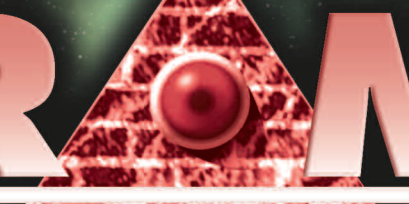# PYRAMID

SPACESHIPS

PRACTICAL ASTROMANCY
by Kenneth Peters

ONE WITH THE SHIP
by W.A. Frick

MASS COMBAT IN SPACE
by David L. Pulver

SKY GALLEYS
by Ken Spencer

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by Stephen Dedman

STEVE JACKSON GAMES

PYRAMID

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Article Colors

Each article is color-coded to help you find your favorite sections.

Pale Blue: In This Issue
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Dark Blue: **GURPS** Features
Purple: Systemless Features
Green: Distinguished Columnists

COVER ART	INTERIOR ART
Jesse DeGraff	*Greg Hyland*

Hoping to survive in space? Don't hold your breath . . . get a spaceship, instead! This issue's theme is interstellar transport, high-tech captains, and things that go bump against the hull.

Our interstellar journey starts close to home as we explore the solar system – with magic! *Practical Astromancy* looks at the high-tech, off-world edge of the **GURPS Technomancer** setting. You can pop over to Kennedy Base on the moon, check out the solar system in a survey ship, or participate in a research and development project on a space station. Kenneth Peters, co-author of **GURPS Ultra-Tech** and author of **Transhuman Space: Spacecraft of the Solar System,** provides ship stats and game mechanics for schlepping people and cargo. Any sufficiently advanced magic is indistinguishable from everyday tech!

Some vessels are so complicated that the only way to operate them is by becoming *One With the Ship.* This meaty **GURPS** article gives a new 150-point template – the interface pilot – plus customization options, new advantages, cybernetic implants, and interface technologies. It also includes a sample pilot suitable for any cinematic TL10 campaign. Plug in and zoom out!

We welcome the return from deep space of David L. Pulver, co-author of the **GURPS Basic Set,** *Fourth Edition* and mastermind behind **GURPS Spaceships** (among many others). In this month's *Eidetic Memory,* David provides an optional system for how to combine **GURPS Mass Combat** with **GURPS Spaceships.** Now you can re-create epic space battles at the gaming table!

Sky Galleys are an essential component in Rome's ability to keep its empire together in the *Roma Universalis* setting (the first reports of which came to our universe from *Pyramid #3/20: Infinite Worlds*). Their vessels are constructed using the provided new optional **GURPS Spaceship** components. The empire would welcome your appreciation of the stats for two of its proud vessels, plus **GURPS** templates for sky crews and additional information about this **Infinite Worlds** timeline.

What will brave explorers find on the *Hunter-Gatherer?* From cutting-edge 1950s to far-future exploratory campaigns, this adventure is suitable for any setting in which the heroes can get into and survive in space. **GURPS Spaceships** stats are provided for the "asteroid," plus game information for the nine different living threats the explorers might face. Will the explorers become heroes – or memories?

What do comic-book heroes and sci-fi adventurers have in common? This month's theme of "spaceships" might give you a clue . . . Steven Marsh, *Pyramid* Editor, reveals the connection in this month's *Random Though Table.*

Finally, you'll race to catch this month's *Murphy's Rules,* then encounter a few ways to make your ship "interesting" in this month's *Odds and Ends.* The void of space beckons; strap into your favorite FTL flyer and answer the call!

FROM THE EDITOR

HIGH TO THE SKIES AND FAR TO THE STARS

There's one truism for sci-fi games: If it's a setting that can use spaceships, it can use a darn-near unlimited number of them. Fans of the *Star Wars* or *Star Trek* universes know that there are jillions of ships in each of those galaxies.

This proliferation is great! In the same way that automobile fans can get a charge out of new releases and classic models of their four-wheeled fascinations, so too do new vessels liven up a galactic game. There's always a thrill at seeing some new design, or some "impossible" configuration light the sky.
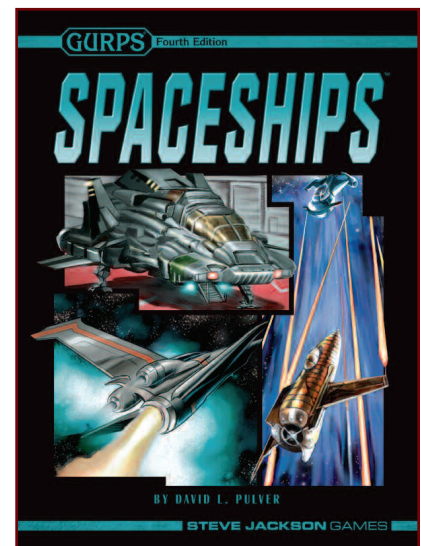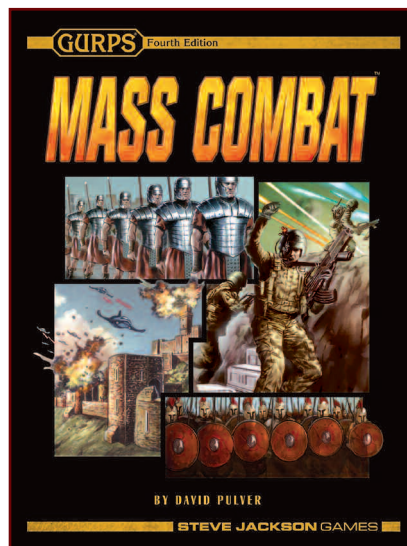
Plus, attention to starships can provide valuable plot devices that extend the setting in new and interesting directions. For example, introducing (or emphasizing) a vessel that's designed to hold a squadron of space marines can open up the possibility of full-scale man-to-man invasion of other worlds.

Finally, I suspect that spaceships are a way to differentiate adventurers in quasi-realistic settings. In worlds where two captains might have similar skills or point totals, it's easy to give them vastly different feels just by assigning each a different ship – say, one gargantuan battleship and one small-crew stealth vessel. (As a bonus, starcraft are perhaps the ultimate money sink in many space games!)

Done right, a spaceship can be as valued an addition of the heroes' party as any sapients with "PC" stamped on their foreheads . . . and they can be at least as interesting. Hopefully this issue will liven up any spacefaring settings.

WRITE HERE, WRITE NOW

Did we reach warp factor 10 with our offerings, or did we badly miscalculate our jump? You can send a private courier shuttle with comments to **pyramid@sjgames.com,** or deliver a public missive to the council online at **forums.sjgames.com.**

PRACTICAL ASTROMANCY

BY KENNETH PETERS

GURPS Technomancer tries to answer the question of what the modern world would look like if high-powered and reliable magic, as described in **GURPS Magic** and **GURPS Thaumatology**, was widely available. It is a world of high-tech wizardry, industrial enchantment, and scientific alchemy. It is also a world in which satellites are routinely teleported into orbit, golem probes trudge across the sands of Mars, and pressurized flying rugs are used for recreational travel on the moon.

Magic makes living and working in space both safe and *comfortable*. More important, teleportation and spells such as Purify Air make it *cheap*. However, the ability of magic to create resources from nothing also eliminates most of the economic or political rationales for exploring other planets or exploiting asteroids for resources.

TECHNOMANCER SPACE

The United States and Russia began using mundane chemical rockets to launch artificial satellites into orbit in 1957, but it never grabbed the public's attention like the various revelations about the Hellstorms and killer Antarctic penguins. The dream of space becoming the next great frontier, filled with entrepreneurs, explorers, and colonists never came to pass. Although ambitious projects were shelved or scaled back, and the best and brightest mages sought careers in financial divination instead of astromancy, enough interest still exists to fuel a slowly growing space economy.

EARTH ORBIT

Getting into orbit is a relatively simple task, with both private corporations and national governments offering direct teleports to orbit for the cost of an expensive aircraft ticket. This ease of access comes at a price: Vitally important habitats and satellites in low-earth orbit share space with broken satellites, forgotten college pranks, discarded golems, and a million other pieces of trash. Most habitats use Missile Shield to minimize the danger of collisions, and the threat of accidental or intentional use of malicious teleportation has led to Teleport Shields being erected around most important space stations.

Geosynchronous orbit and the Lagrange points are mostly free from trash, and the major corporations and space agencies take pains to keep it that way. This is where Sephiroth Industries focuses its efforts with *Yetzirah* station (p. 10) and other ventures.

Space City Mir

Almost entirely abandoned in the 1990s as Russia was embroiled with its various insurrections, the Russian Space Agency began to hire out the station to the highest bidder. The biggest expansion to the station came with a wave of venture capitalist interest in commercial enchantment; an entire section of the station was added in 1999 by a company whose business plan was to teleport pet food direct to subscribers' homes.

Russia has been aggressive at marketing the open space left after the initial companies exploded (literally, in some cases). It now houses about 15 different companies and 100 personnel.

Technomancer Space Timeline

For events prior to 1999, see **GURPS Technomancer**, pp. 8-12.

1999 – Mars mission halted due to massive cost overruns.

2002 – Researchers confirm that other stars emit oz particles.

2004 – Sephiroth Industries' *Yetzirah* space colony completed ahead of schedule.

2005 – Sungrazing comet 272425 Choronzon is struck by NASA's *Deep Star* impact probe, revealing that it may have been a living creature.

2007 – *Trailblazer* project restarted with international support.

2008 – Japan launches series of probes to measure the mana levels of the outer solar system.

2010 – *Trailblazer* arrives in Mars orbit.

As long as they pay on time, and don't damage the station, almost anything goes: from unregulated elixir production and demon summoning to university research on how microgravity affects insect development.

THE MOON

Kennedy Base (pp. 7-9) is the largest facility on the moon, and NASA uses that leverage to run the moon as its own personal fiefdom. Most of the moon bases are science facilities that look out into the universe for answers to the great mysteries of creation.

Hubble Lunar Observatory

Located on the far side of the moon, this small facility has suffered from budget cuts and is reduced to a skeleton crew of 10 scientists (from the original 30). Mechanical breakdowns with the telescopes and radio arrays are a persistent issue; the scientists suspect that gremlins have somehow figured out how to hide out on the lunar surface and wreak havoc, but they don't have the manpower to go chasing down demonic saboteurs.

VENUS

The most recent exploration of Venus was NASA's *Magellan* probe, which surveyed the planet from 1990 until it was crashed into the planet at the end of its mission in 1994. Rumors surfaced in 2009 that the probe's Beacon spell may not only have survived the crash landing, but that the de-orbiting specifically targeted a mana anomaly that had been detected on the surface.

MARS

The success of the *Trailblazer* mission, and that of a string of earlier probes, is one of the few bright spots of public interest in space development. NASA and the ESA both maintain extensive educational outreach and media relations campaigns to keep it in the spotlight and drum up funding. Supporters for more extensive Mars exploration and development are eclectic, ranging from religious foundations who want to build a safe haven away from the madness of Earth to conspiracy nuts who

The Choronzon Event

Until it was selected as the target site for NASA's *Deep Star* mission, 272425 Choronzon was an unassuming sungrazing comet. The probe simply needed to crash into the comet so that the ejected material could be analyzed, and was otherwise not considered very interesting. Unfortunately, it did not end up being so simple.

Shortly before the impactor probe slammed into the comet, a massive oz particle flux was detected on the surface. Observers could only sit astounded as hundreds, if not thousands, of spectral apparitions flocked to the impactor, seemingly in an attempt to redirect it – they failed. The probe slammed into the comet with the force of several tons of TNT, gouging a gigantic crater. Analysis of the debris plume did not reveal the expected pristine cometary ice and mud; instead, it showed a composition similar to blood. Contact with the main probe was lost shortly afterward.

The fact that the probe had been attacked by spirits apparently native to the asteroid was shocking enough; the chance that the comet *itself* was actually a living being was even more so. Pundits openly wondered if Earth may have accidently attacked a new form of life, a sleeping space god, or an alien ship.

In any case, the possibility of hostile spirits lurking just below the surface of planets, comets, and asteroids forced a reassessment of all space-probe projects. Congressional fears of Martian specters lying in wait under the Martian sands forced designers to include weapons on the *Trailblazer* mission, and every deep-space probe failure is now ominously blamed on the Choronzon event.

believe NASA is hiding evidence of Seelie cities under the sands at Cydonia.

OUTER SOLAR SYSTEM

The low mana conditions of the outer solar system are a significant impediment to any development or exploration. Scientists have resorted to soliciting private funds for deep space probes, which has had some measure of success after a publicity stunt in 2006 used Rapid Journey to send an explorer on a one-minute trip to the surface of Europa, dropping a portable Beacon while he was there. This sort of risk-taking has attracted the attention of many daring astromancers, who have since quit their cushy, but boring, jobs at the big aerospace agencies and joined the risk-taking mavericks.

SIDEREAL MAGIC

The sun emits enormous quantities of exotic charged particles known as *oz particles* or *mana*. Normally, these particles have only the barest interaction with reality, with properties similar to neutrinos. But for reasons still not understood, Magery allows the particles to be channeled into specific forms, "grounding" it in reality.

At the GM's discretion, exposure to baneful cosmic rays without the buffer of Earth's biosphere may lead to oz radiation building up over time, inflicting 1 rad/week unless shielded. See *The Current* in **GURPS Infinite Worlds** (p. 75) for additional rules. This type of radiation cannot be treated!

MANA LEVELS

The mana level is highest at the sun, gradually declining in intensity beyond Mars orbit, and becoming vanishingly low in the outer solar system. Beyond the heliopause, there is effectively no mana at all. The amount of oz particles emitted by the sun varies over time, but changes in mana level are usually too small to detect.

The gradient of oz particle density can be represented using the rules for *Continuous Mana* (**GURPS Thaumatology**, p. 58).

However, the increments between mana levels are measured in the millions, or tens of millions, of miles.

Wild Mana: The oz particle flux within the sun's corona is so intense that it is impossible to control, creating a very high mana zone of *wild magic* (**GURPS Thaumatology**, p. 59) that extends several million miles from the photosphere. The core of the sun is theorized to be a ravening maw of magical energy, a Hellstorm of incalculable power – which fuels the pop-culture beliefs that gods or dimensional gateways exist there.

High Mana (0.5 AU): The mana level rapidly drops off outside the chromosphere, but solar flares and other fluxes may result in high doses of oz energy.

Normal Mana (0.5 – 2 AU): This zone includes Venus, Earth, and Mars. Venus is low mana inside of its atmosphere.

Low Mana (2 – 16 AU): This zone includes the asteroid belt and Saturn. Teleporting into this area is done at a -5 penalty to skill.

Very Low Mana (16 AU – 100 AU?): Only the faintest mana levels remain beyond Saturn. This *very low mana* (**GURPS Thaumatology**, p. 58) area is almost entirely unexplored, as technomagical probes require expensive NEMA reactors to function. Teleporting into or through this area is done at a -10 penalty to skill; teleporting back *out* is almost impossible.

No Mana: Current theory suggests that the space between the stars is devoid of any usable density of oz particles. In the popular imagination, it is a *mana void*, actively suppressing or sucking away magic energy.

> *Earth orbit has become increasingly crowded as smaller nations and corporations deploy thousands of civilian and military satellites and dozens of manned space stations.*
> – GURPS Technomancer

GROUND CONTROL TO MAJOR GANDALF

Any college-educated mage with a basic grasp of the spell can Teleport himself into orbit if he knows the destination. However, the ceremonial magic (p. B238) needed to teleport dozens of people, or tons of cargo, into space requires substantial quantities of energy and a large staff of trained mages.

A certified teleportation technician must know the Draw Power, Teleport, and Teleport Other spells at skill 15+; Magery 3 is required as well, but specialists often have one or two levels of Magery with the One-College Only limitation. Being certified may be reflected with a License perk (**GURPS Thaumatology: Magical Styles**, p. 27).

The leading mage ("mission controller") has the Stabilizing Skill (Thaumatology for Gate spells) perk (see **Magical Styles**, p. 24). As NASA discovered in 1986, when seven astromancers died in a horrific miscast, the 1.9% chance of critical failure for ceremonial magic is an unacceptable level of risk when dozens, or even hundreds, of teleports a day are required. Note that under the *best* circumstances, there is still a 4.6% chance of ordinary failure! Individuals don spacesuits before teleporting in case they are temporarily stuck in vacuum, and passenger transports have limited life support in case they miss their destination.

The market rate for teleportation is $15 per point of energy expended.

Practical Astromancy

Each astromancer involved in the launch ceremony is stationed at a computer terminal that houses a 50-point Powerstone and a NEMA power outlet (100-point Powerstones can be used for special tasks). Video feeds allow the mages to monitor the destination in as close to real time as possible. In older facilities a large auditorium surrounds the astromancer circle for observers to lend energy, but security concerns and public disinterest limits their use to exceptional events. Standard operating procedure requires that the mages not contribute their own energy to the casting of the spell, in case of emergency. Each HT 10, Magery 3 astromancer can provide 176 energy points for the ritual: 126 from the NEMA energy feed and 50 from the Powerstone. A full circle of 13 mages can power a teleport with up to 2,288 energy. Excess power is always traded for skill, but standard policy uses the minimum necessary to ensure a *modified* skill of 15.

Typical Teleport Destinations

The table below provides the base energy cost and penalty to skill for teleporting from the surface of the Earth to various locations in the solar system. See **GURPS Magic**, p. 147, for more detailed descriptions of the Teleport and Teleport Other spells.

Additional Penalties: The mission controller is usually at -2 for viewing the destination over a sensor link, although many take periodic trips so they have current familiarity with the sites. He also suffers an additional -1 to skill for maintaining the Draw Power spell during the ritual.

Destination	Cost	Skill Penalty	Notes
Low-Earth Orbit	10	-7	
Moon	13	-10	[1]
Mars	15	-12	
Saturn	16	-13	[2]
Heliopause	17	-14	[3]
Proxima Centauri	21	-18	[4]

Notes

[1] LEO to the moon is the same cost and penalty.
[2] Low mana region; additional -5 to skill.
[3] Very low mana region; additional -10 to skill.
[4] Not currently reachable through no mana space.

Typical Teleport Cargo

The table below provides the multiplier to the energy cost for various amounts of cargo.

Weight	Multiplier	Notes
0.5 tons	×11	System for SM +4 spacecraft.
1.5 tons	×31	System for SM +5 spacecraft.
5 tons	×101	System for SM +6 spacecraft. Standard cargo module.
10 tons	×201	Entire SM +4 spacecraft. Maximum safe limit.

Example

A NASA astromancer team (HT 10, Magery 3, Skill 15) led by a grizzled mission controller (Skill 17) is teleporting a group of dignitaries to a beacon at Kennedy Base. Their loaded "space bus," including passengers and cargo, weighs about five tons. The base skill penalty is -10, and the cost is 1,313 energy. The mission controller is at an additional -3 to skill for maintaining the Draw Power spell and viewing the destination over a video link (he hasn't visited the site for a few months). The Beacon reduces the skill penalty and cost to -6 and 656 energy. His team uses 1,312 energy (out of a possible 2,288), resulting in a +4 bonus to skill. This brings his effective skill level to 15, but he will still suffer an ordinary failure on 16+ (he has Stabilizing Skill). The launch costs a mere $19,680.

