power): 279
 Duplication (Power): 77
 Duration Advantages (Advantage): 83
 Dust, space: 305
 Dwarf planets: 139
 Dwarf stars: 99-100
 Dysnomia: 139
 Dyson spheres: 128
 Dystopias (Science Fiction subgenre): 35, 148, 287

 Earning a living (Low SF element): 24
 Earthbound Science Fiction (Science Fiction subgenre): 19, 285
 Eccentricity, orbital: 108
 ECM: 236
 Ecologically Unified worlds: 113
 Economics, alien civilizations and: 164
 Education, alien civilizations and: 180
 Eidetic Memory (Talent): 71
 Elastic time: 261
 Elder Civilization (alien NPC type/role): 13, 158
 Electronic warfare: 236
 Electronics (Skill): 67
 Elements of Science Fiction: 9-35
 Elysium Planitia: 134
 Empathic Communication (example psionic power): 279
 Empathic Control (example psionic power): 280
 Empires, galactic (Science Fiction element): 11, 172

Encumbrance, gravity and: 305
 Endurance Reserve (Power): 77
 Endurance Reserve for starship power: 216
 Enemy Species (alien NPC role): 158
 Enemy Species (villain archetype): 315
 Energy barrier, galactic: 90
 Energy Beings
 Generally: 119
 Alien archetype: 149
 Template: 45
 Energy Blade Fencing (Martial Art): 68
 Energy technology: 200-03
 Energy weapons: 10, 32, 190
 Engineer Template: 58
 Enhanced Senses (Power): 77
 Enraged/Berserk (Complication): 85, 301
 Environment: 305-12
 Environment Templates: 51
 Environmental Movement (Talent): 71
 Epsilon Eridani (star): 140-41
 Epsilon Indi (star): 140
 Equipment
 Personal: 181-208
 Starship: 215-40
 Eris: 139
 Escape velocity: 219
 ESP (category of psionic powers): 268
 Espionage, alien civilizations and: 173
 Europa: 137
 Everyman Powers: 74
 Everyman Skills for Science Fiction: 66
 Exotic life: 119

- Exotic Objects Table: 100
- Expanded Vehicle Size Table: 214-15
- Exploration
Campaign theme: 284
Science Fiction element: 11
- Explorer Template: 58
- Explosive decompression: 312
- Extra-Dimensional Movement (Power): 78
- Fads, fashion, and style (Cyberpunk element): 18
- Falling, gravity and: 306
- Fantasy (other genre and SF): 41
- Farming economies: 165
- Fast Beings (alien body type): 153
- Felinoid Template: 46
- Few aliens (Low SF element): 24
- Fifties Sci-Fi (Science Fiction subgenre): 32
- Fighter (example Vehicle): 247, 249
- Fighting, gravity and: 306, 308
- Filmography: 352
- First contact (Science Fiction element): 11
- Fixed history: 260
- Flare stars: 101
- Flight (Power): 78
- Flight, gravity and: 306
- Fluorine: 114, 119
- Flyers (alien body type): 153
- Flying in asteroid belts: 126
- Focus, starships and: 211, 215
- Folded space: 205
- Folded space drive: 225
- Fomalhaut (star): 141
- Food, alien civilizations and: 179
- Force-fields: 74, 191
- Force shields for starships: 232
- Free Robot (Perk): 70
- Free Trader (example NPC): 346
- Freefallers: 54
- Fringe Benefit (Perk): 69
- FTL Pilot (Talent): 72
- FTL propulsion: 223-27
- FTL Travel (Power): 78
- Fuel cells: 201
- Funny-Looking Humans (alien archetype): 149
- Fusion, cultural: 147
- Fusion power: 202
- Fusion rockets: 221
- Future civilizations: 143-80
- Future infantry (Military SF element): 26
- Future, the (definitional element of SF): 8
- G forces: 218
- Galactic ComputerNet Access Card (Perk): 69, 192
- Galactic Patrol (campaign subject): 288
- Galactic Tyrant (villain archetype): 316
