

CEPHEUS JOURNAL

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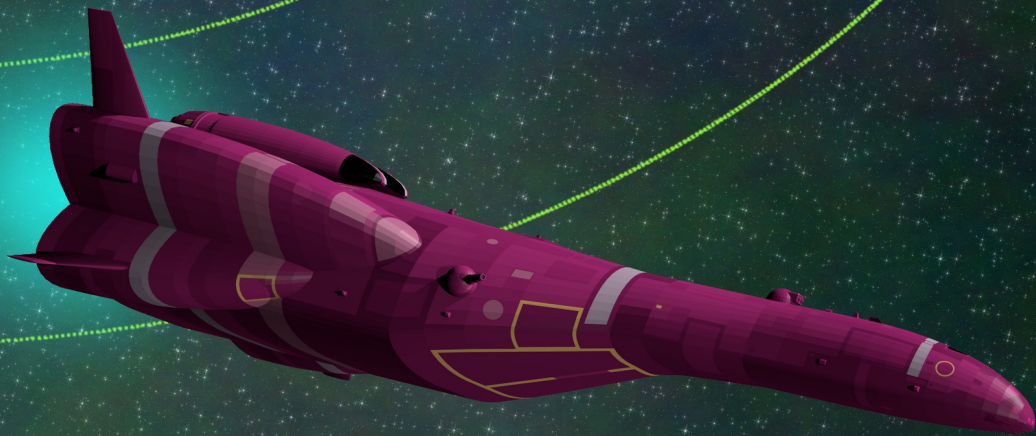
Rigil

Archimedes

Newton

Einstein

Hawking



In this issue:

Alpha Centauri

The Quarlon

Vega Subsector

Tau Ceti

And More...

Mandela

King

Gandhi

Toliman

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From The Editors

The neighborhood has changed a lot since RPGs got started in the 1970s. At the time I was fascinated with Peter van de Kamp's claims of at least one Jupiter-class planet around Barnard's Star—at the time, the only serious contender for a known extraplanetary system. That specific claim was getting debunked right about then, though, and the technique van de Kamp used (visual observation of a star's transverse motion in the sky due to the gravity of the unseen planet) hasn't proved fruitful in the long run.

But then in 1992 Polish astronomer Aleksander Wolszczan announced that he'd found planets around PSR B1257+12. This was the first hint that extrasolar planets were going to be weirder than we had expected based on the orderly Solar System. As the star's name suggests, it was a pulsar, and who had thought that any planet would survive the violent death throes it takes to produce one of those? The strangeness was further foreshadowed by the first "real" planet—one around an ordinary star—51 Pegasi B, the first of the kind that would become so commonplace, the close-in gas giant.

Since then the floodgates have opened, with more than 4000 announced as of this writing. Discoveries have happened so often that even the amateurs have got a slice out of what was once a monumental advance in our knowledge—yours truly was a candidate as a discoverer for a while a few years ago after finding a blip in one of the Kepler satellite light curves. I was pondering naming it "Vland" until

further analysis revealed that it was a false positive, a nearby variable contaminating the data. Ah, well.

Meanwhile, close examination of the faintest objects in the sky have even turned up even entire new nearby star systems. Luhman 16 is a binary brown dwarf that is the third closest to Sol after Alpha Centauri and the aforementioned Barnard's Star, but it was only first noticed in 2013!

As a result, whole new avenues have opened for SFnal exploration. In this issue we take a look at a few of your old favorites with new eyes: a Cen from Thomas Smith and Tau Ceti from Randy McDonald, as well as a take on the stars around Vega from Neil Lucock. We're not entirely devoted to the topic this time, though: some other SF setting and rule material feature in a couple of alien races, as well as a starship -- the Provincial Cruiser. Fantasy fans will find some Sword of Cepheus material.

Come on in and enjoy!

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Alpha Centauri

By Thomas Smith

The Nearest Stars to the Sun

Introduction

Alpha Centauri is a triple star system lying four and a third light years away from the Sun. It is a bright star, the third brightest (after Sirius and Canopus) in the night sky of Earth. It is visible in the southern hemisphere of Earth year around and can be seen in the northern hemisphere within about 30 degrees of the equator. It is part of the constellation Centaurus, the centaur, a large constellation that includes many bright stars and other deep sky objects. The name Alpha Centauri is used to denote that the star is the visually brightest--the alpha star--in its constellation.

Being the closest star system to the Sun, Alpha Centauri has long interested humanity, both due to its proximity to the Sun, and to the two larger stars' similarities to the Sun. Many science fiction works have featured Alpha Centauri and the possible planets that may orbit the stars there. This includes many science fiction roleplaying systems that are set in the local neighborhood of the Sun.