KENNEDY BASE

Since it became operational in 1983, Kennedy Base has grown from a small set of caves dug out with Earth magic to a comfortable underground research facility that houses thousands of technicians and scientists. Thousands more pass through the base each year for training and orientation, a few dozen of which are VIPs and their entourages taking the tour of NASA sites.

Unlike most habitats, space is not at a premium at Kennedy Base; the base could easily hold twice the current population before new tunnels would have to be excavated. The environment is comfortable, with a dozen small habitat caverns clustered around the central administrative hub. Most of the base social life is centered on the hub, which also houses a large park, entertainment facilities, shops, and the famous Kennedy Base Observation Dome that looks out onto the stars. Earth-normal gravity is maintained using magic in the administrative hub as a convenience to visitors; the rest of the base is kept in low gravity.

Space defense and base security is handled by the 83rd Security Forces Squadron, nominally an Air Force unit under U.S. Space Command, but composed entirely of federal police officers on detached duty from the U.S. Marshals, FBI, and Department of Defense Police. Gremlins, demons hitchhiking in from the orbital stations, and the occasional out-of-control spellboxing match are their most pressing safety concerns.

NOTABLES

Kennedy Base draws the best and brightest astromancers and mundane scientists from a dozen nations. The most prestigious inhabitants are well-known scientific and bureaucratic figures who wield power at the highest levels of academia and government.

Colonel Philip Uemura

At 46, Uemura has been Commanding Officer of the 83rd Security Forces Squadron for two years. Unknown to most, the commander is a devout supporter of a particularly apocalyptic branch of the Church of the Knights of the Apocalypse (*GURPS Technomancer*, p. 119) and believes that a manaclysm will engulf Earth within the next decade – sparing only those who have already ascended to the heavens (which he interprets as the orbital habitats). He has an Intolerance of chimeras but strives to always be professional; his attitudes toward magic in general are more relaxed than most Knights. As a Contact, he can provide Strategy-21 or Tactics-21, and is always reliable.

Joaquin Sorolla

Appointed as chief administrator of Kennedy Base in 2009, Sorolla has the unenviable task of correcting the budget excesses of his predecessors, dealing with foreign science agencies, and refereeing academic catfights between rival labs. Although he is not mageborn, the 48-year-old Sorolla is an accomplished alchemical researcher and holds great influence with the National Thaumatological Research Foundation, which funds many academics back on earth. His position in NASA gives him Administrative Rank 6 (Sciences) and Status 5. As a Contact, he can provide Administration-21 and is usually reliable. His contacts within the U.S. government and influence with funding agencies make him a 10-point Patron.

Rhea Brisis

Resident conspiracy theorist and femme fatale, the 22-year-old Brisis is convinced that something *big* occurred at Kennedy Base between the period the first caverns were shaped in 1976 and the "official" base opening in 1983. She's not sure exactly *what* transpired (her personal theory is that NASA unearthed a Seelie crypt), but she has been looking for clues since she arrived last year. She is well-liked but considered something of a pest by the security personnel – Reputation +2 (Kennedy Researchers, excluding her numerous ex-lovers; All the time). As a Contact, she can provide Expert Skill (Conspiracy Theory)-18 and is somewhat reliable; she has a bad habit of presenting supposition and uncorrelated facts as truth.

CAMPAIGNS

Adventures on Kennedy Base could revolve around the overworked security personnel. The bulk of their activities involves cleaning up after the hijinks of bored research mages, breaking up scuffles, and sweeping for demons; the occasional security breach and mana-active waste spill breaks up the tedium. A limited-term campaign could focus on a difficult, lengthy problem, such as a serial killer or a conspiracy related to one of the special projects lab that no one seems to have clearance to talk about.

A major problem at the base may require the attention of specialized troubleshooters. This would be a good opportunity to indulge in a horror campaign, with supernatural threats hiding in the abandoned service tunnels and darkened research labs.

Kennedy Base, 2011

GURPS City Stats provides a standard format for summarizing information about towns and cities; see that supplement for an explanation of related terms used here.

Population: 4,000 (Search -1)

Physical and Magical Environment

Terrain: Rock Planet, Plains, Underground
Appearance: Attractive (+1)   **Hygiene:** +2
Normal Mana (Very Common Enchantment)

Culture and Economy

Language: English, Spanish   **Literacy:** Native
TL: 8^
Wealth: Very Wealthy (×20)   **Status:** 1 to 5

Political Environment

Government: Representative Democracy, Colony
CR: 4 (Corruption -1)
Military Resources: $1.04M   **Defense Bonus:** +5

Notes

Over half the Kennedy Base population is mageborn, all of whom are trained mages. The high CR reflects security precautions against demonic intrusions, unauthorized magical research, and terrorism; for most personal issues, it is CR3. The high Wealth reflects capital investment, grants, and infrastructure improvements; average individual Wealth of the scientists and technicians is Wealthy. The facility has no armed forces of its own; the effective Military Resources assume CR1 mobilization of the Civil Defense.

ASTRONAUTICS

These guidelines explain how to use *GURPS Spaceships* and *GURPS Spaceships 7: Divergent and Paranormal Tech* to create craft suitable for the *Technomancer* setting.

Tech Level

Technomancer spacecraft are TL8^, combining mundane technologies and systems with a selection of superscience alchemical processes and magical enchantments. Building spacecraft without the conveniences of modern technomancy is almost unheard of, even in those countries outside of Trinity's Shadow.

Spacecraft Hulls

Most spacecraft components are built on Earth and teleported into orbit for final assembly. Market demand for large spacecraft is limited; most orbital factories produce goods for consumption on Earth. This *tends* to limit spacecraft to hull sizes of up to 300 tons (SM +7).

Spacecraft Systems

Most *GURPS Spaceships* systems of TL8 of less are available in *Technomancer*. Only the following superscience systems from *GURPS Spaceships 7* are permitted, despite the widespread use of magic.

Armor: Hardened armor incorporates stabilized ectoplasm or depleted necronium layers that allow dDR to protect against necrolasers (see below) and blocks insubstantial beings from traveling through it (it does not block Teleport).

Control Rooms: **Technomancer** computer technology is not impressive (TL7+1), but Upgrade Computer (*GURPS Technomancer*, p. 35) enables temporary Complexity increases (permanent increase is usually not worth the cost). Awaken Computer allows for true AI, but the possibility of demonic possession makes it a risky choice. Standard security precautions distribute ship functions among multiple networks to prevent a single Glitch, Machine Control, or Malfunction spell from disabling the entire vessel.

Factory: A magic-powered factory consists of one or more industrial enchantment production lines (*GURPS Technomancer*, pp. 40-42). Divide the given $/hr. amount by 2,000 to determine how many mages can work on the line; e.g., an SM +8 system (50k) can handle 25 mages.

Fuel Tanks: Essential Fuel is an expensive, but useful, option available in *Technomancer*; current techniques add $6K/ton to fuel costs. Create Water and Create Fuel are also widely employed. A fuel tank with a self-powered Create Water enchantment costs $60K and can replenish 358 tons/day. Essential Fuel converters are not available (some say they exist, but that the spell formula is suppressed by mainstream magery).

Habitat: Magical life support is standard on all spacecraft and habitats. Minor magical conveniences are common, such as galleys featuring pots enchanted with Create Food and Cook; survival kits with Essential Food rations; maintenance being done by golems with Clean and Repair wands; etc.

Power Plant, Magical: All types of enchanted power plants are available, with mana engines and NEMA reactors being the most common. Soulburners are very rare, and only employed by the Condor Group (**GURPS Technomancer**, p. 120). If using the *Power Siphoning* rules from **GURPS Spaceships 7** (p. 14), *double* the FP per second that can be drawn from a NEMA reactor. Note that only NEMA reactors can function in low or no mana environments, as they create their own oz field.

Weaponry, Beams: Lasers are available at TL8^ as *necrolasers*. These beams bypass normal DR unless it is Hardened. If the beam's penetrating damage is at least 10% of the ship's dHP, every living being (that is, those without Immunity to Metabolic Hazards) *in that system* takes 2 points of toxic damage; this bypasses any non-Hardened personal DR. If the penetrating damage exceeds half the ship's dHP, it affects anyone in the hull section hit. If it is equal to or greater than the ship's dHP, it affects every being in the entire vessel. No damage is actually inflicted to the vessel's dHP, nor is damage cumulative over time. Damage is only rolled to determine whether people are affected.

Weaponry, Guns: Ammunition can include *spell-piercing warheads*. This ammo costs $1.6M per ton. See **GURPS Technomancer**, p. 47, for additional rules.

Spells

In addition to individual quality-of-life spells, such as Machine Speech and Cure Radiation, some magic has uses at the **GURPS Spaceships** scale.

Force Dome and *Utter Dome* provide almost perfect defenses, but cannot be permanently enchanted. Technomagical warships are spherical in order to make casting these Area spells more efficient (see *Length* in **GURPS Spaceships**, p. 9).

Propel does not translate to thrust very easily. Use the spell description from **GURPS Technomancer**, p. 30, for spacecraft.

Rebuild trivializes most damage control, allowing complete reconstruction of destroyed modules within one or two space battle turns (**GURPS Spaceships**, p. 48). It also has applications for colonization and base building, as a single exemplar can be broken up and then reconstituted on multiple sites (the so-called Starfish method).

TRAILBLAZER-CLASS SURVEY SHIP (TL8^)

This 3,000-ton (SM +9) unstreamlined spacecraft is the pinnacle of TL8^ technomancy, utilizing the latest in life-support enchantments, digital computers, and alchemical fuels. After two decades of setbacks, political wrangling, and a last-minute redesign following the Choronzon Event (p. 5) the first (so far, only) manned interplanetary spaceship arrived in Mars orbit in late 2010 with a crew of 21 astromancers. Its mission: establish a permanent science facility on the surface and create a technical infrastructure for future missions.

The *Trailblazer* has a spherical forward section containing the hangar bay and command module, with the central hull holding the habitat and science labs, and the rear devoted to the fuel tanks, warded NEMA reactor, and VASIMR plasma rocket. Similar vessels may soon be constructed for additional Mars missions or journeys to the outer solar system.

The essential hydrogen used as a reaction mass has proven effective at reducing spirit infestations and boosting delta-V; it costs $8K/ton. The conventional gun has 4,000 shots, which includes a mix of specialty ammo for handling unexpected entities during the trip; see *Monster Killers* in **GURPS Loadouts: Monster Hunters** (p. 11) for specific examples.

Front Hull	Systems
[1]	Light Alloy Armor (dDR 10).
[2-4]	Hangar Bays (total 300 tons capacity).
[5-6]	Cargo Holds (150 tons capacity each).
[core]	Control Room (C4 computer, comm/sensor 6, and six control stations).

Central Hull	System
[1]	Light Alloy Armor (dDR 10).
[2]	Science Array (comm/sensor 8).
[3]	Habitat (magical life support; one luxury cabin; 10 cabins; operations center (+1 to Cartography); operations center (+1 to Electronics Operation (Scientific); four-bed sickbay; 10 tons cargo).
[4]	Habitat (magical life support; large lab (+2 to Geology (Rock Worlds); large lab (+2 to Chemistry).
[5]	Habitat (magical life support; two briefing rooms; three establishments; five labs; one physics lab; 50 tons cargo).
[6!]	Medium Battery (magic-powered; two turrets with 30 MJ rapid fire ghost-dynamic lasers, and one turret with a 4 cm very rapid fire conventional gun).

Rear Hull	System
[1-2]	Light Alloy Armor (total dDR 20).
[3-4]	Fuel Tanks (100 tons essential hydrogen; each provides 5 mps in high-thrust mode).
[5]	Engine Room (two workspaces).
[6!]	VASIMR Electric Rocket (0.002G acceleration in high-thrust mode).
[core]	NEMA Reactor (one normal Power Point and one magical Power Point).

The current *Trailblazer* crew consists of a mission commander, co-pilot, engineering officer, sensor technician (doubling as weapons officer), and 17 mission specialists with various skills. All are trained astromancers. In addition, the vessel carries dozens of golem automata and a complement of summoned spirits. It has exposed radiators.

TL	Spacecraft	dST/HP	Hnd/SR	HT	Move	LWt.	Load	SM	Occ	dDR	Range	Cost
PILOTING/TL8 (LOW-PERFORMANCE SPACECRAFT)												
8^	*Trailblazer*	100	-5/4	13	0.002G/10 mps*	3,000	662.2	+9	22ASV	10/10/20	–	$132.4M

* Move 0.0002/200 mps in low-thrust mode.

YETZIRAH SPACE STATION (TL8^)

Sited at the Lagrange 5 (L5) point between Earth and the moon, the *Yetzirah* is the crown jewel of Sephiroth Space Industries (SSI) orbital manufacturing and R&D efforts. The 100,000-ton (SM +12) station houses over 2,000 scientists and workers, hundreds of construction golems, and various animals used as test subjects.

Yetzirah is a classic "wheel-and-spoke" space station that spins to generate gravity in the outer rim. The rim (front and rear hull) houses the bulk of the residential and administrative offices, along with employee garden plots and a small research farm. The central hull houses the zero-G spacedock and industrial enchantment facilities. Potentially volatile alchemical work is done in smaller work shacks (*GURPS Spaceships 6: Mining and Industrial Spacecraft,* p. 7) located at a safe distance from *Yetzirah*.

Front Hull	Systems
[1]	Light Alloy Armor (dDR 30).
[2-3]	Open Space (total two acres gardens and recreational plots).*
[4]	Habitat (magical life-support; 50 bunkrooms; 250 cabins; 125 luxury cabins; 50 briefing rooms; 50 establishments; large ops center (+2 to Administration); 50 minifacs; 50 offices; 50-bed clinic; 500 tons cargo).*
[5]	Habitat (major lab (+3 to Alchemy); major lab (+3 to Chemistry); major lab (+3 to Pharmacy (Synthetic)); major physics lab (+3 to Physics); 1,000 tons cargo).*

Front Hull	Systems
[6]	Habitat (magical life support; 300 cabins; 2,250 tons cargo).*
[core]	Control Room (C6 computer, comm/sensor 9, and 20 control stations).*

Central Hull	System
[1]	Light Alloy Armor (dDR 30).
[2!]	Fabricator ($5M/hr production capacity).*
[3!]	Factory, Enchantment (magic-powered; 2,500-mage capacity).*
[4-5]	Hangar Bays (3,000 tons capacity each).*
[6]	External Clamp.
[core]	NEMA Reactor (one normal Power Point and one magical Power Point).*

Rear Hull	System
[1]	Light Alloy Armor (dDR 30).
[2-3]	Open Space (total two acres gardens and recreational plots).*
[4]	Habitat (magical life-support; 50 bunkrooms; 250 cabins; 125 luxury cabins; 50 briefing rooms; 50 establishments; large ops center (+2 to Administration); 50 minifacs; 50 offices; 50-bed clinic; 500 tons cargo).*
[5]	Habitat (magical life-support; major lab (+3 to Thaumatology); major lab (+3 to Biology); major lab (+3 to Occultism); 50 cells; 50 offices; 750 tons cargo).*
[6]	Cargo Hold (5,000 tons capacity).

* 10 workspaces per system.

The *Yetzirah* has exposed radiators and spin gravity (0.5G). Crew consists of 20 station administrators, 140 technicians, and 10 medics.

TL	Spacecraft	dST/HP	Hnd/SR	HT	Move	LWt.	Load	SM	Occ	dDR	Range	Cost
SPACER/TL8												
8^	*Yetzirah*	300	–	14	–	100,000	16,270	+12	2,700ASV	30	–	$10,598M

> *NASA [National Astromancy and Space Administration] is the world's largest civilian space agency. It is in charge of everything from space tracking to orbital teleportation to deep-space interplanetary probes.*
>
> **– GURPS Technomancer**

ABOUT THE AUTHOR

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ONE WITH THE SHIP

BY W.A. FRICK

Sensors are your eyes, thrusters your legs. Your hands are weapon pods, bristling with missiles and gun mounts. Your visual field is arrayed with superimposed instrument readouts, targeting information, and navigation aids. Adjusting a flap or engine is as simple as wiggling your toes, and firing a weapon is like pointing a finger and wishing forth destruction – because you are connected *directly* to the controls. You are the soul of the machine; it is your body, at least as much so as that bag of warm meat and bones strapped into the cockpit.

Science fiction is filled with pilots who don't just climb in, but *plug* in to their vessels – whether maneuverable fighters, great starships, giant armored mecha, or whatever – and take direct control. Sometimes this is done through a physical cyber-neural interface, using advanced virtual reality software to pipe all controls and readouts directly into the pilot's sensorium. Other settings feature supernatural (psionic, magical, etc.) connections, with a pilot effectively possessing his vehicle. This article presents a new template, the *interface pilot*, and explores some of the more common variations on this theme – and how to bring them to a *GURPS* game.

Although not strictly required to make use of the material here, this article makes heavy reference to *GURPS Ultra-Tech*, particularly the section on cybernetics (pp. 207-218), as well as some material from *GURPS Psionic Powers*, the *GURPS Spaceships* line, and a handful of other *GURPS* supplements.

INTERFACE PILOT

150 points

Interfaced directly with your vehicle, you pilot by neural impulse, perceiving the world through sensor arrays and reacting at the speed of wire and synapse. Every system and control is closer than your fingertips, awaiting only a thought to adjust, toggle, or unleash.

This template represents a basic, generic interface pilot, for a moderately heroic game; *interface type* (pp. 13-14), *pilot type* (see *Customization Notes,* pp. 12-13), and the *spacer lens* (p. 17) are used to customize the template to specific campaigns and vehicle types.

Attributes: ST 10 [0]; DX 13 [60]; IQ 12 [40]; HT 11 [10].

Secondary Characteristics: Damage 1d-2/1d; BL 20 lbs.; HP 10 [0]; Will 12 [0]; Per 12 [0]; FP 11 [0]; Basic Speed 6.00 [0]; Basic Move 6 [0].

Advantages: Soul of the Machine 2 (p. 12) [10]. ● 30 points chosen from among the required cybernetics or abilities for the pilot's interface type (pp. 13-14), DX +1 [20], IQ +1 [20], Per +1 to +6 [5/level], Basic Speed +1.00 [20], 3D Spatial Sense [10] *or* 3D Tactical Comp† (p. 13) [10], Ally (Copilot or Vehicle) [Varies], Combat Reflexes [15] *or* Wired Reflexes† 1-2 (p. 13) [12 or 24], Daredevil [15], Enhanced Dodge 1-3 (Vehicular) (p. 12) [5 or 10/level], Fearlessness [2/level], Luck [15], Military Rank 2-4 (Bridge, Flight, *or* Warrant Officer) [5/level], Perfect Balance [15] *or* Gyrobalance† (*Ultra-Tech*, p. 211) [10], Resistant to Acceleration (+3) *or* (+8) [2 or 3], Resistant to Space Sickness (+3) *or* (+8) [2 or 3], Signature Gear (Vehicle) [Varies], Soul of the Machine 3-4 [5/level], or Vehicle Bond (p. 12) [1/skill-and-vehicle combination *or* 5/vehicle].

Disadvantages: -40 points chosen from among vehicle-related Compulsive Behavior (Modification, racing, showboating, etc.) [-5*], Duty (Military pilot, etc.; 9, 12, *or* 15 or less) [-5, -10, or -15] *or* Duty (Very Hazardous; 9, 12, *or* 15 or less) [-10, -15, or -20], Impulsiveness [-10*], On the Edge [-15*], Overconfidence [-5*], Sense of Duty (Crew, Squadron, etc.) [-5], or Stubbornness [-5].

