GURPS Fourth Edition

SPACE

By Jon F. Zeigler and James L. Cambias

STEVE JACKSON GAMES

THE FUTURE IS YOURS!

It's the ultimate toolkit for building strange new worlds and alien civilizations. *GURPS Space* puts campaign-planning advice and space science at your fingertips, so you can create a setting that is plausible and fun!

- Does your game feature gritty asteroid miners, or blaster-waving fighter jocks? Choose the space travel and technology that give the right feel for your campaign.

- Looking for character ideas? Here are templates and advice to help an adventuring group get together and stay together.

- Do you want a bug-eyed monster, or a realistic ecosystem? Use the alien-design chapter to build them all!

- Need a planet? How about an asteroid, or a Dyson sphere? The worldbuilding chapters provide step-by-step instructions.

- In a hurry to play? Each step of the world- and alien-design instructions lets you roll randomly and get results that make sense. Roll up your next planet and let the adventure begin!

GURPS Space will help you create campaigns of every style, from science fantasy to space opera to realistic. Recreate your favorite science-fiction background, or develop an original world of your own. With *GURPS Space* in your hands, the future is yours!

*GURPS Space requires the GURPS Basic Set, Fourth Edition.
The information and advice on technology, worldbuilding, and alien design
can be used as a resource for **any** space-based game.*

By **Jon F. Zeigler** and **James L. Cambias**   Edited by **Wil Upchurch**

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GURPS

SPACE

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About *GURPS*

Steve Jackson Games is committed to full support of *GURPS* players. We can be reached by email: **info@sjgames.com**. Our address is SJ Games, P.O. Box 18957, Austin, TX 78760. Resources include:

New supplements and adventures. GURPS continues to grow – see what's new at **gurps.sjgames.com**.

Warehouse 23. Our online store offers *GURPS* print items, plus PDFs of our books, supplements, adventures, play aids, and support . . . including exclusive material available only on Warehouse 23! Just head over to **warehouse23.com**.

Pyramid (**pyramid.sjgames.com**). For 10 years, our PDF magazine *Pyramid* included new rules and articles for *GURPS,* plus systemless locations, adventures, and much more. The entire 122-issue library is available at Warehouse 23!

Internet. To discuss *GURPS* with our staff and your fellow gamers, visit our forums at **forums.sjgames.com**. You can also join us at **facebook.com/sjgames** or **twitter.com/sjgames**. Share your brief campaign teasers with #GURPShook on Twitter. Or explore that hashtag for ideas to add to your own game! The web page for *GURPS Space* can be found at **gurps.sjgames.com/space**.

Store Finder (**storefinder.sjgames.com**): Discover nearby places to buy *GURPS* items and other Steve Jackson Games products. Local shops are great places to play our games and meet fellow gamers!

Bibliographies. Bibliographies are a great resource for finding more of what you love! We've added them to many *GURPS* book web pages, with links to help you find the next perfect element for your game.

Rules and statistics in this book are specifically for the *GURPS Basic Set, Fourth Edition.* Page references that begin with B refer to that book, not this one.

INTRODUCTION

Why do we dream of voyages to space? Why do we make up tales of distant worlds and other stars? Isn't Earth enough?

Well, no. Earth is a big planet with plenty of weird stuff on it, but it's getting too well-known. Human civilization is increasingly close-knit, so even in the most exotic lands one sees familiar brand names and hears familiar pop music.
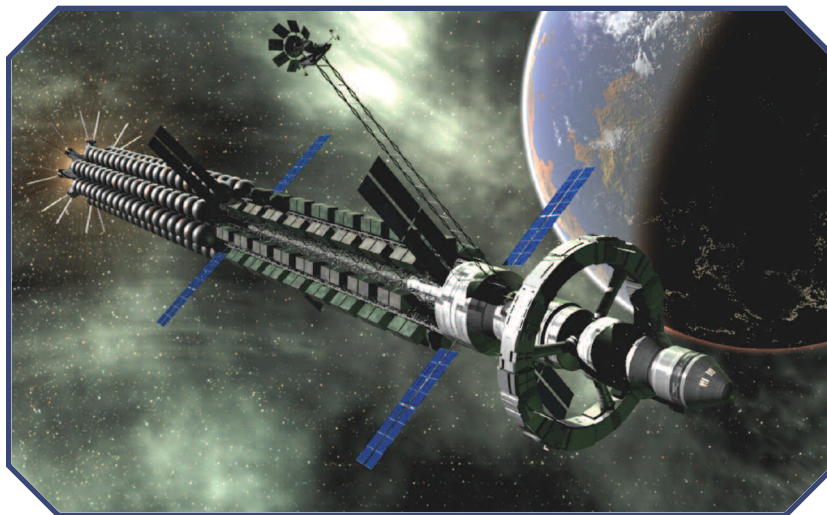
We want *wonders*. We want to climb 26 miles to the top of Mons Olympus on Mars, see the rings of Saturn filling half the sky, watch the double sunset on Alpha Centauri IV, see stars being born in the Orion Nebula, and watch them spiral in to die in the central black hole of the galaxy. Space exploration brings a whole *universe* of wonders within reach.