Discovery

The bright star Alpha Centauri (the largest component is also known as Rigil Kentaurus, or the Centaur's Foot) was known to sky observers from early human civilizations due to its brightness. The actual nature of the star as a multiple star, close to the Sun, was discovered in the late 1680s. By the 1830s, the proper motion (the long-term motion of the star across the background stars) of Alpha Centauri had been measured, and the

high value of that measurement hinted that the star was in fact close to the Sun. The parallax of the star (the motion of the star in six-month intervals against the background stars) was measured, and after some debate, it was recognized as being the closest star to the Sun.

Proxima Centauri (Proxima referring to the proximity of the star to the Sun) is not visible to the naked eye--it is a small star, and not very bright, even at our close range to it. It was discovered during a telescopic proper motion survey of stars, and it was noted that the measurement of the small star's proper motion was very similar to Alpha Centauri's motion, which, along with a parallax measurement of the star showing it was slightly closer to the Sun than the larger stars, but was in the same general area as them. led to the concept that Proxima Centauri is gravitationally bound to the larger stars.

System Physical Characteristics and Architecture

As a convention, from here on, I will generally refer to the stars of Alpha Centauri as [A], the largest star, [B], the second largest star, and [C] the smallest star, Proxima Centauri.

[A] is a yellow-white G-type main sequence star, very similar to the Sun, but 50% brighter and slightly larger in mass and radius.

[B] is a yellow-orange K-type main sequence star, again like the Sun, but 50% dimmer and smaller in mass and radius.

[C] is a red M-type main sequence star (a





red dwarf). It is about a tenth the mass and diameter of the Sun, and is about 0.002 times as bright as the Sun. [C] is only slightly larger in radius than Jupiter!

[A] and [B] move around their combined center of mass in a moderately elliptical set of orbits with a period of about 80 years. On average, the distance between the stars is about 23.5 Astronomical Units (the average Sun-Earth distance is 1 Astronomical Unit or 1 AU—93 million miles or 149 million kilometers). The closest approach of the stars is slightly over 11 AUs, and the most distant separation is nearly 36 AUs.

[C] is thought to revolve around the center of mass of the [A]-[B] system at about 9,000 AUs in an eccentric orbit, taking about half a million years to complete one orbit. While this distance is nearly a quarter of a light-year (or about 1/15th of a parsec), [C] is thought to be gravitationally bound to [A] and [B].

All three stars are thought to have formed at the same time, from a cloud of gas and dust in deep space (in a similar way to the way our solar system is thought to have formed). Based on several different analyses, the age of the three-star system is believed to be slightly older than our own solar system, perhaps as old as 6 billion years.

Planetary Possibilities

Proxima Centauri

Of the three stars that comprise the Alpha Centauri system, only [C] has planets that have been confirmed. The first planet discovered is referred to as Proxima Centauri b (or Alpha Centauri Cb). It was initially found in 2013 and confirmed after a prolonged international effort in 2016 using spectroscopic Doppler shift measurements

of [C]. Based on this data, the planet orbits [C] at an approximate distance of about 0.05 AUs with a “year” of just over 11 Earth days. The planet’s mass is calculated to be about 1.2 times the mass of Earth. The planet’s radius lies in a range from slightly smaller than Earth to about 50% larger than Earth—the doppler shift detection method does not provide a radius measurement, so the radius must be estimated based on what the normal density range of worlds of that mass are thought to be.

Based on [C]’s luminosity, the planet lies in the “Goldilocks Zone”. In this area, the star’s light has been moderated by distance so that it is possible for liquid water to exist on the surface of the planet—this means that it might be habitable, or it may even have life of some sort! But two things may impact the habitability of Proxima Centauri b:

- Red dwarf stars like [C] are often flare stars, producing large numbers of solar flares, some very energetic. [C] appears to be typical of the red dwarf family, and these flares can “sputter” away the atmosphere of a planet that does not have a strong magnetic field. This is the same way that Mars’ more dense early atmosphere has been reduced to the low pressure status it has now—Mars may have had a magnetic field to protect it in the past, but as the planet’s core cooled, the magnetic field that core generated faded away, leaving the atmosphere unprotected so that particles from the Sun sputtered away the atmospheric components.

- Planets in the “goldilocks zone” of red dwarf stars are subject to intense stellar gravitational tidal forces that can, over time, slow the rotation of the planet. This is like the process that caused Earth’s moon





to show only the “nearside” face to Earth. During this “tidal locking” process, the satellite body’s rotation period becomes the same as its revolution period. Proxima Centauri b has probably undergone this same process, so it may rotate on its axis once every 11+ days, the same as its revolution period.