Primary Skills: Electronics Operation/TL (Comms) (A) IQ [2]-12‡; Electronics Operation/TL (Sensors) (A) IQ [2]-12‡; *and* Navigation (Air, Hyperspace, Land, *or* Space), all (A) IQ+2 [2]-14‡. ● *Either* of Driving/TL (Mecha) (A) DX+1 [4]-14‡ *or* Piloting/TL (any) (A) DX+1 [4]-14‡.

Secondary Skills: *Seven* of Gunner/TL (Beams, Cannon, Machine Gun, *or* Rockets) (E) DX+1 [2]-14‡; Piloting/TL (additional specialty) (A) DX [2]-13‡; Aerobatics (H) DX-1 [2]-12‡; or Artillery/TL (Beams, Bombs, Cannon, *or* Guided Missile), Electronics Operation/TL (Electronic Warfare *or* Force Shields), or Navigation/TL (additional specialty), all (A) IQ+2 [2]-14‡. (Mecha pilots may add Submarine/TL and Battlesuit/TL, both (A) DX [2]-13‡, to this list, as well as any Melee Weapon or unarmed combat skill.)

What can I say? I've always had a thing for machines.

– Louis Nichols,
*in **Robotech:***
The Shadow Chronicles

Background Skills: Six of Beam Weapons/TL (Pistol), Brawling, Guns (Pistol), or Parachuting/TL, all (E) DX [1]-13; Driving/TL (any) (A) DX-1 [1]-12; Judo or Karate, both (H) DX-2 [1]-11; Computer Operation/TL, Connoisseur (Starfighters, mecha, etc.), First Aid/TL, or Savoir-Faire (Military), all (E) IQ [1]-12; Freight Handling/TL, Leadership, Mechanic/TL (any), or Smuggling, all (A) IQ-1 [1]-11; Carousing (E) HT [1]-11; 1 point in another appropriate background, hobby, or professional skill; or 1 point to raise any background skill by one level. ● 10 points spent on the spacer lens (p. 17) or on any unchosen traits from this template.

* Multiplied for self-control number; see p. B120.
† Cybernetics; see ***Ultra-Tech*** p. 207.
‡ *When interfaced,* receives an extra +2 from Soul of the Machine.

New Advantages

Enhanced Dodge (Vehicular)

5 or 10 points/level

You have +1 per level to vehicular Dodge (p. B375), up to +3. You may take this for a specific vehicle operation skill (5 points/level) or for all vehicles (10 points/level).

Soul of the Machine

5 points/level

You're a natural at the interface. When you are controlling a suitable vehicle by direct interface, you get a +1 per level to Artillery, Driving, Electronics Operation, Gunner, Navigation, Piloting, Submarine, and any other skills used to operate the vehicle and its systems. If the GM allows *Interfaced Stunts* (p. 15), this includes Acrobatics, Aerobatics, or Aquabatics, as appropriate. For mecha and similar vehicles, it also includes Battlesuit (if required), and any melee or unarmed combat skills that the GM permits mecha to use.

By default, the maximum level of Soul of the Machine is four. The GM may raise or lower this limit, or forbid the advantage altogether, to increase or decrease the effectiveness of direct interface in relation to conventional controls. Raising the available levels give interface pilots a distinct advantage over normal pilots in combat, making the interface an important military technology. If it's totally unavailable, interface pilots still get the other benefits of the interface (see *The Importance of Being Interfaced*, p. 15), but they have a smaller edge over conventional pilots.

New Perk: Vehicle Bond

Some specific system or component of your vehicle is specially suited to you, giving you a +1 to the relevant skill when you use it. This is regardless of the component's actual quality, and stacks with bonuses for high quality, computer assistance, etc. For example, customized targeting software for a mounted 20mm chaingun would be good for a +1 to Gunner (Machine Guns) when attacking with the weapon. This perk must be specialized by *vehicle* and *skill;* it can be taken multiple times for the same vehicle, applied to a different skill each time. At the GM's option, a single 5-point advantage might apply to all systems on a specific vehicle. *1 point/combination of skill and vehicle, or 5 points/vehicle.*

Customization Notes

Pilots who must deal with the realistic (or at least semirealistic) hazards of space should spend background skill points on the spacer lens. Planet-based pilots, and those in campaigns where technology or genre convention makes vacuum and zero-G less of a concern, have no need for it.

Perhaps even more important than the type of interface, is the type of ship or vehicle that the pilot interfaces with. The following *pilot types* represent a small sampling of the possibilities – virtually any kind of vehicle could be controlled by direct interface, and each kind of driver, pilot, helmsman, or controller will have his own required skill-set.

Fighter Pilot

You're a combat pilot, and fly a small, fast, probably highly maneuverable, certainly high-performance fighter – optimized for dogfighting, forward assault, or other such roles. You need amazing reflexes, nerves of steel, and maybe just a little bit of *pure crazy*.

Advantages: Anything that boosts your Piloting skill (3D Spatial Sense, Perfect Balance) or your Vehicular Dodge (Combat Reflexes, Enhanced Dodge) – or cyberwear that provides those advantages – will help keep you on top in a dogfight. For the pure crazy, try Daredevil or Fearlessness.

Skills: Piloting specialization will be Aerospace, High-Performance Airplane, High-Performance Spacecraft, or other as appropriate. Pilots of hyperspace-capable fighters may need to expand their Piloting and Navigation skills to that medium. Weapon system skills likely include Artillery (Bombs or Guided Missile) and Gunner (Beams, Machine Gun, or Rockets).

Mecha Pilot

You pilot a giant robotic war machine, probably armored and/or armed to the teeth with an assortment of lethal technologies. Your mecha might be roughly anthropomorphic, centauroid, tracked, or more exotic – but whatever it looks like, it packs a wallop, and can likely take one in turn.

Advantages: 3D Spatial Sense isn't worth much in the relatively 2D world of land-based mecha, and since neither that nor Perfect Balance add to Driving (Mecha), they can be skipped by earthbound pilots. Otherwise, a mecha driver benefits from most of the same capabilities as a fighter jock: lightning reflexes, cool under pressure (Combat Reflexes, Enhanced Dodge), and not afraid of the many risks involved in giant robot fights (Daredevil, Fearlessness).

Skills: For land-based mecha, Driving (Mecha) replaces Piloting, and Navigation specialty is (Land). Multi-environment or transforming mecha might also require anything from Piloting (High-Performance Spacecraft) to Submarine (Mini-Sub), along with the appropriate Navigation specialties.

Weapon system skills may include Artillery (Cannon or Guided Missile) and Gunner (Beams, Cannon, Machine Gun, or Rockets), but could also involve melee or unarmed combat skills, for use of giant melee weapons, or the mecha's own limbs. The role of the Battlesuit skill is up to the GM – it could be required to get into and out of a sealed cockpit, and may limit some or all of the pilot's DX-based skills when operating mecha, or it may be entirely irrelevant for mecha piloting.

Interface Wheel Man

The *wheel man* template in **GURPS Action 1: Heroes** (p. 14) is a great candidate for an effective interface pilot in a more cinematic campaign – just buy any required interface abilities or implants with the template's discretionary advantage points, use the pilot type to help select appropriate skills, and if the campaign takes place in space, buy the *spacer* lens (p. 17) with background points. The wheel man's signature talent – *Driver's Reflexes* (**Action 1**, p. 19) – can be traded for an equal level of Soul of the Machine (p. 12), giving the pilot less versatility in vehicle choice, but greater ability in all of an *interfaced* vehicle's systems.

Starship Pilot

You helm a heavy space vessel, perhaps a capital ship, which has a crew beyond just the pilot and copilot. While you may have control over the ship's navigation, propulsion, maneuvering, and even defensive systems, you're part of a team that coordinates the ship's operations.

Advantages: Quickness and daring are somewhat less important than a strong ability with ship's systems (higher IQ, additional levels of Soul in the Machine) – even with the assistance of the crew or computer, a starship pilot has a lot of ship to worry about. Bonuses to Piloting are always welcome, of course, and abilities like 3D Spatial Sense and Perfect Balance are useful in a variety of space-based situations.

Skills: Piloting specialization will most likely be either High- or Low-Performance Spacecraft; if Hyperspace is a separate required specialization, the crewman should learn it as a secondary Piloting skill. Likewise, a pilot who must navigate both normal and hyper-space needs Navigation skills for both (although a capital ship is likely to have a navigation computer or team to help). A large ship could have any number and variety of weapon systems, but the pilot may not control them directly – it's likely that many of the ship's defenses are automated, controlled by special firing teams, etc. However, the pilot will often have primary control of at least some front-facing fixed-mount weapons (spinal battery, etc.) – often using Gunner (Beams, Cannon, or Rockets).

NEW CYBERNETICS

The following cybernetic implants use the rules in **Ultra-Tech**, p. 207.

3D Tactical Comp (TL9)

10 points

You have a 3D tactical computer implanted in your head, with the output mapped onto your visual field. This helps you orient yourself on a three-dimensional battlefield, and keeps track of your position and facing relative to other detected ships. The implant includes a *dedicated* neural interface; the ability to interface with other computers requires a neural interface implant (**Ultra-Tech**, p. 217) or other appropriate technology. Availability and monetary cost are as for a Computer Implant (**Ultra-Tech**, p. 215).

At the GM's option, the computer might be installed in your vehicle, rather than in your head. This adds Accessibility (Only when interfaced) – with a value up to the GM, from -10% for piloting-focused campaigns, to -30% for campaigns where vehicle combat is relatively rare – reducing the ability's cost by 1-3 points.

Statistics: 3D Spatial Sense (Temporary Disadvantage: Electrical, -20%) [8]; Accessory (Implant Computer) [1] + Accessory (HUD) [1]. *10 points.*

Wired Reflexes (TL10)

12/24/39/48 points for levels 1-4

Significant portions of your nervous system have been replaced by micro-wire nerves and speed-optimized electronics, increasing your perceptual processing and reaction time – possibly to superhuman levels. Availability is as for Accelerated Reflexes (**Ultra-Tech**, p. 212); the procedure costs $50,000 *per level*.

Statistics: Level 1 is Combat Reflexes (Temporary Disadvantage, Electrical, -20%) [12]. Further levels add Enhanced Dodge 1 [12 + 12], then trade Combat Reflexes for Enhanced Time Sense (Combat Sense, -20%; see **Martial Arts**, p. 44) [27 + 12], then drop (Combat Sense) [36 + 12], all still with (Temporary Disadvantage: Electrical, -20%). A cyborg with Wired Reflexes 4 can buy additional levels of Enhanced Dodge (Temporary Disadvantage, Electrical, -20%) [12/level], up to whatever limit the GM sets (typically 3).

INTERFACES

The interface technologies available to a pilot depend entirely on the campaign. Some settings feature only a single option, while others include multiple choices (e.g., most pilots use cyber-neural implants, but psis with the Netrunning ability can interface *without* an implant), or different technologies available to different civilizations (the psionic Septagonians use advanced telepathic interfaces, and the Proxers have bio-symbiotic ships). If all PCs are required to have a specific kind of interface, the GM might make it a (free) campaign feature, or give all PCs enough extra starting points to cover it, leaving more points for individual customization.

Bio-Symbiotic Interface

The interface controls in *Biomecha* (*Pyramid #3.24: Bio-Tech*, p. 5) certainly qualify as a direct interface. GM willing, interfaced biomecha pilots (or any pilot who uses a symbiotic bond with a biological vehicle) gain all the benefits of direct interface (see *The Importance of Being Interfaced*, p. 15).

Cyber-Neural Interface

A cybernetic hardware connection – brain to computer to vehicle, using direct neural VR (*Ultra-Tech*, p. 54) to map the vehicle's sensors and controls into his visual field. Depending on the setting's technology, the interface may be a socket in the pilot's head, a completely noninvasive neural induction rig, or anything in between. A technological interface has technological limitations and liabilities – physical connections and hardware can be damaged, wireless signals can be disrupted or hijacked, electronics can be disabled by electromagnetic pulse, etc.

If an implant is required – neural jack [9], wireless neural interface [17] (both in *Ultra-Tech*, p. 217), or vehicular interface implant (below) [20] – it should be purchased with the template's advantage points. Some campaigns feature nonimplant neural interfaces, such as neural interface helmets (TL10), neural induction helmets (TL10^), or even neural induction fields (TL11^) (all found on *Ultra-Tech*, p. 49). Even non-neural, basic, or full VR (*Ultra-Tech*, p. 54) could reasonably justify *some* of the benefits (e.g. sensory advantages) of direct interface. In this case, pilots don't need *any* special advantages to connect to their vehicles, just the proper equipment – often built into the cockpit.

Vehicular Interface Implant

20 points

If the GM doesn't want interface pilots to use a standard neural interface implant (because they're not available, because interface piloting has specific technological requirements that normal implants don't meet, etc.), a vehicular interface can be a separate cybernetic implant. It's more expensive than a normal neural interface, and has no uses beyond interface piloting, so pilots are only likely to buy it if they have no other choice.

Establishing control is done with a Computer Operation roll – or Computer Hacking if the pilot doesn't have the proper keys or credentials.

Statistics: Possession (Full Memory Access, +10%; Parasitic, -60%; Specialized, Interface-ready vehicle only, -40%; Temporary Disadvantage, Electrical, -20%) [20].

Psionic Interface

Whether by way of Ergokinesis, Telepathy, exotic psi-tech, or psychic wild talent, the pilot effectively possesses his vehicle. Rather than sensor and system readouts, he may experience the connection as sensations in his extended "body" – hunger when he needs fuel, pain when a system is damaged, etc. Psionic interfaces are affected by Anti-Psi, psi-tech, and anything else that disrupts or interacts with psionic powers.

The most likely candidates for psionic interface abilities are Netrunning (*Psionic Powers*, p. 31), for pilots who psychically connect to a computerized vehicle; or Telecontrol (*Psionic Powers*, p. 64), for bio-mechanical or psi-tech vehicles with telepathic interfaces (or minds). Alternately, it may be a separate ability, Vehicle Possession (below), part of Ergokinesis, Telepathy, or whatever power the GM deems appropriate – possibly even an exotic wild talent.

Part of the Ship

In some tales, the pilot isn't just interfaced with the ship, but is a permanent *part* of it – perhaps an AI resident in the ship's computers, or an organic symbiont attached to a bioship. Or, the ship itself may be alive, with its own mind and personality, and conscious control of all its own systems.

Controlling a Vehicle

A pilot who can reach out and mentally take control of a vehicle has a very particular form of Possession. The Parasitic modifier is used because the pilot must physically enter and remain within the vehicle while piloting it; however, the roll to take control is vs. IQ, or the appropriate psionic skill (*Psionic Powers*, p. 5), rather than HT. *Sentient* vehicles can resist with Will.

Netrunning can stand in for Vehicular Possession of fully computerized vehicles, including those outfitted for cyber-neural interface. Telecontrol allows possession of biological or "techno-organic" vehicles, in addition to those outfitted with telepathic interfaces. The Machine Possession spell (*Magic*, p. 178) and similar abilities could take control of virtually any vehicle the GM allows.

Vehicular Possession

20 or 30 points

Skill: Vehicular Possession (IQ/H).

You can psionically or magically project your mind into your vehicle, controlling it directly. This requires that you get into the cockpit or control area of a vehicle, which must be specifically designed for the kind of interface you're using, and that you remain within for the duration. You must spend a moment establishing contact (a turn of Concentration), and succeed an IQ or psionic skill roll. The vehicle only resists if it's sentient (or has a psi-tech security system). Subsequent attempts are made at no penalty, but a critical failure means that you've "shorted out" your ability, and can't try again for at least 24 hours.

Statistics: Possession (Ergokinetic, Magical, or other power modifier, -10%; Full Memory Access, +10%; Parasitic, -60%; Specialized, Interface-ready vehicle only, -40%) [20]. The ability to possess *any* vehicle, like the Machine Possession spell, changes to Specialized (Vehicles only, -10%) [30] – and can't be used to possess *living* beings at all (except for bio-ships, etc.). Such an ability is probably based on magic, exotic superscience, or advanced psionic techniques (combining telekinesis and ESP to control mechanical systems, "see" through a car's headlights, etc.).

Whether or not such a person can make a suitable PC depends on the nature of the campaign, and what accommodations the GM is willing to make. Campaigns that spend most of their time shipboard, or where the pilot has some means of accompanying the crew on away missions (e.g., a remote-controlled drone), might be able to support such a PC – provided that there were ample opportunities to engage in ship-to-ship encounters as well. Otherwise, a ship-integral pilot should be an NPC.

THE IMPORTANCE OF BEING INTERFACED

Owing mostly to the speed and precision with which the pilot may adjust the controls, piloting by direct interface has several benefits.

● +1 to effective vehicle Handling, which gives a bonus to Control Rolls (p. B469), vehicular Dodge (p. B470), and other rolls where Hnd. matters.

● +1 to the pilot's Speed for the purpose of determining combat sequence.

● The pilot gains the level of his Soul of the Machine advantage as a bonus to all skills used in operating the vehicle and its systems, weapons, etc.

● Extra Attacks, Gunslinger, and any other of the *pilot's* advantages that the GM deems relevant can be used with the vehicle's weapon systems (though never specific physiological traits, like Extra Arms or Striking ST – the vehicle must purchase these separately, if it should have them).

● The pilot effectively has all of the sensory modes and advantages that his sensors have – for example, 360° Vision (p. B34), Hyperspectral Vision (p. B60), Scanning Sense (Radar, p. B81), and Telescopic Vision (p. B92) from a standard comm/sensor array (*Spaceships*, p. 44).

● The pilot may make Per-based Electronics Operation (Sensors) rolls while using the ship's sensors to detect nearby vessels and objects.

● The pilot has at-will access to the vehicle's computer, all computerized systems, and all software running there – including all comm devices, targeting systems, tactical programs, internet uplinks, etc. (see *Ultra-Tech*, p. 149).

● If using the Space Combat rules (*Spaceships*, pp. 48-68), *all* interfaced pilots benefit from *Cockpit Multitasking* (*Spaceships 4*, p. 33) – the skill penalty for multitasking is only -1 per additional task, whether of the same or different category.

Interfaced Stunts

At the GM's indulgence, an interfaced pilot in a suitably maneuverable vehicle may make Aerobatics rolls (or Acrobatics for particularly lithe mecha, or Aquabatics for highly maneuverable submarines) to attempt vehicular stunts, Acrobatic Dodges (p. B375), etc. Particularly cinematic mecha might even be able to attempt exotic martial arts maneuvers, using the pilot's appropriate melee or unarmed combat skills.

Copilots and AIs

Even with direct control of every system, a pilot may find it useful at times to have a little help – someone to fire secondary weapon systems, perform tactical navigation, etc. This might be a physical copilot, strapped in and interfaced alongside the pilot, or it might be a computer program (or the consciousness of a bio-ship), running within the interface.