- Galaxies: 90-94
- Gamemastering: 283-322
- Games, alien civilizations and: 180
- Ganymede: 137
- Gas giants: 111
- Gas planets: 110
- Gathering economies: 164
- Generation ships (Science Fiction element): 12, 223
- Genetic engineering/modifications: 198
- Genre of Science Fiction: 7-42
- Giant Polygons: 134
- Giant stars: 99-100
- Giants (alien body type): 153
- Gliding, gravity and: 307
- Gliese 581 (star): 141
- Globular clusters: 94
- Going Boldly (campaign subject): 287
- Goo spectrum: 199
- Good Businessman (NPC archetype): 321
- Government, alien civilizations and: 169
- Grand scale (Space Opera element): 33
- Gravity
Environmental factor: 305-09
Planetary: 111
Penalty to Skill Rolls: 65
Systems for starships: 238
- Great Red Spot: 136
- Green zone: 106
- Greenhouse effect: 117
- Grey goo: 199
- Grigori, Jason: 329
- Groombridge 34 (star): 140
- Guns for starships: 231
- Habitable zone, galactic: 92
- Habitats in space: 126
- Handless Beings (alien body type): 153
- Hangars: 233
- Hard Science Fiction (Science Fiction subgenre): 20, 285
- Haumea: 139
- Head Of State (Perk): 69
- Healing (Power): 78
- Heavy metals (planetary resource): 122
- Heavy weapons: 189
- Heavyworlder Template: 51
- Helium: 114, 119
- Hellas: 134
- Herdfolk Template: 47
- Hero Gone Bad (villain archetype): 316
- Hibernation: 23, 223
- Hideous Beings (alien body type): 153
- High gravity (environmental factor): 305-09
- High Gravity Training (Talent): 71
- Highest tech (Space Opera element): 33
- History of space travel: 210
- Hive Creatures (alien archetype): 150
- Hive minds (Science Fiction element): 12
- Holographic entertainment systems: 239
- Honorable Enemy (villain archetype): 316
- Horror (meta-genre): 37
- Hostile universe (Hard SF element): 21
- Hotshot Pilot (Talent): 73
- Hovercraft: 241
- Humanity's origin (Science Fiction element): 13
- Hunted (Complication): 85, 240, 301
- Hydra: 139
- Hydrogen: 114, 119
- Hydrosphere Modifiers Table: 121
- Hydrosphere of planets: 121
- Hyperdrive: 226
- Hyperspace (Science Fiction element): 13, 226
- Iapetus: 137
- Ice planets: 110
- Ichthyoid Template: 47
- Images (Power): 79

- Immaterial Aliens (alien body type): 153
- Immobile Beings (alien body type): 154
- Immunity (type of Life Support): 79
- Immunity To Timeshifts (form of Life Support): 261
- Improving technology: 185-86
- Incantations (Limitation): 83
- Inclination, orbital: 109
- Inertialess drive: 227
- Infantry, future (Military SF element): 26
- Infodumps (potential disconnect): 298
- Information economies: 165
- Insectoid enemies (Military SF element): 26
- Insectoid Template: 47
- Intelligent life: 120
- Interference with sensors/communications: 236
- Intergalactic space: 90, 93
- Interspecies society: 150
- Interstellar Brain Link (example psionic power): 280
- Interstellar governments: 172
- Interstellar phenomena: 96
- Introduction: 5
- Inventions, invention stories (Science Fiction element): 13
- Invisibility (Power): 79
- Io: 137
- Ion rockets: 221
- Judicial systems, alien civilizations and: 175
- Jump drive: 226
- Jupiter: 136
- Kapteyn's Star (star): 140
- Kardashev classifications: 159
- Knockback in zero gravity: 309
- Krez'shul, Segaro: 331
- Kruger 60 (star): 140
- Kuiper Belt: 139
- Lacaille 8760 (star): 140
- Lacaille 9352 (star): 140