We want to play with ideas. What would life be like on a planet of a flare star? What are some other ways to run a society, or distribute wealth? How does hyperspace travel affect interstellar military strategy? Space travel and colonization lets us create new societies and examine different ways of doing things.

We also want someone to talk to. An alien perspective would tell us many things about the universe, and about ourselves. Alien music and alien art might revitalize our jaded tastes and inbred styles. Civilizations older than our own might know the answers to some of our questions – and ask some questions we haven't even thought of.

Finally, as gamers we want adventures. We want to chase our foes across the icy plains of Pluto, or hide from them in the clouds of Neptune. We want to make a killing doing business with intelligent fungi from Altair, or lead troops into battle against robot hordes. Space is fun.

What makes space different is that it's real. The wonders are really out there, along with others we haven't seen. There are real alien civilizations out there somewhere, probably more strange than we've imagined. Space adventures are achievable. Anyone can join in, no royal birth or ancient prophecy required. Those odd societies? They're real, too – or can be. If this book has a message, it's: *we can do this*. Humans are capable of great things. Sure, Earth is a great place, but if we limit ourselves to a single planet, it's an admission of defeat.

PUBLICATION HISTORY

This is the fourth edition of *GURPS Space*. Steve Jackson and William Barton collaborated on the first and second editions, and David Pulver revised their text for the third edition. The current edition includes a great deal of text from these earlier versions.

This book also incorporates material from several other *GURPS* books. The concepts of *tone*, *scale*, and *scope* used in Chapter 1 were pioneered by Ken Hite in the third edition of *GURPS Horror*. The world design sequences in Chapters 4 and 5 are descended from the one designed by Jon F. Zeigler for *GURPS Traveller: First In*; a simpler version of the current system also appears in *GURPS Traveller: Interstellar Wars*. The alien design sequence in Chapter 6 was inspired by the one Stefan Jones created for *GURPS Uplift*.

About the Authors

James L. Cambias is a game designer and science fiction writer, currently resident in western Massachusetts. He is putting the finishing touches on his plan to gain a complete monopoly on science fiction role-playing sourcebooks. Earlier stages in the project include *GURPS Planet Krishna*, *GURPS Mars*, *GURPS Planet of Adventure*; *Star Hero* and *Terran Empire* from Hero Games; and several science fiction short stories. With the appearance of this book, total science fiction domination is within his grasp!

Jon F. Zeigler has been a science fiction fan since the cradle (literally). He and his wife and two children live in Maryland, where he works for the federal government as a network security analyst. He has written several books for *GURPS*, especially for the *GURPS Traveller* and *Transhuman Space* product lines.

I dodged the thing's deadly beam-blasts and leaped over one of the tumbled stone slabs to find cover. Captain Panatic was hunkered down behind the same slab, his proton gun ready.