Whatever the case, if the PC needs to pay points for his copilot (i.e., the copilot isn't another PC, or a free campaign feature), he does so as for a normal Ally. Most copilots will probably be constantly available (×4 cost) – it's hard to get anywhere if you're waiting on a copilot who won't show up this session. A copilot who *only* appears when the pilot is on duty can be purchased with the same frequency as the Duty; only one roll for Frequency of Appearance needs to be made for both. A copilot *program* is built as an AI (see *Ultra-Tech*, p. 25), and will appear as often as the pilot has access to his vehicle – probably either constantly, or only when he's on duty.

IN THE CAMPAIGN

In a campaign that features great space battles, dogfights in orbit, slug-fests between giant mecha, etc., the interface pilot's role is clear. In fact, *all* PCs might be pilots in such a campaign, each with his own (personalized and cherried-out) vehicle. Adventures should highlight their operating skills and their customized machines, so attention should go into optimizing and fine-tuning those elements during character creation.

The other likely possibility is that the pilot is one member of a more diverse team or crew. In this case, he'll need a good balance of skills and aptitudes outside of piloting, as well as opportunities (provided by the GM) for his piloting abilities to shine. Sinking all his points into a custom hot-rod spaceship (as Ally or Signature Gear), and all of the skills needed to operate sensor and weapon systems, will make him that much less effective when outside of the ship . . . but flying the custom hot-rod ship is the pilot's personal shtick, so it shouldn't be ignored altogether.

Tech Levels

For a pilot, technology determines *everything*, from interfaces to weapon systems to the vehicles that are available in the first place. Campaign tech level will determine what specializations and optional skills are needed to control a ship's systems, and what additional implants might be available for a cyber-pilot, psi-tech for a psi-pilot, etc. This article assumes a futuristic (TL9+) backdrop – the interface pilot is a science-fiction archetype, and even most psi-pilots tend to find themselves in ultra-tech hardware.

That said, the template doesn't mandate a specific tech level. Neural interface technology is officially TL9, so that could be seen as the *earliest* that a cyber-pilot shows up in the normal tech timeline – but alternate tech paths, psi-pilots, and magical machine possession could allow for steampunk mecha-mages, telepathic dragon-riders, or whatever else a creative mind can devise.

Interface-Ready Vehicles

By default, only specially outfitted vehicles may be controlled by interface. For direct neural interface (as well as psionic Netrunning), this must be a vehicle in which all systems are connected to and controlled from a central computer, and which can be "flown on instruments" (sensors). It must have a neural interface connected to the computer, and the pilot must have any required interface implants. (Netrunning psis can obviously ignore the need for an implant, and might be able to control vehicles that aren't specifically intended for interfaced piloting – provided that the vehicle is controlled by a central computer, and can be flown on instruments.) Most vehicles will have electronic security systems to prevent theft, and defensive programs protecting the central computer from unauthorized access. These can be defeated by a properly equipped pilot who successfully uses Electronics Operation (Security) and Computer Hacking, respectively.

Psionically piloted vehicles might be computerized, as above, or they might consist entirely of advanced psi-tech, bio-tech, or other exotic systems and materials. If psi-pilots are able to steal one anothers' vehicles, various *psionic* security measures may be installed, in addition to or instead of electronic ones.

Obtaining Vehicles

Depending on campaign details and personal preference, the GM may let players design or choose their own vehicles, purchasing them as Allies or starting (or Signature) gear, or he may decide that the vehicles are a campaign feature, costing the PCs no points. In the case of a party of PCs who crews a single large vessel, the latter option is most likely. If each character has his own customized vehicle, acquiring them with money or points is appropriate.

Vehicles as Allies should be purchased with the Minion modifier (+0%), and will either be constantly available (×4 cost), or available with the same frequency as the character's military Duty. In that case, only one roll for Frequency of Appearance needs to be made – when the pilot is on duty, he has his vehicle (and copilot, if applicable), and when he's not, he doesn't. A vehicle-Ally is generally a Machine with IQ 0 (unless it has a resident AI or is otherwise sentient; see **Part** *of the Ship*, pp. 14-15), and all sensors, weapons, communication systems, means of locomotion, and other capabilities bought as appropriately modified advantages. Since most vehicles (especially combat vehicles) end up having very large points costs, use the rules for nonsentient Allies (p. B 37), even for vehicles with an AI or similar system.

With most appropriate vehicles coming in at several *million* dollars, and average starting wealth in even high-TL games reaching only tens or hundreds of *thousands*, buying a vehicle with starting wealth requires either high levels of Wealth, or special accommodations by the GM. It would require a few levels of Multimillionaire, and even then, might leave relatively little money left after the purchase. This isn't entirely unrealistic – the PC is rich in that he owns an expensive vehicle, but has little in the way of liquid assets. A Patron who provides vehicles for PCs certainly qualifies as supplying equipment worth more than average starting wealth (+100%), and may count as having special abilities, if interface ships are rare in the setting.

Alternately, the GM can encourage PCs to buy their vehicles as Signature Gear – but only by making special allowances for it. In essence, the GM declares that, for the purpose of purchasing a vehicle, each point spent on Signature Gear is worth more money than normal. A typical number for a campaign with ships or mecha prices in the millions might be $100,000 per point, so a $3 million spaceship costs 30 character points. The GM can adjust the amount to come up with numbers appropriate to his campaign; depending on how big a part vehicles play, it may be a minor expenditure or a major portion of the character's starting point total.

Finally, if all PCs are to have their own *customized* vehicles, the GM may elect to give them "split" starting point pools – for instance, 200 points to build a pilot, and 750 to build a ship or mecha. This ensures that all party members are on more-or-less even footing, whether in or out of their vehicles.

The important consideration when charging points or money for a pilot's vehicle is, how much use will he get from his ship in the course of the adventure? If it will come up a lot, and provide a distinct benefit in the game, it should cost points . . . unless *everyone* gets identical or equivalent vehicles (e.g. members of a fighter squadron), in which case it should be a campaign feature, or a separate starting point pool. (And if vehicles won't be coming up much at all, a dedicated pilot PC might not be such a good fit for the campaign.)

SAMPLE INTERFACE PILOT: LT. JAKE "SPITFIRE" MALONE

200 points

Hot-shot cyber-jock, lover of alien women, and chronic pain-in-the-butt to his Division Officer (the redoubtable Commander Simmons), Lt. Jake "Spitfire" Malone is the top gun of the 5th Starfighter Squadron aboard the ISS Hammerdown, the most (in)famous Assault Carrier in the Imperial Navy.

Jake is a talented fighter pilot in a cinematic TL10^(ish) space-opera campaign. Direct neural interface is the only choice available to PCs, and cybernetics are common, at least among military pilots. His fighter is supplied by the Imperial Navy, and he can't use it on personal endeavors – more important, the GM rules that it's a campaign feature, costing no points – so his player doesn't have to buy it as an Ally or Signature Gear.

Vehicles as Puppets

A possession-based interface pilot (see *Vehicular Possession*, p. 14) may buy his primary vehicle as a Puppet [5, or 10 for a group of identical vehicles], allowing him to take control without rolling; pilots who can *only* possess their own vehicles take Puppet Only (-30%) on their Vehicular Possession ability.

At the GM's option, even vehicles not purchased as Allies (e.g. those purchased as starting or Signature Gear, granted by a Patron, or as a campaign feature) can be taken as Puppets, allowing the pilot to forgo the risk of botching the start-up on his own vehicle.

Spaceships – In Space?

Sooner or later, a sci-fi game is apt to end up in space (assuming it didn't start there). The standard **GURPS** rules for different gravity (p. B350), however, are a bit too harsh and complex for more heroic or operatic games. There are a few ways to handle this. Campaigns that take place mostly or exclusively in Earth-like gravity – perhaps because of superscience artificial gravity generators – can largely ignore the effects of varied gravity levels. Space-based adventurers in such a campaign probably have some skill in Spacer and Vacc Suit, but only specialized zero-G workers (or soldiers) will need points in G-Experience and Free Fall.

For campaigns that want to feature different gravities without the harsh penalties, the simplified G-Experience rules from *Transhuman Action!* (*Pyramid #3/15: Transhuman Space*, p. 8) are a good fit: Buying G-Experience for a different gravity level allows you to treat that level exactly as if it were your native level, removing all penalties when operating in those conditions. Since you can operate without penalty in gravity within 0.2G of your accustomed level,

1 point in G-Experience at 0.19G allows unhindered operation in any gravity level from 0G (free fall) to 0.38G (Mars), and 0.81G to 1.19G (Earth-like). This covers most locations likely to be inhabited in many sci-fi games, from roughly Earth-like planets to small moons to free fall. In short, this basically makes the ability to ignore penalties from different gravity into a perk: G-Experience [1].

Spacer Lens

10 points

You live or work primarily in space, whether as a ship's crewman or a fighter jock on an interstellar carrier. You're experienced with all of the basics of life in vacuum and free fall, including the various systems and technologies necessary to survive them.

Advantages: G-Experience (0.19; see above) [1].
Skills: Free Fall (A) DX+1 [4]-14; Spacer (E) IQ [1]-12; Vacc Suit (A) DX+1 [4]-14.

While the campaign mostly takes place aboard a starship, ubiquitous artificial gravity, force-field technology, and the cinematic tone of the game make the hazards of space a relatively small concern.

ST 10 [0]; **DX** 14 [80]; **IQ** 12 [40]; **HT** 11 [10].
Damage 1d-2/1d; BL 20 lbs.; HP 10 [0]; Will 12 [0]; Per 12 [0]; FP 12 [0]
Basic Speed 6.25 [0]; Basic Move 6 [0]; Dodge 9.

Social Background

TL: 10^ [0].
CF: Earth [0].
Languages: Earth Common (Native) [0].

Advantages

3D Tactical Comp [10]; Daredevil [15]; Fearlessness 1 [2]; Military Rank 2 (Flight Lieutenant) [10]; Neural Jack [9]; Soul of the Machine 4 (see p. 12) [20]; Vehicle Bond (Artillery/Guided Missile) [1]; Wired Reflexes 1 [12].

Disadvantages

Compulsive Behavior (Showboating) (12) [-5]; Duty (Very Hazardous, 12 or less) [-15]; Impulsiveness (12) [-10]; Overconfidence (12) [-5]; Sense of Duty (Squadron) [-5].
Quirks: Braggart, Congenial, Dislikes Authority, Flirtatious, Likes alien women. [-5]

Skills

Aerobatics (H) DX+2 [2]-16†‡; Artillery (Guided Missile) (A) IQ+1 [4]-13†; Beam Weapons (Pistol) (E) DX+1 [2]-15; Carousing (E) HT [1]-11; Computer Operation (E) IQ [1]-12; Electronics Operation (Comm) (A) IQ [2]-12†; Electronics Operation (Force Shields) (A) IQ [2]-12†; Electronics Operation (Sensors) (A) IQ [2]-12†; First Aid (E) IQ [1]-12; Gunner (Beams) (E) DX+2 [4]-16†; Navigation (Hyperspace) (A) IQ+1 [2]-13†‡; Navigation (Space) (A) IQ+1 [2]-13†‡; Piloting (High Performance Spacecraft) (A) DX+2 [4]-16†§; Piloting (Hyperspace) (A) DX+1 [2]-15†§; Spacer (E) IQ [1]-12; Vacc Suit (A) DX+1 [4]-15.

* Cybernetics; see **Ultra-Tech** p. 207.
† *When interfaced,* receives an extra +4 from Soul of the Machine.
‡ Includes +2 from 3D Spatial Sense.
§ Includes +1 from 3D Spatial Sense.

Trying to pilot that mobile suit? You're in way over your head, Natarle!

*– Miguel Aiman,
in* **Mobile Suit
Gundam Seed**

ABOUT THE AUTHOR

W.A. Frick (Alex or Lex to his legions of teenage fans) lives in an elaborate delusion, wherein he's some kind of computer witch doctor who exorcises demons from corporate networks. In his more lucid moments, he likes to play **GURPS,** and while everyone tells him that he just started this hobby recently, he has memories of having played for at least 15 years.

EIDETIC MEMORY

MASS COMBAT IN SPACE

BY DAVID L. PULVER

Space combat was common in my campaign, but it was some years before I needed a mass space combat system. Then I needed it *bad*.

I prefer players leave dangling plot threads in their PCs' background. One had decided his space marine was a foundling child of unknown parentage. Over time, I slowly revealed him as the lost heir to a small star empire, its throne seized by a usurper. After becoming leader of a mercenary company, he began amassing resources to regain his birthright. Over years, the PCs gathered military strength and loyalist allies as they fought off the usurper's assassins. Finally, they were ready to attack the imperial capital. But with two dozen starships, squadrons of space fighters, hundreds of flying grav tanks, and 1,200 battle-suit troopers, we sure weren't going to play it out one-to-one.

We started with two mass combats. First up was an orbital space battle using a prototype of this system. They won! The fight spiraled down to a bloody "grav tank and drop ship" assault on the capital (commanded by a different player). Finally, we used the personal combat rules to run a commando raid on the palace to rescue the heir's captive sister and finish off the usurper. It ended with a coronation, a royal wedding, and a bedroom farce involving a shapeshifting living-metal combat robot.

But that's another story . . .

SPACESHIPS AND MASS COMBAT

These guidelines merge **GURPS Spaceships** into the **GURPS Mass Combat** system. Unless noted, all normal **Mass Combat** rules apply.

TROOP STRENGTH (TS) AND OTHER STATISTICS

An element represents a spaceship and crew. To estimate TS from **GURPS Spaceships** stats use this formula:

TS = (average dDR + dST/HP) × WB × HF × TF. Round to nearest whole number.

Average dDR is the average of front, central, and rear dDR plus force screen dDR (rounded to nearest whole number).

dST/HP is the decade-scale ST/HP attribute. As it scales at the same rate as weapon damage, this also represents overall power.

WB is the sum total of all weapon battery and defensive ECM systems. If batteries omit some weapons, they count as a fraction (e.g., a medium battery with only 2 of its 3 weapons is 2/3). Likewise, Smaller Systems count as 1/3.

HF is 10 + Handling, or if the craft has *no* Handling, it is HF 4.

TF from the tech level: 0.01 for TL3 or less, 0.02 for TL4, 0.05 for TL5, 0.25 for TL6, 0.5 for TL7, 1 for TL8, 2.5 for TL9, 5 for TL10, 10 for TL11, or 20 for TL12. Double TF if the craft uses superscience weapons or multiply by 20 if it uses cosmic.

This is the Commander. Moments ago, this ship received word of a Cylon attack against our homeworlds is under way. We do not know the size or the disposition or the strength of the enemy forces, but all indications point to a massive assault against Colonial defenses.

– Commander Adama,
*in **Battlestar Galactica**
(2003)*

Parenthetical Support

Put a spaceship's TS in parenthesis if it has no weapon batteries (even if it does have ECM) and/or no Move.

Special Classes

Only the following apply:

Air: For any spacecraft with an Air speed.
C3I: For a spacecraft with a Multipurpose or Tactical Array (or Flagship feature).
Engineering: For a spacecraft with a Factory or Mining system.
Space: A new class that applies to all spacecraft (and the MILSAT and Drop Ship).
Transport and Transport Weight: Since spacecraft have precise mass, hangar, cargo, and habitat ratings, T and WT ratings are redundant, but for purposes of shipping other **Mass Combat** units in spacecraft use the following abstractions if detail is unavailable:

Foot mobility requires occupancy for 10 people × WT plus 0.5 tons cargo × WT.
Motor or 0 mobility requires 5 tons of hangar capacity × WT.
Mech mobility requires 7.5 tons of hangar capacity × WT.
Air mobility requires 18.75 tons of hangar capacity × WT.

Cost

Cost to Raise: Spacecraft use their normal cost. If no detailed crew costs are available, add $0.1M × crew requirement.
Cost to Maintain: To abstract this, use 1/25 total Cost to Raise. This may exclude reaction mass costs (for that, see **GURPS Spaceships**).

Optional Features

Spacecraft use their existing costs to build. If no detailed crew costs are available, multiply crew requirement by $100K.

Airborne, All-Weather, Hovercraft, Marine, Nocturnal, Terrain: Not applicable for spaceships, except that Airborne applies to craft with Soft Landing systems but no air speed.
Disloyal, Fanatic, Hero, Impetuous, Levy, Mercenary: These can be applied to spaceships.
Flagship: This applies to Space as well as Naval elements.
Night, Sealed: All spaceships have these features.
Super-Soldier: This can be applied for spaceships with exotic features or systems giving unusually useful abilities not covered in TS (e.g., cloaking devices and stasis fields).

Quality and TS

Equipment Quality: This is normally *not* applicable for spaceships converted from **GURPS Spaceships**, as the equipment quality is included in the calculations used to determine TS. However, consider applying Poor modifiers to spacecraft that are badly maintained or lack spares, fuel, or ammunition.
Troop Quality: Applied normally.

Mobility

Ignore the **GURPS Mass Combat** statistic; all spacecraft have Space mobility, using the Move and Range as per **GURPS Spaceships.** A force of spacecraft moves at the speed and acceleration of the slowest vessel. Those with air speeds add Air mobility.

Example

A 3,000-ton *Battle*-class frigate (**GURPS Spaceships 3: Warships and Space Pirates**, p. 17) has dDR 40/20/20, so its average dDR is 27. Its dST/HP is 100. It has five Weapons Batteries and 1 Defensive ECM giving it WB 6. It has Handing -1 for HF 9. It is a TL10^ design so is TF 5 × 2 = 10. Thus, its TS is (27 + 100) × 6 × 9 × 10 = 68,580.

Its classes are Space and (thanks to its tactical array) C3I. Like all spacecraft, it's Sealed. We'd modify its TS based on troop quality. With 22 crew (two shifts) cost to raise is $387M + ($0.1M × 22) = $389.2M. Cost to maintain is $389.2/25 = $15.668M.

Planetary Defenses

TL7+ land, air, and naval elements with the Neutralize Air feature may optionally be given Neutralize (Space) as well, if the GM believes they have weapons that could reach into orbit. At TL7-8, this usually applies only to Theater Air Defense or Guided-Missile Escorts equipped with anti-satellite missiles, but at TL9+ could be added to other (Air) elements (heavy AAA, Mobile SAM, etc.) representing anti-spaceship missile, beam, or railgun armament.

FIGHTING

An additional environment where fighting can take place is . . .

Space: A space campaign is fought beyond a planet's atmosphere in orbit or in deep space. Only Space elements are combatants in deep space. In orbital space, elements on the surface that have Neutralize (Space) can also participate.

Forces in Motion

A "force" is assumed to be a squadron or fleet of spacecraft operating together, plus any planetary elements with Neutralize (Space) ability.

Mobile Forces: A mobile force is moving through space. Travel speed for space forces depends on the technologies involved, which can vary radically. See **GURPS Spaceships** for examples. In general, a space force moves with the speed of the slowest vessel. *No Security* for moving spacecraft generally means traveling at full thrust and carelessly using active sensors and comms to navigate and communicate.
Posture of Encamped Forces: A space force that is "Encamped" is operating close to a planet or orbital base. It may be Patrolling, Bunkered (docked in port), or using No Security.

Mobile Force Modifiers

"Flying," "forced march," "recon in land battle," and "terrain" are ignored.

"Relations with locals" apply if commercial satellites or shipping offer intelligence.

"Roads" are ignored unless the campaign is interstellar and this feature represents jump points.

"Speed" modifiers use the slowest values among all vessels in the force. They should be calculated *twice:* once based on delta-V (with "*c*" always higher than any delta-V), and once for relative acceleration in G. If the campaign involves several star systems and interstellar speeds, use the vessel's stardrive range.