- LaGrange planets: 107
- LaGrange points: 133, 211
- Lalande 21185 (star): 140
- Language, alien civilizations and: 177
- Latent Psionic (Talent): 73
- Law, alien civilizations and: 175
- Law Enforcement Agent Template: 58
- Laws of Robotics: 196
- Leaping, gravity and: 308
- Legal systems, alien civilizations and: 175
- Libertarian worldview (Hard SF element): 22
- Licensed Psionic (Perk): 70
- Life
- Alien: 117-20, 149-80*
- Interstellar: 97*
- Life Complexity Table: 120
- Life Support (Power): 79
- Life support systems for starships: 238
- Lifting, gravity and: 308-09
- Light distances: 217
- Light sails: 222
- Light-year: 98, 217
- Lightspeed Delay (Limitation): 234
- Lightworlder Template: 52
- Limitations
- Generally: 83*
- Psionics and: 273*
- Limited Power (Limitation): 83
- Liquid fuel rockets: 221
- Literature, alien civilizations and: 180
- Low gravity (environmental factor): 305-09
- Low Gravity Training (Talent): 71
- Low Native Gravity (Physical Complication): 86
- Low Science Fiction (Science Fiction subgenre): 23, 185, 285
- Lowell, Percival: 135
- Luyten 725-32 (star): 140
- Luyten 726-8 (star): 140
- Luyten 789-6 (star): 140
- Mad Scientist (villain archetype): 317
- Magellanic Clouds: 93
- Maintenance systems for starships: 239
- Makarides High Port (example Base) : 247, 253
- Makemake: 139
- Making Crime Pay (campaign subject): 288
- Maneuverability of starships: 218
- Manhunters (campaign subject): 288
- Manufactures (planetary resource): 123
- Manufacturing economies: 165
- Mapping star sectors: 95, 104
- Mars: 133-35
- Martial Arts (Skill): 67
- Mass media, alien civilizations and: 180
- Mass, planetary: 109
- Matrix, the: 17
- Matter faxes: 203
- Mecha: 241-43
- Mecha (Science Fiction element): 13
- Medical facilities on starships: 239
- MegaScale (Advantage): 83
- Megastructures: 127
- Mental Defense (Power): 80
- Mercantile Culture Template: 50
- Mercenary (villain archetype): 317
- Merchant (example NPC): 346
- Merchant Ship (example Vehicle): 247, 248
- Mercury: 131
- Merfolk Template: 53
- MESSENGER: 131
- Metals (planetary resource): 122
- Methane: 114, 119
- Militaries, alien civilizations and: 172
- Military Science Fiction (Science Fiction subgenre): 25, 286
- Military technology: 189
- Milky Way Galaxy: 91
- Mimcry (Skill): 67
- Mind Control (Power): 80
- Mind control (potential disconnect): 298
- Mind Shield (example psionic power): 280
- Mind transfer: 258
- Minion Gallery: 345-51
- Miranda: 138
- Missiles: 228
- Modern technology advanced (Low SF element): 24
- Money (Perk): 70
- Monopolies on FTL travel: 224
- Moon Anomalies Table: 112

- Moon Distance Table: 111
 Moon Size Table: 112
 Moon, the: 132
 Moons: 111
 Moons Table: 111
 Movement, gravity and: 306-08
 Movement Powers: 73
 Multiform (Power): 80
 Multiple intelligent species on a planet: 120
 Multiple Limbs (alien body type): 154
 Music, alien civilizations and: 179
 Mutant Template: 53
 Mutants (Post-Apocalyptic element): 30
 Mystery (meta-genre): 37
- Names
Of planets: 110
Of stars: 98
- Nanotechnology: 199
 Navigation computers: 237
 Nebulae: 96, 100, 102
 Negative Reputation (Complication): 86, 302
 Neptune: 138
 Net, the: 17
 Neutron stars: 102
 Nitrogen: 114
 Nitrogen oxides: 114
 Noctis Labyrinthus: 134
 Nomadic economies: 164