"I'm wondering why I'm here, Dr. Wallace. I could have stayed back in the Patrol and fought pirates." The slab cracked as a beam-blast struck it. Panatic popped up and fired off a couple of bursts at the giant glittering menace slowly approaching us.
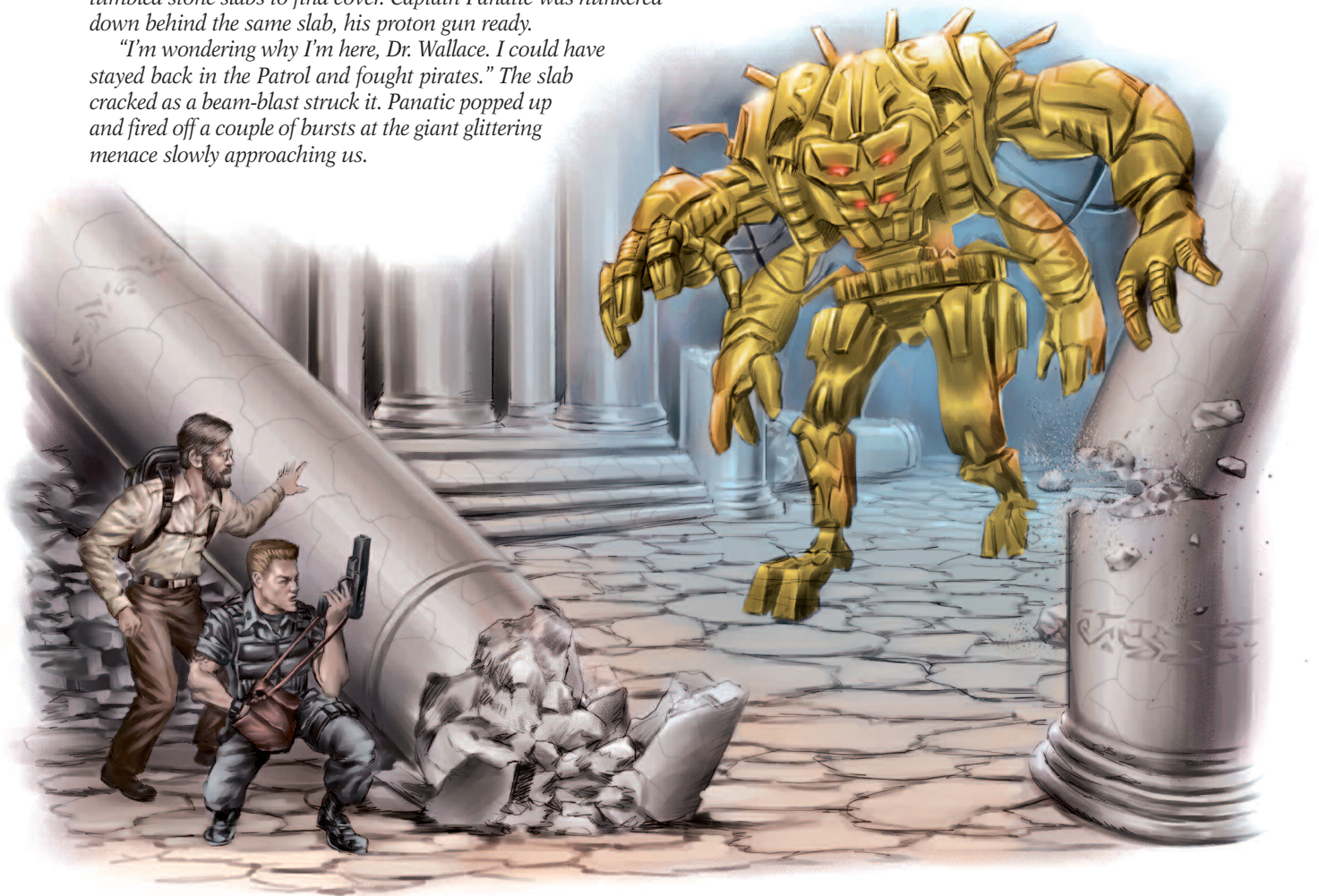
"Or I could have taken my brother's offer and gone into business as a merchant. I think I'd make a pretty good merchant, don't you?"

I ducked as a blast shattered the wall above me, showering us both with fragments of blackened stone.

Captain Panatic took my rucksack and began rummaging through it. "I might even have bought some land on a colony world, maybe raise dairy cattle and make cheese. Do you like cheese, Dr. Wallace?"

I risked a look. The huge golden machine that I'd mistaken for an alien idol was now only five meters away, shoving aside slabs bigger than the one we were hiding behind.

"But I didn't do those things. I heard you were looking for a pilot, so I took the job. Do you know why, Dr. Wallace?" Panatic took out a couple of spare power cells and began prying at the casings. He got them open, used a strip of foil to connect them somehow, counted under his breath, and tossed them over the slab at the machine. A second later, there was a tremendous explosion.

When the dust had cleared and we could stop coughing, Panatic and I peeked over the slab. The ancient alien machine was toppled over and still.