Reconnaissance Operations

It's hard to hide in space, but some "terrain" can make surprise possible: orbital space around a planet, moon, etc.; asteroids and ring systems; the radiation-filled regions near stars or gas giants; and, most of all, the "clutter" of satellites, stations, and space junk around a TL7+ world. The *Space Terrain Table* (below) has Terrain Ratings for these categories. Orbital space refers to encounters within about 5-10 diameters of a given world but can also be space within close proximity to big deep space station or trafficked "jump point."

Space Terrain Table

Environment	Terrain Rating
Deep space	12
Asteroid belt	11
Near (within one diameter) of star, brown dwarf, or gas giant	10
Near a black hole, pulsar, flare star, or similar energetic body	9
Ring system around a gas giant planet (such as Saturn)	9
Upper atmosphere of gas giant or cinematic asteroid belt	9
Orbital space around a world with no spaceport*	9
Orbital space around a world with a Class I spaceport*	8
Orbital space around a world with a Class II spaceport*	7
Orbital space around a world with a Class III spaceport*	6
Orbital space around a world with a Class IV spaceport*	5
Orbital space around a world with a Class V spaceport*	4
Inside gas giant upper atmosphere	3
Modifier for "bad space weather" (solar flares, etc.)	-1

* Or any *populated* Lagrange points in a planet-moon system. See **GURPS Space** or **GURPS Spaceships 2: Traders and Liners** for spaceport class; today's Earth is Class II.

Defense Bonus

Some space "terrain" may benefit a defender:

Asteroid belt, gas giant, or nearby black hole: +1.
Orbital space: Defense bonus equal to (1 + spaceport class).
Gas giant ring system or upper atmosphere, cinematic asteroid belt: +2.

Relative Troop Strength

Determine C3I superiority, Space Superiority (as Naval but counting space elements), and (if directed in rules) Engineering superiority. In orbital battles, count Space superiority (using all spaceships but reduced by elements that Neutralize Space). In nonorbital fights, don't calculate Space superiority as only Space elements participate.

Troop Strength Modifiers Box: Ignore this.

Orbital Assaults on Worlds

When space force attempts to land troops on a world, first play out any space battle, if there is an attempt to stop the force. Then if the attacking space force wins, play out any orbital assault using a variation of the rules for Amphibious Assault:

● Substitute the land terrain defense bonus of the invasion region (if any).

● Non-parenthesized space elements lacking the Air feature are treated as if they were Support elements and given parenthesized TS but gain the Artillery class.

● Only those attacking land and air elements (lacking space mobility) that were transported from space and have air mobility, the airborne feature, or are being transported by such an element, can contribute TS. Halve the TS of land elements that lack Air mobility unless they have the Airborne feature.

● Battle Strategy: The attacking commander may not choose any defense strategy until he acquires at least +1 PB. If he picks any retreat strategy, he's at -4 to Strategy skill.

ABOUT THE COLUMNIST

David L. Pulver is a Canadian freelance author. An avid SF fan, he began roleplaying in junior high with the newly released **Basic Dungeons & Dragons.** Upon graduating from university, he decided to become a game designer. Since then, David has written over 70 roleplaying game books, and he has worked as a staff writer, editor, and line developer for Steve Jackson Games and Guardians of Order. He is best known for creating **Transhuman Space,** co-authoring the **Big Eyes, Small Mouth** anime RPG, and writing countless **GURPS** books, including the **GURPS Basic Set, Fourth Edition,** and the recent **GURPS Spaceships** series.

Earth has surrendered to the Comet Empire, but the Star Force fights on. On the submerged Argo, Derek Wildstar starts his undersea torpedo attack on the Comet Empire, while the Black Tigers, headed by Conroy, prepare an aerial attack from above.

– **Star Blazers: The Comet Empire** #2.25

SKY GALLEYS

BY KEN SPENCER

*Appius Larcius Durus, the captain of the **Eagle** watched Mars revolve beneath him in all its red-tinted glory. It had been a long two-month journey from Earth, shepherding a flotilla of merchant vessels through the void of the Divium Mare. Soon they would descend to make planetfall and his mission would be complete. Already he was counting the bounty he would receive for bringing all 12 ships through storms, past the many dangers of the Divium Mare, and navigating them safely to Mars.*

"Sails ho!" cried the lookout from the mast far above. "Thirty degrees to port and 10 below!"

Captain Appius ran to the port rail of his sky galley and looked over the side. There, rising out of the Martian atmosphere were eight ships, their sails black as night and adorned with a strange red design. Although the ships appeared to be like any other Roman design, odd insect-like shapes projected from the prows and sides.

"Lookout, can you make out the crew?"

"Aye, Captain – they look like Martians."

*"Martians," thought Appius, "Martians don't fly ships." As the strange vessels neared, even Appius' old eyes could make out the mangy lumps of fur running about the other vessels' decks. Then, with a bellowing belch that was loud enough to propagate in the thin upper atmosphere of the Red Planet, the lead vessel's prow thing shuddered and flung a buzzing projectile past the **Eagle's** main mast.*

"Boatswain, signal the fleet to row to close quarters, and call all men to their stations. The rumors must be true – those are renegade Martians coming in! Marines to the rails, lets put some bow fire on them. You there, ready the forward ballista and return fire. Helm . . ."

Appius' last words were cut off as the projectile turned around and made a suicide dive into the deck, spraying corrosive bile across the crew and burning out the captain's throat and eyes.

Sky Galleys is an article designed with **GURPS Spaceships** that details a system of alternate space-flight science. Although the background is derived from the *Roma* *Universalis* setting featured in *Pyramid #3/20: Infinite Worlds,* information herein can be exported for use in any planetary romance or fantasy game that makes use of low-tech space travel. To make full use of this article, you will need **GURPS Spaceships** and **GURPS Spaceships 7: Divergent and Paranormal Tech**. *Pyramid #3/24: Bio-Tech* and *Pyramid #3/27: Monsters in Space* have additional information on the *Roma Universalis* setting (Martian bio-tech and a horde of nasty beasties of the solar system, respectively).

ANATOMY OF A SKY GALLEY

Through a secret treatment involving the distillation of rare minerals and herbs, wood and other inanimate organic matter can be transformed so as to allow for interaction with the strange substance of the aether. The effects are stunning; Wood so treated becomes buoyant in air, and can float beyond a planet's atmosphere to worlds beyond. Cloth gains the ability to catch the natural flow of the Divium Mare and propel the vessel through the skies and beyond. Finally, scraped hides, worked so thin so as to become translucent membranes and then treated with the Elixir of Daedalus, are attached to long oars, replacing the wooden blades with ones capable of catching the aetherial wisps of the Divium Mare.

The Roman Empire in Roma Universalis is much more advanced than its Homeline counterpart in the field of naval engineering. This is partially due to the increased need posed by the Elixir of Daedalus and the sky galleys, but also owes to the mixing of technological knowledge from across much of Europe and Asia. Long gone are older maritime technologies that have been replaced by rib-and-plank construction. The increased wealth of an enlarged Empire has opened up greater resources, such as timber and metal ore, than was possible before the advent of sky galleys.

In effect, the Roman Empire of Roma Universalis is at TL3+ with regards to nautical engineering and naval architecture.

Sky galleys are constructed around a keel and rib framework of treated wood. Planks are nailed to this to form the hull and decking. The classic Mediterranean lines are still used, and sky galleys tend to be long, sleek affairs. The need to provide for at least two banks of oars has also encouraged the retention of ancient ship designs. However, as sky galleys are flying vessels, some innovations have been widely adapted. Whereas the first sky galleys were simply sailing ships made from treated lumber, the current trend is to make full use of their aerial nature.

Travel Times

Theoretically, under full sail, a merchantman could make the trip from Terra to Mars in less than 10 days. In practice, aether storms, poor aetheric winds, and the vagaries of travel extend this time to weeks or months. If a voyage needs to be shortened, the GM is free to make it quick and easy. If more detailed travel is called for, any and all of the hazards of terrestrial navigation and sailing are possible. Storms will blow vessels off course or delay them, the aetheric wind may be slack or blowing in the wrong direction, and sailing in the lea of a planet can greatly alter the direction and strength of the aetheric wind.

Sails are deployed rising from the main deck, as well as sprouting from masts that extend from the sides or even the keel. Because when operating in both atmosphere and the Divium Mare an increased amount of canvas equates to increased speed, a sky galley under full sail presents a riot of mainsails, spinnakers, and jibes. Sail technology has also evolved, with the lateen joining the traditional square sail of the Mediterranean. More exotic skysails of all shapes are also being experimented with.

One of the latest developments in naval architecture is the castle. This tall structure rises from the bow or stern of a vessel and forms a stable platform for archers and ballistae. As sky galleys are expensive vehicles, most combats are conducted with the goal of capturing the other ship. The fore and aft castles thus serve as defended positions from which to launch or repel boarding actions.

> *The first sky galley lifted off from Athens and flew to Rome, where the greatly impressed Emperor Augustus rewarded Akakios for his invention, and then promptly confiscated the galley, the inventor, and the formula.*
>
> *– Ken Spencer,*
> *"Roma Universalis,"*
> ***Pyramid Magazine #3/20***

Sky-Galley Components

Sky galleys are built like any other spaceship using the *GURPS Spaceships* rules. There are several items that need to be considered due to the nature of sky galleys and the aether of Roma Universalis. Hulls are made of wood untreated by the Elixir, and thus the normal ship's hulls from *GURPS Spaceships* (p. 9) can be used. Hulls should have nautical streamlining as per the rules of *GURPS Spaceships 7* (p. 12). The remainder of the design process must utilize components from *GURPS Spaceships 7*, or the new parts below.

Most galleys are technically unarmored. However, the planking is composed of treated wood, and thus the etherwood armor option should be used to model this, with an increase in price due to the nature of the Elixir of Daedalus (increase price by 1.5 times the SM of the hull). War galleys are known to carry armor composed of iron scales on their bows and center hull sections, with the heaviest city assault galleys being fully armored. Propulsion is provided through aether oars and aether sails (see *GURPS Spaceships 7*, p. 7).

Once the basic systems of armor and propulsion are chosen, the design process moves on to the specifics for which the sky galley is being constructed. Most non-military vessels mount a limited number of ballistae (using the statistics for catapults from *GURPS Spaceships 7*, p. 19), lack a ram, and do not have ravens or castles. More space needs to be devoted to cargo holds than on "normal" spacecraft as sky galleys lack even the most rudimentary of life-support systems. This means that any

voyage needs to include a sizeable allotment of space for food and water. Furthermore, sky galleys are cramped vessels, and habitats should reflect this, with bunkrooms being standard. The captain may, of course, have a cabin, and several of his officers may share one, but these too should be shoehorned into the design, almost as an afterthought.

Other considerations that alter the normal spaceship design process include the lack of computers, radios, life support, and automation. The lack of life support effectively doubles the number of cabins available in each habitat, for the same reason Magical Life Support (*GURPS Spaceships 7*, p. 9) does so. Fortunately, the aether is breathable in this universe!

Raven (TL2) [Front]

First developed centuries ago during the Punic Wars, the venerable raven has been improved and modified for use aboard sky galleys. A raven is a retractable bridge that can be dropped down on an enemy vessel, allowing a boarding party to rush across and capture the opposing ship. The modern raven is generally built adjacent to a castle (see below), which is then closed off from the rest of the ship in case the boarding action goes poorly and enemy marines come charging back across your own ship's raven.

Treat a raven as a low-tech *grabber* – that is, a robot arm (*GURPS Spaceships,* p. 24) with Bad Grip 2 and 1/10 the cost.

Weapons

Ships typically mount ballistae; in game terms, these are catapults (*GURPS Spaceships 7,* p. 19). They must be placed in a fixed mount, unless located in a castle (see below). Martians have other options, of course . . .

Castles (TL3)

The latest in naval architecture, castles constitute a fortified position from which to launch or repel boarding operations. They also raise ballistae above the decks, effectively increasing their field of fire. They do require a fair amount of buttressing and reinforcing below decks, however.

A ship may designate up to two weapons batteries as castles – one in the front hull and one in the rear hull. Weapons in a castle are treated as being in a turret. In addition, a castle is better armored than the rest of the ship; calculate the DR of this system *(only)* as though the ship were 1 SM larger. As with any system, castles can be closed off from the rest of the ship; this is frequently done by default in case a boarding action goes wrong.

To find the cost of upgrading a weapons battery into a castle, total the cost of all armor systems in the battery's hull and multiply the sum by 0.15.

Martian Bug Spitter (TL5^)

One of the rare weapons produced by rogue Martians, and favored by the Martian Separatists, is the bug spitter. This is a larger version of the more common Martian bug bow (see *Pyramid #3/24: Bio-Tech,* p. 14), an organic weapon that shoots out its own offspring. Resembling little more than a large eight-limbed insect, this acid thrower fires slightly more mature "rounds" than the bug bow, enabling the ammunition to seek out targets on its own. For game purposes, treat a spitter as a standard missile launcher.

THE GALLEYS

Most Roman ships can be split into two classes: those used for war, and everything else. Sky galley operation and the people needed to crew it are otherwise similar across different types of vessels.

WAR GALLEY (TL3^)

The standard Imperial war sky galley utilizes the latest in construction technologies and armaments. The hull is constructed of planks nailed onto a keel-and-rib framework and utilizes different types of wood in order to provide strength and flexibility. War galleys are cramped; there is only so much room for stores, men, and the equipment to fight battles. The front and center hulls are sheathed in overlapping iron scales. The vessel mounts a heavy ballista in a swivel castle mount on the bow, two batteries of smaller ballistae amidships (port and starboard in fixed mounts), and another secondary battery fixed aft.

Front Hull	System
[1]	Etherwood Armor (dDR 1).
[2]	Iron Armor (dDR 1).
[3]	Major Battery (castle; one turret-mount 3.5cm catapult; dDR 3).*
[4]	Raven.*
[5]	Ether Sails (0.1G acceleration).*
[6]	Habitat (four bunkrooms; no life support).*
[core]	Cargo Hold (15 tons capacity).

Central Hull	System
[1]	Etherwood Armor (dDR 1).
[2]	Iron Armor (dDR 1).
[3]	Medium Battery (three port-facing, fixed-mount 3cm catapults).*
[4]	Medium Battery (three starboard-facing, fixed-mount 3cm catapults).*
[5]	Ether Oars (0.1G acceleration).*
[6]	Ether Sails (0.1G acceleration).*
[core]	Passenger Seating (20 seats).

Rear Hull	System
[1]	Etherwood Armor (dDR 1).
[2]	Control Room (three control stations, no comm/sensor, no computer).*
[3]	Habitat (one luxury cabin and two cabins; no life support).*
[4]	Habitat (four bunkrooms; no life support).*
[5]	Medium Battery (three fixed-mount 3cm catapults).*
[6]	Habitat (four bunkrooms; no life support).*

* One workspace per system.

The vessel has nautical lines and a top deck. Crew consists of a captain, three officers, and 50 crew (including sailors, oarsmen, and marines).

TL	Spacecraft	dST/HP	Hnd/SR	HT	Move	LWt.	Load	SM	Occ	dDR	Range	Cost
PILOTING/TL3 (SKY GALLEY)												
3^	War Galley	50	-3/4	14	0.3/*c**	300	20.4	+7	54A	2/2/1	–	$10.1085M

* Move becomes 0.2/*c* if using only sails or 0.1/*c* if using only oars.

Top air speed is 220 mph with sails, 160 mph with oars, or 280 mph with both.

MERCHANT SKY GALLEY (TL3^)

This represents one of the many types of merchant galleys that ply the skies throughout the Empire, transporting expensive goods over vast distances. They are not intended for combat, and thus worry less about weaponry than cargo capacity. A merchantman of this sort can be found on Mars, Venus, or almost anywhere on Terra.

Front Hull	System
[1]	Etherwood Armor (dDR 1).
[2-6]	Cargo Holds (15 tons capacity each).
[core]	Habitat (four bunkrooms; no life support).*

Central Hull	System
[1]	Etherwood Armor (dDR 1).
[2]	Cargo Hold (15 tons capacity).
[3-4]	Habitat (four bunkrooms each; no life support).*
[5]	Ether Oars (0.1G acceleration).*
[6]	Ether Sails (0.1G acceleration).*
[core]	Passenger Seating (20 seats).

Rear Hull	System
[1]	Etherwood Armor (dDR 1).
[2]	Control Room (three control stations, no comm/sensor, no computer).*
[3-4]	Cargo Holds (15 tons capacity each).
[5]	Medium Battery (three fixed-mount 3cm catapults).*
[6]	Habitat (one luxury cabin and two cabins; no life support).*

* One workspace per system.

The vessel has nautical lines and a top deck. Crew consists of a captain, four officers, and 49 crew (including sailors, oarsmen, and marines).

TL	Spacecraft	dST/HP	Hnd/SR	HT	Move	LWt.	Load	SM	Occ	dDR	Range	Cost
PILOTING/TL3 (SKY GALLEY)												
3^	Merchant Sky Galley	50	-3/4	14	0.2/*c*	300	125.4	+7	54A	1	–	$4.6M

* Move becomes 0.1/*c* if using only sails or only oars.

Top air speed is 220 mph with sails *and* oars, or 160 mph using only one.

SKY GALLEY OPERATIONS

Four broad categories of people rely on sky galleys: the Imperial Navy, merchants, pirates, and renegades. Each takes to the heavens for different reasons, and utilizes the fantastic technology of the Elixir of Daedalus in different ways. The Imperial Navy is tasked with two duties: patrolling the shipping lanes, and expanding the Empire. In the former role, naval sky galleys travel across the Empire and between Luna, Mars, and Terra on regular routes. Pirates, smugglers, and renegades pose constant threats to the Empire and its citizens, and must be challenged, pursued, and defeated. Splashing a sky galley belonging to one of these villains is not enough, and most anti-piracy patrols end with an aerial assault on the criminal's base of operations.

The Empire is always expanding, and the Imperial Navy's sky galleys are at the forefront. Walled cities cannot stand against aerial bombardment and assault, a fact that has helped create an Empire that spans across four continents. Flying above or ahead of the legions is seen as a glorious occupation by the common folk of the Empire; however, those who serve on the sky galleys view it as a hardship posting. Only the marines have any real opportunities for loot, and even they do not receive much. The action for the sailors is routine, and for men who signed up with dreams of star spanning adventures, a little boring. Many would rather expand the Empire as part of the Imperial Navy's Legion of Exploration.

The Legion of Exploration travels far beyond the boundaries of the Empire seeking new lands to conquer or colonize. Aside from the thrill of discovery, the Emperor offers a standing bounty to all who make great discoveries. In one (admittedly long and arduous) journey, a captain and his entire crew could earn enough wealth to raise themselves and their descendents to great heights. That the Legion of Exploration has the highest rate of fatality does not deter ambitious Romans from setting out in search of the next Mars or Venus.

A rare few civilian sky galleys are employed in exploration, hoping to not only cash in on the Emperor's prize money, but also to find new and valuable land to stake out for themselves. For these hardy souls, risking one's life to push a sky galley beyond the limits of sane flight is just part of the normal workday. It is the civilian explorers, and not the Legion of Exploration, who are investigating the asteroid belt beyond Mars, and making forays into the deep space between Mars and Jupiter. Perhaps the King of Planets holds even greater wonders than Mars – or even greater dangers.