 Nonmetals (planetary resource): 123
 NPCs: 320-22
 Nuclear power: 202
 Nuclear thermal rockets: 221
 Nyx: 139
- O’Niell colonies: 211
 Oberon: 138
- Objects in Star Hero: 312
 Obsolete technologies: 184
 Obtaining a starship: 212
 Olympus Mons: 134
 Omnipotent Alien (villain archetype): 318
 One New Technology (Earth-bound SF element): 20
 Oort Cloud: 96, 139
 Operations Systems for starships: 234
 Orbital distance of planets: 106
 Orbital effects of planets: 108
 Orbital Military Base (example Base): 247, 254
 Orbital separation of stars: 99
 Orbitals: 127-28
 Orbits of moons: 111
 Organics (planetary resource): 123
 Origin of Humanity (Science Fiction element): 13
 Oxygen: 114
- Pan: 137
 Paradox: 257, 259
 Parasites (alien body type): 154
 Pavonis Mons: 134
 Penetrating (Advantage): 83
 Perks: 69
 Personnel Systems for starships: 238
 Philosophy, alien civilizations and: 180
 Phobos: 135
 Photosphere of a star: 130
 Physical Complication (Complication): 86, 240, 302
 Pilot Template: 58
 Piloting systems: 237
- Pirate Life (campaign subject): 289
 Planetary Composition Table: 110
 Planetary Mass Table: 109
 Planetary militaries: 172
 Planetary nebula: 100, 102
 Planetary Romance (Science Fiction subgenre): 27, 286
 Planetary Rotation Table: 113
 Planets
Generally: 105-39
Attacking/destroying: 230
Wandering: 97
 Plants (planetary resource): 123
 Plasma rockets: 221
 Player Characters
Access to technology, controlling: 188
Computers or robots as: 193, 196
Species, creating: 155-57
 Pleasure planets (Science Fiction element): 13, 113
 Pleiades, the (stars): 142
 Plotting: 294
 Pluto: 139
 Point defenses for starships: 232
 Poisonous atmospheres: 311
 Polaris (star): 141
 Police Powers (Perk): 69
 Pollux (star): 141
 Population, alien civilizations and: 161
 Population I and II stars: 92
 Positive Reputation (Perk): 70
 Possession (potential disconnect): 298
 Post-Apocalyptic (Science Fiction subgenre): 29, 148, 286
- Pirate Life (campaign subject): 289
 Planetary Composition Table: 110
 Planetary Mass Table: 109
 Planetary militaries: 172
 Planetary nebula: 100, 102
 Planetary Romance (Science Fiction subgenre): 27, 286
 Planetary Rotation Table: 113
 Planets
Generally: 105-39
Attacking/destroying: 230
Wandering: 97
 Plants (planetary resource): 123
 Plasma rockets: 221
 Player Characters
Access to technology, controlling: 188
Computers or robots as: 193, 196
Species, creating: 155-57
 Pleasure planets (Science Fiction element): 13, 113
 Pleiades, the (stars): 142
 Plotting: 294
 Pluto: 139
 Point defenses for starships: 232
 Poisonous atmospheres: 311
 Polaris (star): 141
 Police Powers (Perk): 69
 Pollux (star): 141
 Population, alien civilizations and: 161
 Population I and II stars: 92
 Positive Reputation (Perk): 70
 Possession (potential disconnect): 298
 Post-Apocalyptic (Science Fiction subgenre): 29, 148, 286
- Post-scarcity setting (Space Opera element): 34
 Posteconomic economies: 166
 Power (campaign theme): 284
 Power (Skill): 68
 Power Frameworks, psionics and: 274
 Power Systems for starships: 216-17
 Power technology: 200-03
 Powered armor (Military SF element): 26
 Powered Exoskeleton (device): 205
 Powers: 73
 Premonitions (example psionic power): 280
 Pressure
Atmospheric: 117, 310
High or low (environmental factor): 310-11