"I signed on with you because I figured an archaeology voyage would be nice and safe. What could possibly happen?"

I decided not to tell him about the psi-worms yet.

SPACE AND SPACE FICTION

A LITTLE LITERARY HISTORY

Space travel has always been the most important trope in science fiction. To many people, it's "all that outer space stuff." And certainly SF writers have been interested in the subject for a very long time. Johannes Kepler wrote about a voyage to the Moon in 1634, and although his hero gets there by means of magic, Kepler's description of conditions on the Moon was pure "hard" science fiction.

Early accounts of space voyages were often fantasies, either explicitly like Kepler's, or with a wink at the reader, as when Francis Godwin used migratory geese to carry his hero to the Moon in *The Man in the Moone* or Edgar Allan Poe used a balloon to carry Hans Pfaal there in "The Unparalleled Adventure of one Hans Pfaal." But by the middle of the 19th century, authors began speculating about ways by which people might really be able to leave the Earth. Edward Everett Hale proposed a giant catapult powered by spinning fly-wheels to launch an artificial satellite in "The Brick Moon," and Jules Verne envisioned a titanic cannon in *From the Earth to the Moon*. Later authors like H.G. Wells and George Griffiths realized the problems with those methods and concocted imaginary "superscience" methods of negating gravity to allow their heroes to visit other worlds.

At the start of the 20th century, pioneering scientists like Konstantin Tsiolkovsky and Robert Goddard began to investigate the possibilities of rockets as a practical means of space exploration, and space travel moved solidly into the realm of hard SF, where it has remained ever since. Science-fiction writers (and fans) were soon bandying about technical concepts like specific impulse, delta-V, ullage, and gyrostabilization. Some of them, like Arthur C. Clarke, mixed SF writing with research and theoretical work on space exploration.

Unfortunately for science-fiction writers, astronomers during the same era were discovering some uncomfortable facts about the solar system. As early as the 1890s, it was known that Mars was too cold and dry to support any advanced life, and in the 1960s scientists learned that Venus was equally inhospitable. A few writers tried handwaving about asteroids with Earthlike conditions or speculation about the moons of the outer giant planets, but the majority of SF writers began looking to the stars.

Tales of space exploration remained limited to the Solar system until about World War II, when writers began working on a larger scale. Because of Albert Einstein's theory of relativity, the readers were also aware that journeys to other stars were likely to take a very long time. To speed things up, SF writers began a long tradition of coming up with ways to cheat Einstein. E.E. "Doc" Smith's "Lensman" series used the "inertialess" drive to let spaceships crack the lightspeed barrier; others postulated short cuts through hyperspace, instantaneous "jump" drives, space-bending warp drives, and a long list of methods ranging from barely possible to ridiculous.

In modern science fiction, space voyages and interstellar faster-than-light travel are part of the "furniture" of the genre. Authors no longer have to explain how the spaceships work or waste much time describing the thunder of the mighty rocket engines, because those are all so familiar to the readers from movies and televised space missions.

WHY SPACE TRAVEL?

Given that science fiction covers all possible futures, alternate pasts, other realities, and transformations of the human body and mind, it may seem odd that so much energy in the field is devoted to stories about voyages in outer space. Some see this as a continuation of the American idea of the frontier, with space fiction as nothing more than Westerns with ray guns. Others speculate archly about the sexual imagery of rockets. Certainly there *is* a lot of powerful symbolism involved in the idea of rising up away from Earth and mundane concerns to soar among the stars. In just about all mythologies the sky is where the gods live.

But there is more to space travel than just the symbols. The simple fact is that space travel (and interstellar travel) are the most plausible ways to have stories about humans in settings that are not Earthly locales and interacting with beings who are not other people like themselves. This is not very different from descriptions of fantasy settings – Narnia and Middle-Earth are not Earthly locales and have nonhuman inhabitants – but there is an important difference. Alien worlds in outer space are fairylands

What's *Not* in This Book

Though *GURPS Space* is intended as the chief sourcebook for science fiction roleplaying using the *GURPS* system, the main focus of this book is adventures in space and on other worlds. There are whole subgenres of SF that aren't covered here, because they're important enough to get their own sourcebooks. Descriptions of specific game universes are covered in *GURPS* worldbooks. *GURPS Infinite Worlds* covers time travel, interdimensional travel, and alternate histories – and presents a campaign framework that links *all* the *GURPS* worldbooks. *GURPS Powers* describes psionics and other super-powers. "Tech books" provide shopping lists of gadgets.