Almost the entirety of legal civilian-operated sky galleys are in the hands of a patrician house. These vessels are generally engaged in the lucrative luxury goods trade, bringing spices, and silks from the east, exotic furs from Novus Terra, or goods from Mars and Venus. Increased trade (coupled with improvements in sanitation, medicine, and agriculture) has produced a large and productive middle class. Bulk goods, such as grains and most raw materials, are still transported by sea or wagon, except where an aerial shortcut would justify the expense. Service onboard a merchant ship is not glorious, but it does still have that "sky galley" cachet, and profits can quickly turn a crew into wealthy men.

Not all civilian craft are engaged in legal endeavors. Over the years a number of sky galleys have fallen into the hands of pirates. Although unable to manufacture their own ships without the Elixir of Daedalus, pirates have proven to be resourceful in acquiring and maintaining sky galleys. The most successful have managed to raid outlying Imperial Navy bases in order to procure wood and other materials treated with the Elixir.

Most pirates operate on or around Terra, though a few infamous rogues have waylaid vessels in the transplanetary trade. It is far safer to fly up out of a terrestrial bay or mountain range, attack a merchant vessel, and then slip away back to the ground. Disappearing among the teeming masses of the Empire is much easier than blending in with the few thousand humans on Mars. However, the most notorious pirates – such as the Twin Orbs pirates who, for 30 years plundered, the space lanes around Mars, or the Red Eye Brotherhood who claim to operate out of a floating island in the Red Spot of Jupiter – manage to not just attack ships in the void, but also to fence their ill-gotten gains. It was the combined smuggling and piracy operation of the Twin Orbs that lead to their downfall, as the Imperial Navy first cracked the Terra-based fences, and then followed the trail back to the moons of Mars.

The gravest threat to legal shipping and the Empire as a whole are the renegade Roman factions that have sprung up on the edges of the Empire. Renegades differ from pirates in that they are better financed and interested in more than mere profit.

Martian Separatists

The prospect of an alien species – much less one that is capable of creating advanced bio-tech weapons – challenging man to his rightful place among the stars is too terrifying for most residents of Roma Universalis to comprehend. However, rumors abound that a rogue group of insane Martians have managed to either capture a handful of sky galleys or may have even developed their own version of the Elixir of Daedalus. Although so far the Imperial Bureaucracy has been mute on the subject, some sky captains who operate in Martian space have claimed to have seen ships crewed by Martians performing maneuvers near the slopes of Mons Olympus. The PCs may be dispatched to find out if this is true, and if so, to destroy the renegade Martians and any sky galleys or Elixirs of Daedalus they may have.

Their attacks are aimed to hamper or harm Imperial operations, not just acquire loot (though loot helps further the ambitions of the renegade factions). Most of these renegades are petty would-be kings or fractious off shoots of the Imperial family. Others are religious fanatics who seek to overthrow the Empire in order to bring their theological prophecies to fruition. Some of these are not even Roman at all, but ethnic separatists that have managed to capture a sky galley and turn it against its former masters. In general, the suppression of renegades is a priority of the Imperial Navy, but one that sees greater risk than working alongside the legions, and far less profit.

Sky Crews

A ship without a crew is just a chunk of wood and canvas spinning through the void. These three templates can be used to build sky galleys' crews , from the lowly sky sailor pulling an oar, on up to the glorious sky captain commanding the voyage. The templates should serve nicely as starting points for PCs, and equally well as the general crew of the party's or another's galley. The baseline assumption for the templates is Roman; thus, they should all get Cultural Familiarity (Imperial) [0] and Language (Latin; Native) [0]. However, they could be easily altered to fit non-Roman crews. It should also be noted that the templates represent the best of the best of sailors and marines in the Empire; lesser mortals simply do not get the opportunity to serve on a million-sesterces vessel.

Note that the Crewman, Piloting, and Shiphandling skills here all take a new specialty, *Sky Galley*. This variant encompasses the unique blend of airship, naval ship, and spaceship knowledge necessary to handle one of these vehicles.

Sky Captain

210 points

Resolute and brave, sky captains command the pride of the Empire, the great sky galleys. Whether a merchant captain with an eye on profit, a brave explorer pushing out into the unknowns of the solar system, a steel eyed Imperial Navy officer, or a scurvy space pirate bent on loot and rampage, a sky captain must be courageous, wise, and most of all, knowledgeable about his ship, crew, and the dangers of the void.

The sky captains are the darlings of the Empire, and their exploits are retold to thrill the teeming masses. Although many are from the patrician class, serving aboard a sky galley is one means by which a plebian, or even a barbarian, can advance himself in the Imperial social strata. Some sky captains are even women, a fact that troubles the more traditionally minded in Roman society.

Attributes: ST 10 [0]; DX 12 [40]; IQ 13 [60]; HT 11 [10].
Secondary Characteristic: Dmg 1d-2/1d; BL 20 lbs; HP 10 [0]; Will 13 [0]; Per 13 [0]; FP 11 [0]; Basic Speed 5.75 [0]; Basic Move 5 [0].
Advantages: Ally (Crew of 11-20 sailors, officers, and marines; Built on 50%; 15 or less) [48]; Claim to Hospitality (Roman Sky Captains) [5]; Rank 4 (Captain) [20]; Social Regard 2 (Sky Captain) [10]; *and* Wealth (Wealthy) [20]. ● 20 points chosen from among Absolute Direction [5] *or* 3D Spatial Sense [10], Charisma [5/level], Common Sense [10], Contacts (Scattered around the solar system) [Varies], Danger

Sense [15], Fearlessness [2/level], Independent Income [1/level], Intuition [15], Less Sleep [2/level], Luck [15], or Status 2-4 [10 to 20].
Disadvantages: Duty (Your ship; 15 or less; Extremely Hazardous) [-20]. ● *One* of *either* Code of Honor (Gentleman's) [-10] *or* Code of Honor (Pirate's) [-5] and Secret (Something that would cause serious embarrassment) [-5]. ● -30 points chosen from among Bad Temper [-10*], Bully [-10*], Callous [-5], Curious [-5*], Enemies (Rival captains) [Varies], Greed [-15], Hidebound [-5], Intolerance [-5 or -10], Lecherousness [-15*], On the Edge [-15*], Obsession (Completing a voyage; Making a fortune; Defeating a rival, etc.) [-5 or -10*], Overconfidence [-5*], Sense of Duty (Crew, ship, or both) [-5], Stubbornness [-5], or Workaholic [-5].
Primary Skills: Artillery/TL3 (Catapult) (A) IQ [2]-13; Climbing (A) DX [2]-12; Crewman/TL3 (Sky Galley) (E) IQ [1]-13; Diplomacy (H) IQ [4]-13; Leadership (A) IQ [2]-13; Knife (E) DX [1]-12; Navigation/TL3 (Air) (A) IQ [2]-13; Piloting/TL3 (Sky Galley) (A) DX [2]-12; Savoir-Faire (Sky Sailors) (E) IQ [1]-13; *and* Shiphandling/TL3 (Sky Galley) (H) IQ [4]-13.
Secondary Skills: Accounting (H) IQ-1 [2]-12; Administration (A) IQ-1 [1]-12; Area Knowledge (Ports Along Route) (E) IQ [1]-13; Astronomy/TL3 (Observational) (A) IQ [2]-13; Cartography/TL3 (A) IQ-1 [1]-12; Knot-Tying (E) DX [1]-12; Shortsword (A) DX -1 [1]-11; *and* Tactics (H) IQ-1 [2]-12.
Background Skills: *Five* of Brawling or Shield, both (E) DX [1]-12; Dancing (A) DX-1 [1]-11; Current Affairs/TL3 or Gambling, both (E) IQ [1]-13; Connoisseur, Fast-Talk, Falconry, Merchant, Smuggling, or Streetwise, all (A) IQ-1 [1]-12; Literature or Philosophy (any), both (H) IQ-2 [1]-11; or Intimidation (A) Will-1 [1]-12.

* Multiplied for self-control number; see p. B120.

Customization Notes

Merchants should put additional points into Accounting, Diplomacy, Merchant, Smuggling, and Area Knowledge. Imperial Navy and pirates should increase their weapon skills and Tactics. Both would benefit from Danger Sense [15] and Fearlessness [2/level]. Captains in the Imperial Navy have Patron (Imperial Navy; 9 or less; Equipment, +100%) [50]. Explorers should improve Cartography and Navigation, as well as add languages and Survival. Barbarians will need to buy Latin (Broken *or* Accented) [2 or 4], Cultural Familiarity (Imperial) [1], and Social Stigma (Barbarian) [-5]. Female sky captains should take Social Stigma (Second-Class Citizen) [-5].

Sky Crewman

115 points

While regular navies may conscript their crew, those who serve on sky galleys are carefully chosen. The dangers, the privations, and the rewards are enough to justify the elite status of the sky galley crewmen. However, the main factor driving the quest of excellence is the cost of even the smallest sky galley. The expense of the Elixir of Daedalus combined with the high price tag of a normal galley and the special construction methods needed to produce a sky galley means that those who serve aboard these magnificent ships had best be up to the task.

The life of a sky galley crewman is a difficult one. Years spent away from home, especially for those who take service aboard an interplanetary-bound vessel, means that normal family relationships are hard to build. Living in close confines and often on limited (and tasteless) rations wears away at the psychology, and exposure to foreign and alien environments beats apart the body. However, serving aboard a sky galley is a route to wealth and social advancement, so there is never a dearth of applicants.

Attributes: ST 12 [20]; DX 12 [40]; IQ 10 [0]; HT 12 [20].
Secondary Characteristic: Dmg 1d-1/1d+2; BL 29 lbs; HP 12 [0]; Will 10 [0]; Per 12 [10]; FP 12 [0]; Basic Speed 6 [0]; Basic Move 6 [0].
Advantages: Ally (Crewmate; Built on 100%; 15 or less) [15]; Fit [5]; *and* Social Regard 1 (Sky Sailor) [5]. ● 10 points chosen from among Absolute Direction [5], Acute Vision [2/level], Fearlessness [2/level], or Less Sleep [2/level].
Disadvantages: Duty (Your ship; 15 or less; Extremely Hazardous) [-20]. ● *One* of Code of Honor (Pirate's) [-5] *or* Code of Honor (Professional) [-5]. ● -15 points chosen from among Chummy [-5] *or* Gregarious [-10], Compulsive Carousing [-5*], Compulsive Gambling [-5*], Curious [-5*], Intolerance [-5 or -10], Lecherousness [-15*], On the Edge [-15*], Overconfidence [-5*], Sense of Duty (Crew, ship, or both) [-5], or Workaholic [-5].
Primary Skills: Artillery/TL3 (Catapult) (A) IQ+1 [4]-11; Climbing (A) DX [2]-12; Crewman/TL3 (Sky Galley) (E) IQ [1]-10; Knife (E) DX [1]-12; Knot-Tying (E) DX [1]-12; Savoir-Faire (Sky Sailors) (E) IQ [1]-10; Shield (E) DX [1]-12; Shortsword (A) DX [2]-12; Spear (A) DX [2]-12; *and* Thrown Weapon (Spear) (E) DX [1]-12.
Secondary Skills: Area Knowledge (Ports Along Route) (E) IQ [1]-10; Brawling (E) DX [1]-12; Dropping (A) DX [2]-12; *and* Sewing/TL3 (E) DX [1]-12. ● *Two* of Piloting/TL3 (Sky Galley) (A) DX [2]-12; Carpentry, First Aid/TL3, or Leatherworking/TL3, all (E) IQ+1 [2]-11; or Armory/TL3 (Body Armor, Heavy Weapons, Melee Weapons, *or* Missile Weapons), Navigation/TL3 (Air), Cartography/TL3, or Cooking, all (A) IQ [2]-10.
Background Skills: *Five* of Bow (A) DX-1 [1]-11; Current Affairs/TL3 (any) (E) IQ [1]-10; Astronomy/TL3 (Observational), Fast-Talk, Gambling, Smuggling, or Streetwise, all (A) IQ-1 [1]-9; Carousing (E) HT [1]-12; or Intimidation (A) Will-1 [1]-9.

* Multiplied for self-control number; see p. B120.

Sky Marine

128 points

The marines who serve aboard sky galleys, both civilian and Imperial Navy, are seen by the general populace and by the sailors they serve with as being more than a bit mad. Combat aboard a sky galley is a dangerous enterprise as one misstep can send a man plummeting to the ground or drifting off into the void. That marines often have to jump or swing from one ship to another, face off against that ship's defenders, and do so hundreds or thousands of feet above the ground is seen as sheer madness. Sky marines would have it no other way.

In the Imperial Navy, sky marines are an all-volunteer elite branch of the legions. Civilian and pirate ships try to attract ex-legionaries or former Imperial Navy marines to serve aboard them. Losses due to combat, accident, and alien environments take their toll. All too often, a merchant cuts corners and simply hires anyone good with a sword. After a few journeys, recruits who have what it takes to be a sky marine become hard-bitten and skilled warriors; those who don't more than likely end up as a red smear across the terrain.

Attributes: ST 14 [40]; DX 11 [20]; IQ 10 [0]; HT 12 [20].
Secondary Characteristic: Dmg 1d/2d; BL 39 lbs; HP 14 [0]; Will 10 [0]; Per 10 [0]; FP 12 [0]; Basic Speed 5.75 [0]; Basic Move 5 [0].
Advantages: Ally (Crewmate; Built on 100%; 15 or less) [15]; Combat Reflexes [15]; Fit [5]; *and* Social Regard 1 (Sky Sailor) 1 [5]. ● 15 points chosen from among Daredevil [15], Fearlessness [2/level], High Pain Threshold [10], Less Sleep [2/level], or Luck [15].
Disadvantages: Duty (Your ship; 15 or less; Extremely Hazardous) [-20]. ● *One* of Code of Honor (Pirate's) [-5] *or* Code of Honor (Professional) [-5]. ● -15 points chosen from among Chummy [-5] *or* Gregarious [-10], Compulsive Carousing [-5*], Compulsive Gambling [-5*], Curious [-5*], Intolerance [-5 or -10], Lecherousness [-15*], On the Edge [-15*], Overconfidence [-5*], Sense of Duty (Crew, ship, or both) [-5], or Workaholic [-5].
Primary Skills: Acrobatics (H) DX-1 [2]-10; Brawling (E) DX [1]-11; Jumping (E) DX+1 [2]-12; Knife (E) DX [1]-11; Shield (E) DX [1]-11; Shortsword (A) DX [2]-11; Spear (A) DX [2]-11; *and* Thrown Weapon (Spear) (E) DX [1]-11.
Secondary Skills: Area Knowledge (Ports Along Route) (E) IQ [1]-10; Artillery/TL3 (Catapult) (A) IQ+1 [4]-11; Climbing (A) DX [2]-11; Crewman/TL3 (Sky Galley) (E) IQ [1]-10; Dropping (A) DX [2]-11; Knot-Tying (E) DX [1]-11; *and* Savoir-Faire (Sky Sailors) (E) IQ [1]-10. ● *Two* of Armory/TL3 (Body Armor, Heavy Weapons, Melee Weapons, *or* Missile Weapons) (A) IQ [2]-10; Bow (A) DX [2]-11; Cooking (A) IQ [2]-10; or First Aid/TL3 (E) IQ+1 [2]-11.
Background Skills: *Five* of Current Affairs/TL3 (any) (E) IQ [1]-10; Astronomy/TL3 (Observational), Fast-Talk, Gambling, Smuggling, or Streetwise, all (A) IQ-1 [1]-9; Carousing (E) HT [1]-12; or Intimidation (A) Will-1 [1]-9.

* Multiplied for self-control number; see p. B120.

ABOUT THE AUTHOR

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HUNTER-GATHERER

BY STEPHEN DEDMAN

This adventure for a group of spacefarers can be easily adapted to fit into a campaign at almost any tech level from a higher-tech "atomic horror" TL7 on up.

The action begins when astronomers plot the trajectory of an asteroid known only as 1955 Omega, and predict that it will pass within 33,000 miles of the Earth's surface – nearer than the orbit of geosynchronous satellites, and less than a sixth of the distance from Earth to the moon. In an Earth-centered campaign, this would automatically be enough to make it an appealing prospect for a space program unable (for technical or economic reasons) to send a crew to Luna. In an interstellar campaign, replace "Earth" with a populated but low-tech or resource-poor planet where the only operational spaceship belongs to the PCs.

A few weeks before 1955 Omega intersects Earth orbit, radio astronomers detect a faint but apparently artificial radio signal coming from the asteroid – an SOS or similar distress call, seemingly indicating that humans (or something familiar with human communication) may be there. The signal lasts 57 seconds, and is never repeated.

This makes the asteroid – renamed "Welles" by the astronomer who first detected the signal – even more interesting to the public. Unfortunately, Welles is extremely dark (albedo 0.03) and has a low radar reflectivity, making it difficult to measure accurately until it nears Earth. When it does, it becomes apparent that it's close to half a mile across, but not spherical – possibly disc-like. It's also less dense than would be expected, even for a carbonaceous chondrite containing little or no metal; its total mass is no more than 100,000 tons. Soon, people begin speculating that it's both saucer-shaped and hollow, and the tabloid media are no longer predicting it will crash into Earth. Instead, they fear that it will land.

THE PHANTOM PLANET

If unmanned probes are sent toward Welles for a preliminary look, they see that the "asteroid" is a flattened cylinder, approximately 900' long, 600' wide and 300' high (SM +12), slowly tumbling end-over-end as it travels. The exterior has been badly pitted by minor meteor impacts, but it is still roughly symmetrical. The array of hexagonal black solar panels covering most of the surface resembles the scaly skin of an huge reptile.

Welles is not a complete spaceship, but only a large part of the central hull of an automated *Hunter-Gatherer* starship. The front and rear hulls, which held the stardrive, main power plant, control room, hangar bay for atmospheric shuttles, and other habitats for different creatures, were ejected or destroyed centuries before. The remaining section holds eight creature habitats, the necessary life support systems to keep the creatures alive (including artificial gravity), and three turret-mounted tractor beams used primarily to defend against collisions, but which also bring in life forms for study. Most of its interior is pressurized but largely empty.

The *Hunter-Gatherer* was an automated craft designed to collect animals from habitable worlds – specifically, predators large enough to be dangerous to human-sized creatures, and their chosen prey. (Whether this was done for a xenoecology research project or for the arenas of a sadistic but technologically advanced culture is for the GM to decide. In either case, the onboard computer is programmed not to harm or detain species that can demonstrate sapient behavior.)

What is this ship's purpose?

Any probe or ship coming within 200 miles of Welles on a collision course, or within 20 miles on any trajectory, will be targeted by its tractor beams (skill level 14). If the vehicle is captured, it will be scanned for life forms, using a TL12^ superscience multiscanner (*GURPS Spaceships,* p. 45) with Electronics Operation/TL12 (Sensors)-14. If the scans are negative for anything larger than a microorganism, the probe will be deflected out into space, unharmed. Capsules between SM -2 and SM +8 that contain more than 1 lb. of animal life will be captured if they come into range, and drawn into Habitat #1 (see p. 28). Vehicles larger than SM +8 will be kept at a safe distance with tractor beams (if possible), but no other action will be taken.