 Pressure Table: 116
 Prices for equipment: 206-08
 Prime directives: 184
 Probability drive: 227
 Probability Manipulation (example psionic power): 280
 Probes: 235
 Procyon (star): 140
 Professional Skill: Zero-G Operations (Skill): 68
 Professional Templates: 55
 Programs for computers: 192
 Propulsion Systems for starships: 217-27
 Prospector (example NPC): 347
 Protostars: 101
 Proxima Centauri (star): 140
 Psi Agents (psionic campaign type): 275

- Psi Cops (psionic campaign type): 275
- Psi-Agent Template: 59
- Psionic Jamming (example psionic power): 281
- Psionic Template: 54
- Psionics: 14, 265-82
- Psychic Diagnosis (example psionic power): 281
- Psychic Invisibility (example psionic power): 281
- Psychic Wars (psionic campaign type): 276
- Psychological Complication (Complication): 87, 303
- Pulp (other genre and SF): 42
- Pulp Science Fiction (Science Fiction subgenre): 31, 286
- Pulsars: 102
- Puppet (villain archetype): 318
- Quantum displacement: 204
- Quaoar: 139
- Quarantines, technological/cultural: 184
- Quarters on starships: 239
- Quasars: 91
- Quest for safety (Post-Apocalyptic element): 30
- Racial Templates: 44
- Radar jamming/spoofing: 234
- Radiative zone of a star: 130
- Radiothermal generators: 201
- Railguns: 231
- Random Star Hero Plot Generator: 296
- Ray guns: 32
- Reactionless drives: 222
- Reality quakes (potential disconnect): 298
- Rebel Psis (psionic campaign type): 276
- Rebels
Campaign subject: 289
Villain archetype: 318
- Recreation, alien civilizations and: 180
- Red giant: 99-100
- Red zone: 106
- Regeneration (Power): 78
- Regulus (star): 141
- Relationships (potential disconnect): 298
- Religion, alien civilizations and: 180
- Remnant, supernova: 100, 102
- Remote Viewing (example psionic power): 281
- Reptiloid Template: 48
- Reserve power systems: 217
- Resistant Protection (Power): 74
- Resonant rotation: 113
- Resort worlds: 13, 113
- Resources of planets: 122
- Retro-Science Fiction (Science Fiction subgenre): 31, 286
- Retrograde orbit: 112-13
- Ribbon worlds: 113
- Rigel (star): 141-42
- Ringworlds: 127-28
- Rivalry (Complication): 303
- Robots (Science Fiction element): 14, 44, 196
- Roche limit: 111
- Rock-ice worlds: 110
- Rock-iron worlds: 110
- Rockets: 220-23
- Rogue planets: 107
- Rogue Psi (villain archetype): 319
- Rogue Template: 59
- Roguish Con Man (villain archetype): 319
- Romance (meta-genre): 38
- Rosettes: 107
- Ross 128 (star): 140
- Ross 154 (star): 140
- Ross 248 (star): 140
- Rotation Anomalies Table: 113
- Rotation of planets: 113, 118
- Rubber Science (Science Fiction element): 14, 187
- Rubber suit aliens: 149
- Ruchbah (star): 141
- Ruins (Post-Apocalyptic element): 30
- Running Star Hero games: 293-304
- S Doradus: 93, 142
- Safe Environment (Zero Gravity) (type of Life Support): 79
- Sagittarius A* (star): 142
- Satire (meta-genre): 39
- Saturn: 137
- Scale of the campaign: 291
- Scavenging (Post-Apocalyptic element): 30
- School For Psionics (psionic campaign type): 277
- Science: 6, 8, 14, 187
- Science Fiction genre: 7-42
- Science! (campaign subject): 290
- Scientific rigor (Hard SF element): 22
- Scientist
Example NPC: 348
Template: 61
- Sectors of stars: 95
- Security Officer
Example NPC: 349
NPC archetype: 321
- Sense-Affecting Powers: 73
- Sensor Systems for starships: 235