Campaign Advantages: Prospectors have a lot of autonomy, and the campaign can have lots of gritty hard-SF details. Dangerous work and rough company can provide action, but it's likely to be small-scale conflict suitable for a group of PCs.

Campaign Disadvantages: The Game Master needs to work up a star system in some detail if the characters are going to spend time searching for wealth. Characters without their own ship will be at the mercy of whatever mining company controls the best rocks. Game Masters have to make sure the characters can make a living, by adjusting the chance of finding something of value and setting the market price accordingly.

References: Larry Niven's "Known Space" stories; Poul Anderson's *Tales of the Flying Mountains*.

THE ABSURDIST CAMPAIGN

If life on Earth is incomprehensible and sometimes blackly comic, how much worse might a galactic empire be? Absurdist SF is often satirical, but an absurdist space campaign is usually an excuse for straightforward humor, from simple silliness to more subtly bizarre.

Character Roles: Innocents abroad – possibly highly capable on their own world, but in galactic society they are but motes caught up in chaos, not even able to go to the male mammalian biped's room without a guidebook. The being with an angle – someone who (thinks it) sees a profit to be made from the situation. Characters from other campaign types, twisted to suit.

Things to Do: Get home; rebuild home; buy a nice quiet planet; find out who's behind it all; make a documentary; become emperor; find a decent cup of coffee; try to avoid trouble.

Campaign Advantages: Can go anywhere and take inspiration from anything (following classic clichés to absurd conclusions). The GM can rewrite galactic history and assign TLs to suit himself. Characters rarely die, except absurdly.

Campaign Disadvantages: Can go anywhere. Needs players and GM willing to improvise and not take any
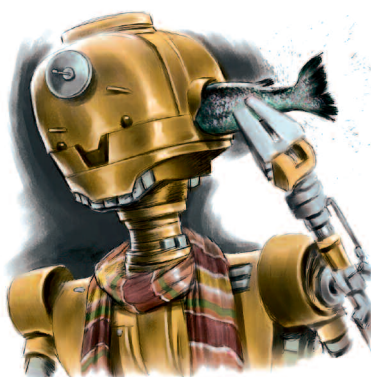
of it too seriously. Boring if drawn out, so best used as light relief between episodes of a serious campaign.

References: Douglas Adams' *The Hitchhiker's Guide to the Galaxy*; Harry Harrison's *Bill, The Galactic Hero*; Terry Pratchett's Discworld books, *The Dark Side of the Sun*, and *Strata*; almost anything by Robert Sheckley or Jack Vance; *Lost in Space*; *Red Dwarf*; the campiest episodes of *Star Trek* and *Dr Who*.

Heroic Engineering

Science fiction is defined as stories about or involving science and technology, and so it's natural that a very old subgenre concentrates on stories about people engaged in large technology projects. This was once a central part of SF, but was gradually shoved aside by more adventure-oriented fiction. But it never died out completely. Stories of heroic engineering include Arthur C. Clarke's *The Fountains of Paradise*, about the construction of a space elevator, and parts of Kim Stanley Robinson's "Green Mars" series about terraforming Mars. In heroic engineering stories, the actual process of doing the job and overcoming the technical challenges are major themes rather than just background for drama.

In a **GURPS Space** adventure, heroic engineering can be an interesting alternative to blaster fights and space marketing. Tasks like designing a new starship or completing a space colony can be quite fascinating, even if they don't involve as much adrenaline. Engineering adventures do require players who are interested in coming up with their own equipment designs, using the rules for New Inventions (p. B473) or Gadgeteering (p. B475).

The Game Master can complicate matters with hidden flaws, industrial spies among the labor crew, sinister forces intent on stopping the project, and unforeseen expenses. Those problems can generate blaster fights and hovercraft chases to keep the non-engineer characters busy. However, it may be necessary for the Game Master and some players to do the actual design evaluation and skill rolls via e-mail rather than during game sessions, if other players are easily bored.

Construction

You don't get much more blue-collar than construction work, even if it's a thousand miles up in orbit. All those orbital stations, starships, space colonies, and whatnot don't build themselves (unless it's a game setting with advanced biotech and living spaceships, of course). The crews who do the work of building them can get into all kinds of interesting trouble.