The habitats inside Welles are thoroughly insulated; radio contact between anything outside and anything inside will be intermittent at best (in other words, whenever the GM wants signals to get through). If a scientific explanation is required, assume that micrometeoroid impacts create thin spots in the outer walls, allowing radio contact if the transmitter and receiver are correctly aligned and only for the short time it takes for the ship to repair itself – hence the 57-second distress call from Habitat #8.

Welles' trajectory takes it from the asteroid belt across the orbits of Mars, Earth, Venus, and Mercury every 451 days, but it last passed close to Earth nine years ago and won't be near again for another 38 years after this transit. Once it has been identified as artificial, space agencies will be even more eager not to miss the opportunity to send a human crew to explore it.

Front Hull	System
[1]	Organic Armor (dDR 30).
[2]	Solar Panel Array.
[3-6, core]	Reconfigurable Systems (Cargo Space, Habitat, or Open Space; Habitats #1-3).
Central Hull	**System**
[1]	Organic Armor (dDR 30).
[2-5]	Reconfigurable Systems (Cargo Space, Habitat, or Open Space; Habitats #4-6).

Central Hull	System
[6]	Science Array (comm/sensor 15).
[core]	Control Room (C12 computer, comm/sensor 13, and no control stations).
Rear Hull	**System**
[1]	Organic Armor (dDR 30).
[2-5]	Reconfigurable Systems (Cargo Space, Habitat, or Open Space; Habitats #7-8).
[6!]	Medium Battery (hidden; three turrets with 10 GJ tractor beams).

TL	Spacecraft	dST/HP	Hnd/SR	HT	Move	LWt.	Load	SM	Occ	dDR	Range	Cost
12^	Hunter-Gatherer	300	–	13	–	100,000	*	+12	*	30	0	–

    * Depends on current configuration.

ONE SMALL STEP

Approaching Welles in a ship smaller than the empty habitat space inside the *Hunter-Gatherer* (450' × 300' × 150') causes the wandering ship to attempt to pull them inside with its tractor beams (which are spaced around the hull so that two can be trained on any object in range). The hull can reconfigure into a membrane airlock up to 450' by 300' (dDR 1), then reseal itself into a dDR 3 wall, trapping the vehicle inside Habitat #1. If this happens, the PCs must prove their sapient status to the *Hunter-Gatherer* to escape – preferably before their life support runs out; see *The Meeting of True Minds* (p. 32).

If the PCs' ship is larger than SM +8 and/or stays at what the *Hunter-Gatherer* considers a non-threatening distance, it is scanned but not targeted. Any PCs who emerge from their ship and approach Welles are grabbed by the tractor beam and pulled into Habitat #1 through a membrane airlock (a hexagon 9' across). Once the airlock has closed (taking no more than one minute to cycle through, unless the object is able to counteract the tractor beams with its own thrusters), radio contact with anyone inside the *Hunter-Gatherer* is cut off.

For the astronauts who are tethered to their ship, the *Hunter-Gatherer*'s airlock doors will not close behind them – but none of the interior airlocks will open for them, either, unless the doors are able to close freely behind them.

WELCOME TO HABITAT #1

Habitat #1 replicates the conditions outside as nearly as possible – hard vacuum, unfiltered sunlight, microgravity.

Say Hello to My Little Friend

The culture that built the *Hunter-Gatherer* is not pacifist, but it does regard ranged weapons as barbaric and unsportsmanlike. For this reason, the *Hunter-Gatherer* interprets attacks on the ship by ranged weapons as equipment malfunctions, and automatically responds by sending out a swarm of utility fog (*GURPS Ultra-Tech,* p. 70) to "fix" the weapon. These fasten themselves to the item, instantly disabling it, then redesign it (1d+1 minutes the first time they encounter a particular weapon; one minute once they're familiar with it).

Slugthrowers

Any slugthrower is converted into a combination of reactionless hand thruster (*GURPS Ultra-Tech,* p. 231), rocket piton (*GURPS Ultra-Tech,* p. 76), splat piton (*GURPS Ultra-Tech,* p. 76), and monowire spool (*GURPS Ultra-Tech,* p. 82), intended as a combined tether and zero-G propulsion unit.

Instead of glue, the converted slugthrower uses universal molecular bonder technology (*GURPS Ultra-Tech,* p. 84). One control activates the reactionless thruster; another fires the piton; a third reels the wielder in at (2 divided by local gravity) yards/second (maximum 10); a fourth disconnects the piton from the surface to which it has bonded. It does not require reaction mass; the thruster has enough charge for 42 minutes of acceleration. Four hours in normal sunlight recharges the batteries. If used as a weapon, it has the same statistics as a conventional rocket piton, but forcibly removing it does 1d+1 cutting damage.

Beam Weapons

Any beam weapon will be converted into a medium ladar (*GURPS Ultra-Tech,* p. 64) and laser searchlight (*GURPS Ultra-Tech,* p. 74) with a variable beam – the equivalent of a penlight (*GURPS Ultra-Tech,* p. 74) at the lowest setting, a large laser communicator (*GURPS Ultra-Tech,* p. 44) at maximum power and tightest focus. It can be used to dazzle as a laser searchlight (*GURPS Ultra-Tech,* p. 113), or blind as a military ladar (*GURPS Ultra-Tech,* p. 114), and set for any color from UV to IR. The battery provides power for 6,000 dazzling shots or 24 hours continuous use as a searchlight or ladar. It takes four hours normal sunlight to recharge.

The walls, floor, and curved ceiling of the habitat are black, with dDR 1. A thorough search reveals three slightly recessed hexagons, each 9' across: one in each of the interior walls (east and south), and one in the floor. Apart from these, and anything the PCs bring with them, the chamber is empty and completely featureless.

These hexagons are membrane airlocks, leading to habitats #2, #3 and #5, respectively. They will open if touched, cycling one person through at a time, taking four turns per individual (though they will take two at a time if the individuals hold on to each other). Airlocks in the floor of one habitat open into the floor of another; habitats 5-8 are upside-down from the perspective of habitats 1-4. Airlocks set into the walls are 3d+3 yards from the floor; treat the walls as vertical stone walls for Climbing purposes.

Any attempt to damage the *Hunter-Gatherer*'s hull from the *outside* with guns or missiles is deflected by the tractor beams. Hand-to-hand attacks are shrugged off (the hull repairs itself at a rate of 5 points of DR per second). Only beam weapons doing more than 1 dDR cause the *Hunter-Gatherer* to actively defend itself: If using its tractor beams to try to propel the enemy craft away doesn't stop the attacks, it responds by firing a capsule of utility fog at the ship (see *Say Hello to My Little Friend*, p. 28) with orders to neutralize any weapons.

Should the explorers purposely or accidently damage the hull from the *inside*, or damage any of the interior surfaces, a microbot swarm comes out to repair any significant damage (5 points or more). Otherwise, the scratch is ignored.

UPPER LEVEL

Of the eight habitats in Welles, two – #1 and #8 – simulate the conditions of empty space. The PCs (and possibly their ship) will start in #1; the source of the signal is in #8.

The *Hunter-Gatherer* uses replicator nanotechnology (built into its hull) to re-create the creatures in Habitats #2 to #7 whenever they die. However, it will leave the corpse for several days, to allow predators and scavengers to feed, before generating a replacement.

If a PC dies while in the *Hunter-Gatherer* and his body is left in any of the habitats except for #4 and #7, the ship will take 1d+1 hours to recognize that the biochemistry does not match the environment, and will remove the corpse for study (if the corpse of any PC is left in habitat #4 or #7, the ship waits 1d+1 days, rather than hours, to study the remains). The ship will not revive the dead PC, but it will attempt to communicate with any survivors; see *The Meeting of True Minds* (p. 32).

Habitat #1

This area is described in *Welcome to Habitat #1* (p. 28).

Habitat #2

Habitat #2 simulates a methane swamp on a slowly rotating, moonless, 0.9G standard ice world, lit by an M6 (red) sun (which will set soon after the PCs enter the habitat, leaving them in darkness). The membrane airlock in the floor, leading to Habitat #6, is buried under 2' of mud. A membrane airlock in the southern cliff-face leads to Habitat #4. One in the western cliff-face leads back into Habitat #1.

The climate is very cold (p. B430), and the dense (1.3 atm) atmosphere is 92.9% nitrogen and 6.4% CO_2, with traces of hydrocarbon haze (-1 to Vision rolls). Life is hydrocarbon-based. Terrain is very bad (p. B351): a reed swamp with small outcrops of mud and rock. The largest plants resemble shoulder-high tree ferns with extensive root networks; slippery moss-like plants cover most exposed rocks and tree-trunks. Most of the animals are small and harmless, similar to snails or worms; only two are large enough to cause problems.

Mireling

Mirelings are browsing herbivores, though omnivorous enough to eat carrion when they find it. They resemble sea-cucumbers or gigantic hairless caterpillars, growing up to 3' long and weighing up to 15 lbs. They will normally avoid anything that moves (except during the mating season, when the three sexes get together), but if handled or attacked, they spray a corrosive liquid. If carried into an oxygen-rich atmosphere, they become Fragile (Flammable).

ST: 4	**HP:** 4	**Speed:** 4.00
DX: 9	**Will:** 10	**Move:** 2
IQ: 1	**Per:** 10	**Weight:** 4-10 lbs.
HT: 11	**FP:** 11	**SM:** -3
Dodge: 7	**Parry:** N/A	**DR:** 0

Corrosion Attack (15): Contact agent emanated in a one-yard radius. Those who fail to resist take 1d corrosion damage. It can only do this once per day. Reach C.

Traits: Acute Taste and Smell 4; Amphibious; Blindness; Decreased Time Rate 1; Invertebrate; Regeneration (Slow); Vermiform; Wild Animal.
Skills: Swimming-15.

Swampshell

Swampshells, the apex predators in their environment, burrow into the marsh and wait for something to wander onto its tentacles. The solitary specimen in the habitat is a rough sphere 4' in diameter, with six tentacles it can retract inside its shell. The tentacles have a 6' reach, and are tipped with trowel-shaped digging claws. If it senses something moving within its grasp, it lashes out, grabbing hold of its prey if it can, then tries to drag it (contest of ST) into the muddy water and toward its beak. Any tentacle that takes damage is quickly retracted.

The swampshell waits near the center of Habitat #2, under three feet of water; until it attacks, it is indistinguishable from a round rock. It is sluggish but not sessile, being able to use its tentacles to drag itself through the mud.

ST: 13	**HP:** 13	**Speed:** 2.00
DX: 9	**Will:** 11	**Move:** 1
IQ: 2	**Per:** 11	**Weight:** 200 lbs.
HT: 11	**FP:** 11	**SM:** 0
Dodge: 5	**Parry:** N/A	**DR:** 1

Cutting Strikers (11): 1d+1 cut. Reach C.
Sharp Beak (11): 1d-1 large piercing. Reach C.

Traits: Acute Hearing 2; Bad Grip 2; Blindness; Constriction Attack; DR 5 (Partial, Torso); DR 2 (Partial, Strikers); DR 1 (Partial, Tentacles); Decreased Time Rate 1; Extra Arms 4 (Extra-Flexible; Long, SM 1); Injury Tolerance (No Head, No Neck); No Legs (Aquatic; Rolls or Slithers); Regeneration (Slow); Wild Animal.
Skills: Brawling-11; Wrestling-11.

Habitat #3

Habitat #3 simulates a desert environment on a large (1.1G), volcanically active greenhouse world, the moon of a gas giant lit by an F4 (white) sun. The membrane airlock in the floor, leading to Habitat #7, is set into a rock and clearly visible. A membrane airlock in the northern cliff-face leads back to Habitat #1. One in the eastern cliff-face leads to Habitat #4.

The climate is infernal (p. B434), and the dense (1.4 atm) atmosphere is 97% CO_2 contaminated with sulfur compounds. Surface temperature ranges from 303°F at night to 450°F at noon; days are 8.6 hours long. Life is sulfuric acid/silicon-based. On the bright side, the Terrain is good (p. B351): old lava plains and sparsely vegetated hard-packed desert sand, both dark gray. Most of the animals are harmless, shy, and live underground, with one notable exception.

A xenobiologist's dream!

Sandrover

Sandrovers are flying chasers and scavengers. Four (two breeding pairs) scour the habitat for carrion or anything that emerges from its burrow to feed. Their bodies are covered with black fur; their wings, long necks, and brainless heads are hairless, leathery and pale gray. They each have two red, catlike eyes set in their chests, just below the shoulders and near their brains.

Like most animals in their world, sandrovers are extremely fast but not particularly smart. The best way to avoid being attacked by them is to move slowly (Move 1) – they locate their prey by sensing motion, and carrion by smell. Anything that runs will be chased down and attacked by the pack, regardless of its size.

ST: 4	**HP:** 4	**Speed:** 8.00
DX: 14	**Will:** 10	**Move:** 4 (Ground)/32 (Air)
IQ: 3	**Per:** 14	**Weight:** 15-20 lbs.
HT: 10	**FP:** 10	**SM:** -2
Dodge: 11	**Parry:** N/A	**DR:** 1

Sharp Beak (15): 1d-6 large piercing. Reach C.
Sharp Claws (15): 1d-6 cutting. Reach C.

Traits: Acute Vision 4; Acute/Smell 2; Enhanced Move 1 (Air; Move 32); Flight (Winged); No Fine Manipulators; Peripheral Vision; Temperature Tolerance 2; Wild Animal.
Skills: Brawling-15; Stealth-13; Tracking-14.

Habitat #4

Habitat #4 simulates a 0.7G terrestrial garden world. The membrane airlock in the floor (covered with a thin layer of leaf litter; -9 to Vision rolls, but requiring little effort to clear), leads to Habitat #8. A membrane airlock in the eastern cliff-face leads to Habitat #3. One in the northern cliff-face leads back into Habitat #2.

The climate is warm, and the standard (0.83 atm) atmosphere is 78% nitrogen, 19% oxygen, and 2% CO_2, with traces of other elements: mildly toxic due to moderate CO_2 and alien pollens. Humidity is 67%.

Life is water-based. Terrain is bad (p. B351): a green rain-forest with a dense canopy. It is night (-8 to Vision rolls); unfamiliar constellations and two small moons can be seen through the trees. The trees resemble Terran cypresses, but with broader leaves and a pale papery bark.

As well as worms and grubs, there are plenty of wingless arthropods, mostly eight-legged and resembling insects closely enough to require Fright Checks from anyone with the wrong phobia; they range from mite-sized parasites to giant hallucipedes. Apart from these, the largest creatures are warm-blooded reptiloids – mostly small and harmless, except for the ones listed below.

Ngoloko

Ngolokos are browsing herbivores, and the favorite prey of the springwurms. They resemble short-necked brachiosaurs, but with larger heads and clawed toes. They normally walk on all fours, but can rear onto their hind legs to reach food 8' from the ground.

Two adults and a juvenile are sleeping near the membrane airlock in the floor. They are not aggressive (their usual method of dealing with springwurm attacks is to try to dislodge or crush them by rolling over), but will attack if disturbed. PCs using the airlock should roll Stealth to avoid waking them.

ST: 14	**HP:** 14	**Speed:** 5.00
DX: 10	**Will:** 11	**Move:** 5
IQ: 3	**Per:** 11	**Weight:** 400 lbs.
HT: 12	**FP:** 12	**SM:** +1
Dodge: 11	**Parry:** N/A	**DR:** 1

Blunt Claws (12): 1d+2 crushing. Reach C.

Traits: Cold Blooded; Enhanced Dodge 3; Hard of Hearing; No Fine Manipulators; Peripheral Vision; Semi-Upright; Wild Animal.
Skills: Brawling-12.
Notes: The juvenile is ST 7; SM 0, 3'; 120 lbs.

Hallucipede

Hallucipedes resemble bright-yellow millipedes with spines on their backs and eye spots on each segment (real eyes on the front and back). They are primarily scavengers, using their venomous spikes to deter predators and attract mates. The largest two in the habitat (a breeding pair) are approximately 9' long; smaller ones abound. Unlike the reptilians, they are as likely to be active at night as during the day.

ST: 4	**HP:** 4	**Speed:** 6.00
DX: 11	**Will:** 10	**Move:** 6
IQ: 1	**Per:** 10	**Weight:** 10-20 lbs.
HT: 11	**FP:** 11	**SM:** -1
Dodge: 9	**Parry:** N/A	**DR:** 1

Short Spines (7): 1d-2 impaling plus Affliction 1 (HT; Irritant; Severe Pain). Roll to hit *each* foe in close combat with the creature once per turn, as a free action; roll at +2 against foes who attacked from behind. Foes who grapple or slam are hit immediately and automatically; those who slam take maximum damage. Reach C.

Traits: Acute Taste/Smell 4; Bad Sight (Nearsighted); Peripheral Vision; Vermiform; Wild Animal.
Skills: Brawling-11.

Springwurm

Springwurms are pouncing hunters: lizard-like arboreal creatures with chameleon-like camouflage and prehensile tails. A springwurm usually attacks by dropping onto its prey, stabbing with its fangs and holding on with its claws until the victim dislodges it or dies.

Springwurms move and react quickly, except at low temperatures, and rarely hunt at night. They dislike staying on the ground any longer than necessary, and will climb the nearest tree or tree-like object as soon as they have a chance. The habitat contains two (a breeding pair), sleeping near a nest that holds four eggs.

ST: 9	**HP:** 9	**Speed:** 7.00
DX: 13	**Will:** 12	**Move:** 8
IQ: 4	**Per:** 12	**Weight:** 25-30 lbs.
HT: 11	**FP:** 11	**SM:** 0
Dodge: 11	**Parry:** N/A	**DR:** 1

Fangs (14): 1d-3 imp; Reach C.

Traits: Acute Hearing 4; Brachiator; Catfall; Chameleon 6; Clinging; Cold Blooded; Combat Reflexes; Extra Arm 1 (Extra-Flexible; Long, SM 1); Gluttony (12); Quadruped; Super Climbing 2; Super Jump 1; Wild Animal.
Skills: Acrobatics-16; Brawling-14; Climbing-16; Jumping-16; Stealth-14.

LOWER LEVEL

The explorers can only reach the lower level through one of the upper-level rooms. See the individual habitats for door locations and room connections.

Habitat #5

Habitat #5 simulates conditions on a "super-Earth" (4.1G) large ice world, the outermost planet of an F1 (yellow-white) star. The membrane airlock in the floor leads back to Habitat #1; one in the eastern cliff-face leads to Habitat #6; one in the southern cliff-face leads into Habitat #7. Terrain is bad (p. B351): flat but slippery ice (frozen hydrochloric acid).

The climate is cold (p. B430), and the very dense (2.6 atm) atmosphere (p. B430) at the surface is 94% chlorine with traces of chlorine compounds. The "breathable" chlorine layer on their homeworld is shallow, almost like a heavy gaseous sea; most of the atmosphere is helium. All life forms in the environment are chlorine-based and harmless to humans. Though the largest are two yards across, they are less than a quarter-inch thick, and smaller ones are paper-thin.

The greatest hazard in Habitat #5 comes from the gravity: PCs from a 1G world without the Improved G-Tolerance advantage will be at -7 to IQ and HT, -15 to DX and DX-based skills (see p. B350). The airlocks in the walls are 14 yards from the floor — a fall from that height would be equivalent to falling 55 yards in 1G (35 yards/second; see p. B431).