- Setting of the campaign (campaign subject): 290
- Shape Shift (Power): 80
- Shapeshifter Template: 48
- Side Effects (Limitation): 84
- Sigma 2398 (star): 140
- Sigma Draconis (star): 141
- Silicon: 119
- Silicon Life-Form Template: 48
- Simulate Death (Talent): 71
- Singularity power: 203
- Sirius (star): 140
- Size
Of moons: 112
Of stars: 99
Vehicle Characteristic: 215
- Skills: 65
- Skills (Power): 80
- Slingshotting: 225
- Slow Beings (alien body type): 154
- Small Aliens (alien body type): 154
- Small-scale setting (Low SF element): 24
- Social Commentary (meta-genre): 39
- Social Complication (Complication): 87, 303
- Solar flares: 131
- Solar power: 200
- Solar sails: 222
- Solar system, Earth's: 129-39, 306
- Soldier Template: 61
- Sonic Multitool (device): 205
- Space (definitional element of SF): 8
- Space battles/combat
Generally: 239
Military SF element: 26
potential disconnect: 299

- Space dust: 305
- Space elevators: 220
- Space habitats: 126
- Space Marine (example NPC): 350
- Space militaries: 173
- Space Opera (Science Fiction subgenre): 32, 287
- Space Pirates
Example NPC: 351
Villain archetype: 320
- Space sails: 222
- Space Station Table: 127
- Space stations
Generally: 244-46
Science Fiction element: 15
- Space storms: 97
- Space travel, history of: 210
- Spacecraft: 207-40
- Spaceports: 167
- Spacer Template: 54
- Specialties (planetary resource): 123
- Species, alien: 44-49, 149-58
- Species Templates: 44-49
- Spectrum of stars: 99
- Speed (Characteristic): 65
- Spica (star): 141
- Spiral galaxies: 90
- Splitting the party (potential disconnect): 299
- Sports, alien civilizations and: 180
- Sprawl, the (Cyberpunk element): 18
- Spy Template: 62
- Standard atmospheres: 115
- Star gates: 227
- Star System Data Table: 103
- Star Traders (campaign subject): 290
- Star Types Table: 100
- Star, visiting: 130
- Starbases: 244-46
- Stars: 95-104, 140-42
- Starship facilities: 167-68
- Starship License (Perk): 70
- Starship Officer Template: 61
- Starship Troopers (campaign subject): 290
- Starships
Generally: 207-40
Science Fiction element: 15
- Stealth systems for starships: 234
- Steampunk (Science Fiction subgenre): 31
- Stellar engineering: 94
- Stereotypes, cultural: 146
- Sticky (Advantage): 83
- Streetwise Kid (NPC archetype): 322
- Strength (Characteristic): 65
- Striking Appearance (Talent): 71
- Style (Distinctive Feature): 67
- Subject of the campaign: 287
- Sulfur: 114, 119
- Sun, the: 130-31
- Super Intellecets (alien archetype): 150
- Supergiant stars: 99-100
- Superheroes (other genre and SF): 40
- Supernova: 100, 102
- Supertanks (Military SF element): 27
- Supplier (NPC archetype): 322
- Surface of planets: 121-23
- Susceptibility (Complication): 88, 304
- Swashbucklers (other genre and SF): 42
- Swimming, gravity and: 308
- Swinging, gravity and: 308
- Swords and swordplay (Planetary Romance element): 29
- Symbiotes (alien body type): 154
- System Type Table: 99



- Tactician Template: 63
- Tal, Kiritha: 333
- Talents: 71
- Talking Beasts (alien archetype): 150
- Target: Asteroid!: 126
- Target: Earth!: 230
- Tau Ceti (star): 140-41
- Tech levels and scales: 182-84
- Tech Template: 63
- Technician (example NPC): 348
- Technician (NPC archetype): 322
- Technology
Generally: 181-208
Alien civilizations and: 159