As with prospecting, the work itself may be only a backdrop. The real fun comes when the workers face labor racketeers or corporate thugs, or when the colony they're working on suddenly declares itself independent and gets into a shooting war, or when it turns out someone on the shift is part of a smuggling ring. If the project includes asteroid mining for raw materials, then the work crews may spend part of their time as prospectors, which adds all those adventure possibilities.

ALIENS IN THE CAMPAIGN

Alien life in a space campaign can fill a vast number of roles. The social and political categories for alien species noted in Chapter 1 are pretty much independent of biology – it doesn't usually matter if the dominant species are carbon-based or silicon-based, aquatic or aerial.

From a *dramatic* standpoint, however, alien beings can fit into four categories, and their biology and appearance do affect which one they belong to. In science-fiction stories and films, alien beings seem to naturally clump into types: people, beasts, things, and monsters.

PEOPLE

Aliens as people are probably the most common in modern science fiction. They don't have to *look* like humans – Poul Anderson created many fascinating alien "people" with very unusual shapes – but a humanoid appearance does make it easier to view them as "folks like us." People-aliens have understandable motives and rational goals. If they are in conflict with humans, the fight is likely to be about something like resources or living space.

They don't have to act exactly like Earth humans, though. Often people-aliens have one or more human traits cranked up to an inhuman degree. Some of these caricature traits are so common in fiction as to be standard types: the warrior Race, the mystics, the ultra-rationalists. Their societies can also parody an aspect of modern human life.

Some readers have criticized people-aliens as being just "humans in funny suits" but others like the idea that a mind is a mind no matter what body it wears. The issue will no doubt remain in dispute until humans actually meet aliens and find out.

BEASTS

Beast aliens make use of archetypes drawn from human perceptions of Earthly animals. They can fit many of the same roles as people-type aliens, but their behavior and culture reflect their animal models. If people aliens tap into ancient travelers' tales about exotic lands, beasts come from fairy tales and fables about talking animals. Larry Niven's Kzinti are beast aliens based on Terran cats. Genetically modified animals provide a rigorously "hard SF" way to use beast archetypes even in a game universe without any aliens at all.

Beasts are very effective because they come with a ready-made and fairly consistent set of assumptions. Eagles are fierce and solitary, so eagle-like aliens make good "proud warrior" cultures. Some of those assumptions about the relationship between ecological role and personality inform the alien-design rules in this chapter.

Game Masters can also make use of the mythical and legendary associations of Earth animals when creating beast aliens. Snakes aren't evil, but because they have long been used as icons of evil in many Terran mythologies, a civilization of serpent-men aliens make natural campaign villains. Lions aren't particularly noble, but their association with royalty make lion-aliens good candidates for honorable aristocrats.

THINGS

"Happy b-b-birthday, you thing from another world, you."
– Porky Pig, **Duck Dodgers in the 24 1/2th Century**

The most alien aliens are perceived as "things" – icky and creepy, possibly not even really alive. They draw on our nearly reflexive reactions to things that sting and bite or spread decay. For a long time SF used alien things simply as monsters, as when H.G. Wells used octopuses as the model for his bloodsucking Martian invaders of Earth. But things don't have to be automatically hostile; they may simply be mysterious and incomprehensible to humans. Things are intrinsically *alien*. If humans ever learn how they think, things can turn into funny-looking people.

While things often use "creepy-crawly" animals like spiders and squids for a model, they can also take on attributes of inanimate or non-living things. Plasma-beings that look like living flames are things, as are cyborg races that have turned themselves into machines.

MONSTERS

Aliens as monsters are probably the oldest role of all – consider Grendel in *Beowulf* or the gorgons of Greek myth. They are menaces, pure and simple. Recent films like the *Aliens* series show the trope is alive and well.

Monsters may or may not be intelligent. If they are, their cleverness only adds to the threat they present. The whole point of a monster is that it's dangerous. If the monster can be negotiated with or placated, it ceases to be a monster and turns into some other kind of alien. The process of "reclassifying" monsters is an old and highly useful science-fiction plot.

Purely animal monsters may be "only" dangerous predators, or may have some other reason for hunting or attacking the heroes. Again, discovering the reason behind an animal monster makes a good adventure. Sometimes, though, a monster is just a monster.