Habitat #6

Habitat #6 is an aquarium, simulating an ammonia ocean, 140' deep, on a 1.2G large ammonia world (corrosive, toxic, and suffocating; see p. B429) orbiting an M4 (red) sun. The 10' of "air" at the top is mostly helium (1.1 atm); temperatures range from -100°F to -60°F. The membrane airlock in the floor leads to

Habitat #2. A membrane airlock in the southern cliff-face leads to Habitat #8. One in the western cliff-face leads into Habitat #5.

Ammonia-based life abounds in the sea, but most of the creatures try to avoid anything as hot as a human – with two exceptions.

Hellamouth

Hellamouths are filter feeders – enormous blind swimmers with huge triangular mouths that never close. Inside their mouths are three tongue-like tentacles covered with sharp teeth, for chopping up anything too big to swallow but that didn't swim out of their way. The 30' specimen in the aquarium is a juvenile (a fully-grown adult wouldn't be able to turn around in such a small habitat), but its mouth is large enough to engulf a human whole. Hellamouths do not chase prey, but neither will they avoid anything smaller than they are.

ST: 45	**HP:** 45	**Speed:** 5.00
DX: 9	**Will:** 10	**Move:** 5
IQ: 2	**Per:** 10	**Weight:** 13,000 lbs.
HT: 12	**FP:** 12	**SM:** +4
Dodge: 8	**Parry:** N/A	**DR:** 1

Sharp Teeth (9): 5d-1 cut; Reach C.

Traits: Aquatic; Blindness; Detect Electrical Fields; Invertebrate; Pressure Support 1; Scanning Sense (Sonar; Extended Arc, 240°); Sharp Teeth; Ichthyoid; Wild Animal.
Skills: Survival (Ocean)-14.

Sunray

Sunrays float just below the surface of the sea, getting much of their energy from photosynthesis – though, like hellamouths, they also filter-feed on tiny creatures. They are flat and approximately circular, growing up to 3' in size.

They have no fear of predators, due to a defense that deters most: an electric charge, doing 1d burn damage.

ST: 3	**HP:** 3	**Speed:** 5.00
DX: 9	**Will:** 10	**Move:** 5
IQ: 2	**Per:** 10	**Weight:** 9 lbs.
HT: 12	**FP:** 12	**SM:** 0
Dodge: 8	**Parry:** N/A	**DR:** 1

Electric Attack (10): 1d electrical burning. Acc 3, Range 10/100. Takes 15 seconds to recharge.

Traits: Aquatic; Blindness; Detect Electrical Fields; Invertebrate; Reduced Consumption 2 (Food Only); Scanning Sense (Sonar; Extended Arc, 240°); Ichthyoid; Wild Animal.
Skills: Survival (Ocean)-14.

Habitat #7

Habitat #7 simulates a green forest on a 1G terrestrial garden world lit by a G2 (yellow) sun. The membrane airlock in the floor (covered with a thin layer of leaf litter; -9 to vision rolls, but requiring little effort to clear) leads to Habitat #3. A membrane airlock in the eastern cliff-face leads to Habitat #8. One in the northern cliff-face leads into Habitat #5.

The climate is warm, and the standard (1 atm) atmosphere is 67% nitrogen, 31% oxygen, and 2% CO_2, with traces of other elements: mildly toxic due to high oxygen content and alien pollens. Humidity is 51%.

Life is water based, but with the chirality (handedness) of the molecules reversed from those of Earth life; see Unusual Biochemistry (p. B160) for any exposure to the biochemistry of life forms in Habitat #7 (e.g., the toxin on the dule tree spines). Terrain is bad (p. B351). The largest trees resemble fig trees with white globular fruit; the ground cover is similar to maidenhair ferns, punctuated with colorful flowers. The largest animals currently living in the habitat resemble butterflies with 11" black wings (harmless). The apex predator is a dule tree, a sessile carnivorous plant.

Dule Tree

Dule trees resemble barrel cacti, growing up to 7' tall and festooned with 2" barbed thorns that inject a digestive fluid. What makes these plants particularly dangerous is their rudimentary telepathic brains, which can stimulate their victims' pleasure centers and cause them to see the tree as something enormously desirable.

Animals typically see dule trees as either food or a mate, and will come close enough to be stuck on the spikes. Astronauts who fail to defend against the telepathic attack usually mistake the tree for an alluring member of the opposite sex who is greatly in need of help; those who are more strongly motivated by Addiction, Gluttony, Greed, Obsession, or other desires will see something even more to their liking.

Most creatures in the dule tree's environment are too small and weak to escape from the barbed spines; disengaging requires a DX roll, and failure causes another 1d-2 cutting damage.

ST: 8	**HP:** 8	**Speed:** 3.00
DX: 0	**Will:** 10	**Move:** 0
IQ: 2	**Per:** 10	**Weight:** 120 lbs.
HT: 12	**FP:** 12	**SM:** 0
Dodge: 0	**Parry:** N/A	**DR:** 2

Telepathic Attack (10): Resist with Will or acquire Severe Delusion about dule tree; takes range penalties (p. B550).
Innate Attack (10): 1d toxic contact agent; 1-minute onset. Reach C.
Short Spines (10): 1d-3 imp. Reach C.

Traits: Blindness (Aware of sunlight); Detect Intelligence; Injury Tolerance (Homogenous); No Manipulators; No Legs (Sessile).
Skills: Survival (Ocean)-14.

Habitat #8

Habitat #8 is identical to Habitat #1, except that it doesn't contain anything the PCs may have left in #1, and does hold the radio beacon that attracted their attention. In an Earth-based campaign, this will be an unreported lost space mission, launched by the Nazis in WWII or the Soviet Union in the 1950s, its once-living passengers now dead. In an interstellar era, it may be an escape pod with passengers still in hibernation or stasis.

THE MEETING OF TRUE MINDS

When (if) the explorers reach Habitat #8, the *Hunter-Gatherer*'s computer is sufficiently convinced of their intelligence that it attempts to communicate with them. It projects a holographic bar in front of them, ranging from far ultraviolet to EHF radio waves (10 nanometers to one centimeter wavelengths). If the PCs mark the extent of their visual range by "touching" the bar, the computer continues to communicate with holograms in the visual spectrum.

The next test is mathematical. It projects sequences of numbers in binary (using large bright spheres for 1 and empty rings for 0). PCs should roll on Mathematics+3 or IQ-2 to recognize these as binary numbers written right to left, then again on Mathematics to identify the sequences (e.g., primes, Fibonacci numbers, perfect squares, etc.) and predict the next in the series.

The final test is an array of 16 holographic images of different planets: if the PCs correctly identify theirs (Astronomy+5), the *Hunter-Gatherer* opens doors in the roof of Habitat #8 (and Habitat #1, if the PCs left their spaceship or other equipment there) and uses tractor beams to return the PCs to their ship and the ship into a safe position for re-entry, then silently continue on its way.

Emergency Procedures

This adventure is essentially a dungeon crawl in space, with a deadline imposed by the astronauts' air tanks. Vacc suits that are punctured should lose some air before they're patched, and the GM may delay the PCs' escape from the *Hunter-Gatherer* until at least one character is in danger of running out of oxygen. Conversely, the *Hunter-Gatherer* may attempt to communicate with the PCs just before this deadline *if* they've demonstrated their intelligence in some way (lighting a fire in one of the oxygen-rich habitats would be one way; slaughtering everything in sight isn't).

RETURNING HOME

The party's reward for this adventure should come in the form of Reputation, which can be turned into a high-paying career with appropriate use of Writing or Public Speaking skills. Whether anything the PCs collect from the *Hunter-Gatherer* can be sold, is for the GM to decide (NASA astronauts didn't get to sell their moon-rocks, but privately funded crews might).

Suggested Reputation bonuses: +1 for going and returning alive; +1 for bringing back photos or video; +1 for retrieving the capsule from Habitat #8; +1 for every sample of a previously unknown form of biochemistry; +1 for any ultra-tech alien artifact. Maximum bonus +4, for all people on Earth (in an Earth-based campaign) or small groups (all xenobiologists, or all inhabitants of the star system) in an interstellar campaign. This Reputation bonus can be modified downward if interstellar feats of derring-do are everyday occurrences.

ABOUT THE AUTHOR

Stephen Dedman is the author of **GURPS Dinosaurs** and the novels *Shadowrun: A Fistful of Data; The Art of Arrow Cutting; Shadows Bite*; and *Foreign Bodies*. He has also written a number of *Pyramid* articles and other RPG material, plus more than 100 short stories published in an eclectic variety of magazines and anthologies.

He is co-owner of Fantastic Planet, a science fiction and fantasy bookshop in Perth, Australia. For more information, check out **stephendedman.com.**

Random Thought Table

Home Is a Starfaring Castle

by Steven Marsh, *Pyramid* Editor

It's entirely likely that my earliest memories of the Batcave stem from Batman's campy television show from the 1960s. I recall thinking that the idea of a hideout beneath a millionaire's mansion was a really cool concept. I even used my old Apple IIgs computer to print out a sign for my room that said "Stately Marsh Manor," to the amusement of my parents.

("Isn't this the *Spaceships* issue?" I hear you ask. It is, indeed. I promise I'll tie it in soon.)

Once I started reading comics, I found the Batcave from those four-color funnies to be even cooler. A giant penny, a huge dinosaur, gargantuan computers, stalagmites and stalagmites everywhere – what was there not to like?

Similarly, in the comics, Superman had his Fortress of Solitude. I never much cared for the crystalline version from the movies; rather, my heart belonged to the silver-age silliness of mammoth metal keys, multiversal menageries, and self-centered statues. Lots of other heroes, such as the Fantastic Four, also had cool hideouts.

The only bad thing about these cool hideouts is that they usually don't come into play very often. In order for the bad guys to pose any threat at a hero's secret hideout, they need to figure out where it is, get there, defeat the headquarters' defenses, etc. It's exciting when it's done right, but it's also a well that writers don't like to go back to very often.

> *To the Batcave, Robin!*
> *– Batman*

A Mobile Home

So, envision that the heroes had a super-cool headquarters – a place that they can hang out at, use for research, sleep, etc. Then imagine if that headquarters could also travel between adventures, on hand if needed but able to be ignored if it's not.

Well, for many science-fiction settings, that's exactly the purpose a starship serves: a headquarters that travels from place to place. With a holographic training facility, conference rooms, high-tech computer banks, and living quarters, the starship *Enterprise* is – on paper – indistinguishable from the X-Men's mansion.

This can be taken to an extreme; the TARDIS from *Doctor Who* has sometimes been more interesting than its eccentric controller. So, with the "spaceship as headquarters" thesis statement in mind, how can we ramp up that realization and do something cool with it?

What's It All About, Alfie?

One similarity in designing a spaceship or a headquarters is trying to figure out what its exact function and purpose is. The Batcave is primarily a research and training facility. The Fortress of Solitude contains elements of a museum, research facility, and just a place to spend time away from things. The Fantastic Four's Baxter Building is intended as a home, offices, research facility, and occasional training facility.

Now, there are two aspects of a spaceship's design: What is its purpose, and what does it have that helps it accomplish that purpose? For example, a spaceship might have the purpose of being a diplomatic vessel. To accomplish this, it might include a conference room (to facilitate discussions), a dining area (meals lead to deals!), or a brig (to control troublemakers). It might even have a museum; after all, diplomatic missions often mean an exchange of cultures, and having a way to display stuff that's important to the launching agency (or a way to temporarily display works from the visited culture) might be a great way to facilitate understanding.

Before I started writing this article, I hadn't considered the possibility of a museum on a spaceship. However, it makes sense and would easily fit in as part of an *Enterprise*-like vessel. Even better, having a museum aboard the ship means that I would suddenly have all kinds of new adventure types open. (Something gets stolen from the museum! An alien artifact in the museum starts acting up! Firefight in the museum!)

Similar trains of thought might lead to other new and different spaceship developments. For example, maybe locks on the warrior race's vessels are entirely manual and require a great deal of strength to activate; that would be a good way to differentiate a Klingon-style ship from a human one *and* leads to a few interesting plot possibilities.

Even better, having a map (with or without miniature setup) helps when concocting stories. Are there lots of tiny rooms with impossible corners? Maybe a formless alien oozes aboard the ship and is hiding in the nooks and crannies. Do all the ship's rooms contain porthole windows to the void of space? Maybe Something Interesting happens outside that the heroes witness while in their cabins. And so on.

Unique but Expendable

Although it's good to develop starship quirks and encourage the PCs to think of their ship as a home and headquarters, it's also useful to remember that – at the end of the day – it *is* still a ship . . . and ships can be replaced. Blowing up a long-used vessel can be a suitably climactic ending to an epic adventure.

Even better, it's possible that forcing the heroes to acquire a new "headquarters" can make them redefine their focus or adventure possibilities – and revitalize the campaign in the process! For example, if the heroes had previously used an exploratory vessel for their needs before it was destroyed, they might acquire a more martial-minded vessel. Now they can take the fight to the enemy! Or maybe their new ship has an experimental cloaking device . . . opening up new possibilities for espionage adventures.

SIZE MATTERS

Knowing what size the "headquarters" is will make it easier to determine how much room is available for facilities to accomplish the vessel's purpose. The *Enterprise-D* is a huge ship, so it'd be fairly easy to sneak in a museum, zoo, or other oddball addition. A Klingon Bird of Prey is much smaller, and its amenities would need to be more utilitarian.

The size of the ship will generally determine how much crew it needs; big ships generally need larger crew. (This isn't universal, however; the TARDIS has a gargantuan interior yet can be controlled by one pilot.) In general, the game system dictates what size the vessels can be for the crew the players are comfortable with, but with AIs or other plot contrivances, it's possible to justify larger or smaller ships.

If the game's action takes place aboard a smaller ship, then it's likely that some areas will need to do double duty. For example, the *Millennium Falcon* has a common rec room that can serve as a training facility. (Don't drop the lightsaber!) This can give a ship additional character of its own; a conference room might smell like a gymnasium because of the retractable hoop!

MAPS MATTER

If possible, having a well-defined starship makes the "headquarters" aspect of it easier to handle. Having deck plans means that everything has a place, and it's easier to visualize the action. (If your PC is in a sleeping chamber the size of a closet, that might give him incentive to try to save up enough money to buy a better ship!)

This is especially true if you have minis. In a *Fading Suns* game I participated in, I constructed a mockup of our ship using LEGO. We even customized minifigs of our heroes. This made it possible to visualize which PCs were manning which stations.

ECCENTRICITIES

I've been a first-time homeowner for a year now. (Since I'm writing about my house, does that mean I can claim my mortgage as a business expense on my taxes? Research purposes? Hmmm . . .) One thing that's been driven home in this experience is that all homes have their own quirks after a while. So do all the cars I've ever owned. Thus, it's likely that a "headquarters in space" would develop certain idiosyncrasies. This can be useful for a sci-fi game; even if a ship is "stock" or generic, it's likely to be unique and quirky enough for the heroes to feel at home.

The GM should encourage the players to come up with their own quirks and customizations. Maybe they commission a mural for a special room. Maybe the ship is tricked out with a piece of unique or irreplaceable gear. In my *Fading Suns* game, my captain had a "theme song" composed and programmed into the ship's memory bank, set to cue every time communications with another ship were activated.

Similarly, the ship will probably develop its own quirks as the campaign progresses. Maybe after a furious firefight, its repairs cause it to not quite pressurize correctly, and it takes an hour or so of flight before the air pressure "feels" right. Maybe the starship always gets to its destination either 10% sooner or 5% later than programmed into the computer (even odds for either result); that'd make it – on average – more useful than a stock ship. Maybe the ship's call sign or markings are renowned throughout the galaxy, so that they give a Reputation bonus.

Regardless, there should be enough of a connection to the ship that the players pay attention if it is placed in significant peril. No one cares if Clark Kent's apartment gets destroyed, but if someone starts messing with Superman's Fortress of Solitude . . . well, that ramps up the tension. Similarly, if a stock YT-1300 gets destroyed – so what? However, if the *Millennium Falcon* is endangered, then that has enough history and interest to ramp up the heroes' protectionism.

By thinking of a starship as a headquarters, you get the best of two worlds: the galaxy-spanning adventures of a spaceship, and the home-sweet-home that leads to introspection, a sense of place, and a place to put your stuff. They say you can't go home again, but maybe you can take it with you as you go reaching for the stars.

ABOUT THE EDITOR

Steven Marsh is a freelance writer and editor. He has contributed to roleplaying game releases from Green Ronin, West End Games, White Wolf, Hogshead Publishing, and others. He has been editing *Pyramid* for over nine years; during that time, he has won four Origins awards.

ODDS AND ENDS

This month's *Random Thought Table* (pp. 33-34) mentions the possibility of spaceship quirks. Here are two types of quirks that might be applicable to starships: those "intrinsic" to the ship, and those that might be acquired in play (say, after being repaired).

INTRINSIC QUIRKS

Some of these quirks might be suitable to add after the campaign begins (for example, if relevant components are replaced with new or experimental gear).

● For some reason, the ship's automatic systems generate food that tastes really good. Perhaps a high-grade model was installed accidentally, or perhaps an unknown experimental firmware was programmed into the computer.

● The manufacturer of software for the ship's computer (or other system) has issued an update or revision. However, the PCs' ship has the old software, which has critical successes and critical failures that are much more *interesting* – good and bad – than the current model . . .

● Even though the stock model is only suitable for zero-gravity functions, the heroes have reason to believe that this specific craft can land on and take off from a planet's surface . . . *once.*

● The structure of this ship is such that one specific activity has a specific bonus or advantage in one specific situation. As an example, the organization of the computer screens in the rec room might enable one participant in a card game to see the cards of two other payers if everyone's seated just so. As another example, the acoustics of the ventilation system are such that people speaking in a conversational tone in one quarters can be heard with a fair bit of clarity by someone in the adjacent room.

● The vessel is a factory "reject" of the craft; the depth and ceilings are 30% taller than expected. This means there's a fair bit more volume than normal, and it just plain feels roomier. This might cause problems at some docks that expect the vessel to be a specific size.

IN-PLAY QUIRKS

● The starship has similar markings or radio signature to another famous ship. Depending on how pronounced they are, the captain might be able to "bluff" his way into or out of situations that would be advantageously handled by the more famous vessel. Alternatively, if the similar vessel is *infamous,* the captain might need to spend time convincing others that he isn't the other ship!

● The keyboard (or other entry system) has grown accustomed to the heroes. Programming in certain specific (common) routes might be accomplished with a speed or accuracy bonus, to indicate "home keyboard advantage."

● A section of the vessel has been modified to be ejectable into space (with or without pressurization is up to the GM, although at the least the remaining vessel should be designed to survive the loss). This might be useful as a last-ditch escape method for the heroes, or a way to get rid of a pesky boarding party!

● The ship has been jostled and jolted so often, many internal components are loose. This makes the vessel particularly receptive to benchthumping attempts, but it also means that some systems might stop working at bad (or good!) times.

● A bad color-matching job after an extensive repair resulted in large patches of the ship being a different shade than the stock hue. This makes the starship very distinctive (which can be good or bad), and may provide bonuses against entities or ships trying to camouflage near the craft's hull . . . inside *or* out!

MURPHY'S RULES

BY GREG HYLAND

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