Campaign theme: 284
Definitional element of SF: 8
Potential disconnect: 300
Psionic: 278
- Telekinesis (category of psionic powers): 268
- Telekinesis (Power): 81
- Telekinetic Hand (example psionic power): 281
- Telepathic Probe (example psionic power): 282
- Telepathic Shriek (example psionic power): 282
- Telepathy (category of psionic powers): 268
- Telepathy (Power): 81
- Teleportation (category of psionic powers): 269
- Teleportation (Power): 81
- Teleportation technology: 203
- Templates
Generally: 44-64
Creating: 156-57
- Terraforming (Science Fiction element): 15, 118
- Terrain, dominant, on planets: 122
- Tethys: 137
- Tharsis Montes: 134
- Tharsis Province: 134
- Theater, alien civilizations and: 180
- Theme of the campaign: 284
- Thermal rockets: 221
- Thin atmospheres: 115, 310
- Thought Speech (example psionic power): 282
- Throwing, gravity and: 308-09
- Tidal Heating Table: 112
- Tidal heating: 112, 117
- Tidally locked planets and moons: 113
- Tilt Table: 113
- Time Castaways (Time Travel Hero campaign): 263
- Time Collectors (Time Travel Hero campaign): 262
- Time Cops (Time Travel Hero campaign): 262
- Time dilation: 227
- Time Explorers (Time Travel Hero campaign): 263
- Time loop: 257
- Time Machine License (Perk): 70
- Time Police (campaign subject): 290
- Time travel
Generally: 255-64
Potential disconnect: 299
Science Fiction element: 15, 255-64
Science Fiction subgenre: 34, 287
- Titan: 138
- Titania: 138
- Tombaugh, Clyde: 139
- Tools, Skills as: 67
- Topopolis: 127-28
- Towel (device): 205
- Trace atmospheres: 115
- Tractor beams: 237
- Trade, planetary or space: 166-67
- Trader Template: 64
- Trading Partner (alien NPC role): 158
- Tragedy (meta-genre): 39
- Transdimensional (Advantage): 83
- Transform (Power): 82
- Travel (Science Fiction element): 15
- Triton: 139
- Trojan Clusters: 136
- Two Real, One Fictional Rule: 169
- Types of campaigns: 285
- Types of space stations: 244
- Types of spacecraft: 211
- Types of stars: 99-100
- Umbriel: 138
- Unbreathable atmospheres: 311
- Universal Translator (Talent): 72
- Unluck (Complication): 304
- Uplifted Animals (alien archetype): 150
- Uranus: 138
- Ursoid Template: 49
- Utopia Planitia: 134
- Utopias (Science Fiction subgenre): 35, 144, 287
- Vaa'resh, Ghenak (sample villain): 339
- Vacuum, effects of: 309
- Valles Marineris: 134
- Van Maanen's Star (star): 141
- Variable Advantage (Advantage): 83
- Variable Special Effect (Advantage): 83
- VASIMR rocket: 221
- Vega (star): 141
- Vehicle (Perk): 70
- Vehicles, planetary: 241-43
- Venus: 132
- Villains: 313-20
- Volatiles (planetary resource): 123
- Vulnerability (Complication): 88, 304
- Wandering planets: 97
- Warp drive: 225
- Warrior Culture Template: 50
- Warriors (alien archetype): 151
- Warship (example Vehicle): 247, 250
- Water on planets: 121
- Weapons
Personal: 189-91
Starship: 228
- Western (other genre and SF): 42
- White dwarf: 99-100
- Wild Talents (category of psionic powers): 270
- Winged Humanoid Template: 49
- Wolf 359 (star): 140
- World reduction: 147
- Wormholes: 227X-780
 Combat Mech (example Vehicle)\$247, 252
- Year length: 108
- Yellow zone: 106
- Zee'gansh (sample villain): 342
- Zero gravity (environmental factor): 305-09
- Zero Point power: 203
- Zones, planetary orbital: 106