In appearance monsters may be terrifying "things," or beasts drawing on monstrous archetypes like Terran wolves, or deceptively human-seeming "people" with a deadly secret nature. In cinematic settings, monsters may even look like demons or undead.

WORKING BACKWARD

The bulk of this chapter is concerned with how to create realistic alien species from scratch. There are even tables for randomly generating things like ecological niches and mating styles. Given that humans won't be able to choose or predict what kind of creatures we meet out there, random creation or just doing what sounds cool is a reasonable and even realistic way to create aliens.

Unobtainium

Here are some examples of special resources not found on present-day Earth, which *are* reasonable to include in a science-fiction universe.

Antimatter

The visible universe is dominated by "normal" matter. Antimatter doesn't seem to exist naturally in large masses, for a very good reason: if a large quantity of antimatter was produced by some natural process, it would annihilate itself spectacularly the moment it encountered normal matter.

Antimatter is thus likely to be produced only in a laboratory – but if some odd natural process produced large quantities of antimatter, then somehow *confined* it away from contact with normal matter, it could be "mined." The engineering processes involved would be difficult, but any civilization that already uses artificial antimatter for power distribution will be up to the challenge.

Antimatter, of course, is the basic power source in the *Star Trek* universe. The television series has never established whether antimatter is produced or mined, but given the wealth of other odd materials in that universe, natural production seems possible . . .

Artifacts

Alien or Precursor devices of technology beyond what human civilization can achieve are fabulously valuable. If the super-advanced aliens are still around, getting their artifacts requires finding something they think is worth trading for, and avoiding any restrictions their government may place on giving high tech to primitive humans. If the aliens are extinct (or have "passed on to a higher state of being") then finding artifacts is a cross between prospecting and archaeology, and the chief dangers are claim jumpers and huge rolling stone balls.

Exotic Biologicals

Living organisms produce a bewildering variety of chemicals even on Earth, where almost everything uses the same basic biochemistry. On alien worlds, where life may be based on other chemical processes, truly exotic substances will be produced.

Any one biochemical is unlikely to be useful, but biologists and pharmaceutical researchers make their living by investigating thousands of them at a time. Any living world might yield useful, yet previously unknown, industrial chemicals or drugs. Meanwhile, alien organisms will produce other substances, valuable for their rarity or curiosity value: exotic woods, unusual amber-like secretions, and so on.

The classic example of an exotic biological – the basis for an entire series of novels, in fact – is the *melange* spice in Frank Herbert's *Dune*.

Exotic Matter

Quantum black holes, magnetic monopoles, cosmic string loops, or negative matter could all be valuable in a future society. Even if there's no industrial use for them, scientists will likely pay good money for samples to study, and some types of weird matter may be essential for antigravity or FTL travel. Most of them are likely to be *very* hard to collect and store.

Transuranic Elements

It's a common cliché to invent "new" chemical elements that were somehow unknown to pre-spaceflight society, but which are critical to interstellar society. In fact, there are no gaps in the periodic table of the elements; we already know all the chemical building blocks of matter, from here to the furthest star.

There is one set of chemical elements – the stable *transuranic* elements – that have not been found on Earth, but which could conceivably be found in other star systems. As atomic nuclei become heavier, they become more unstable and more radioactive, which is why elements heavier than uranium aren't found in nature and must be produced in a laboratory. However, there are theoretical "islands of stability," ranges of atomic weights well beyond that of uranium, in which nuclei might be more or less stable. Tiny amounts of such ultra-heavy metals might be produced in supernova explosions; if some natural process could concentrate them, it might be possible to find and mine them.

What properties do these stable transuranics have? It's anyone's guess, since no one has found or produced any of them yet. Perhaps some superscience technologies depend on the unusual properties of these weird substances. Several pieces of classic science fiction, particularly Poul Anderson's "Polesotechnic League" stories, turn on the rarity and special properties of stable transuranics.

Technology

Advances in technology have a variety of effects on a society's economy. Every new technology increases the *variety* of goods and services, and creates a demand for items that didn't even exist before the technology was developed. New technologies create brand-new industries, each with its own pattern of supply and demand, and this can increase a society's economic volume.

Another profound effect of new technology is on *productivity*. A worker who is given better tools will often produce more goods, or more useful services, in the same amount of time. Technological advances can also make the use of resources more efficient, so that more goods can be produced with the same amount of energy and raw materials.

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