There may be situations that allow for the planet’s habitability. Perhaps it has a large moon, as Earth has. Having a large moon might alleviate the tidal locking to some extent, allowing the planet to have a faster rotation period. Or, if the planet has a strong magnetic field, and rotating once every eleven days may be fast enough to generate it, said magnetic field may protect the planet’s atmosphere.

Even if the planet is tidally locked and does not have a large moon, it may have a habitable zone—one that passes through the north pole of the planet, goes down over the equator, and then through the south pole, going back up over the equator to the north pole. Some refer to these worlds as “eyeball worlds”. The side toward the star is dark, charred desert that always has the star directly overhead. The back side of the world is dark and covered with whitish ice, a place where the star is never seen. And, in a belt between the two areas is a habitable zone with liquid water and moderate temperatures. The width of this belt depends on several factors, but it could be several hundred miles wide. Also, if the planet has large oceans, they may modify the “eyeballing” of the planet, making the habitable belt even wider, or perhaps producing planet circling areas of habitability besides the pole to pole belt.

At least one more planet has been confirmed to orbit [C]. This second planet was also found with spectroscopic

doppler shift measurements (in 2019). Proxima Centauri c orbits about 1.5 AUs from [C], with a “year” of just over 1900 Earth days. It is approximately 7 times the mass of Earth, but the radius is unknown—planets like this are referred to as “Super-Earths” and may be very small gas giants (smaller than Neptune and Uranus), or large, high-gravity terrestrial worlds with thick atmospheres if they are nearer the star, or large, ice-covered worlds with more Earthlike gravity and thin to moderate atmospheres if they are farther from the star.

This world is believed to be very cold, based on the distance to [C]. It was possibly imaged by Hubble Space telescope back in 1995 during an observation of [C], though this was not realized until a review of the images from the observation was done in 2020. It was noted that the planet seems very bright in the images and may in fact have a ring system of icy material as Saturn does in our solar system.

There is some doppler shift data that hints at a smaller world in about a 5-day orbit around [C], which would mean the possible planet (which would be Proxima Centauri d, per International Astronomical Union naming conventions) would be about 0.03 AUs from [C], probably an airless, heavily cratered world like Mercury. The same study also found that there were probably no other near Earth-mass or heavier worlds in the inner system.

Alpha Centauri A and B

[A] and [B] have been investigated for planets, and though there was some evidence for a planet in a close orbit of [B], but that has since been disproven. This does not mean that there are no planets in orbits around [A] or [B] (or



around both), just that they have not been found yet. In fact, both stars are very similar to our Sun, and planet formation seems to be common in Sun-like stars, so planets may be present around them.

Note that there are limits to how far away a planet may form from either star—the other star will interfere with the planet formation process. Various factors play into concept of how far away planets can form from their parent star, but it is safe to assume that beyond about 2 AU from either star, planet formation will be difficult. Other planets may be found in distant orbits around both stars (as [C] orbits, but much closer to the center of mass of the [A]-[B] part of the system).

Gaming Concepts

Proxima Centauri System

We will start with Proxima Centauri since we know the most about the planets there.

Let's assume that the possible detection close to [C] is an actual planet, something like Mercury, and that the two confirmed planets are pretty much as suspected—a slightly larger than Earth terrestrial world (in an “eyeball” configuration, but with some bodies of water somewhat mitigating the condition and a strong enough magnetic field to protect the atmosphere to a great extent) and a large, ice-covered world. We will insert a thin atmosphere, ice-capped world between the b and c planets due to the wide gap there and add a small gas giant into the outer system, just to make it interesting—note that there is no evidence for this world, but it makes sense that Proxima probably has one. Finally, we will put another fictitious outer planet in the system, something small like Pluto, perhaps representative of a so-called “belt” of several small, icy objects.

Proxima Centauri system, then, looks like this:

Proxima Centauri				
World	Orbital Distance	Period	UWP	Notes
I	0.03 AU	5 days	X300000-0	Possible planet “d”, similar to Mercury, no moons
II	0.05 AU	11 days	XA74000-0	Planet “b”, Eyeball world, with moderately expanded habitable zones in the pole to pole belt, no moons. Atmospheric taint due to atmospheric dust from the sun-side.
III	0.9 AU	950 days	X411000-0	Fictional planet, ice-capped, 1 small, icy moon
IV	1.5 AU	1900 days	Icy Super-Earth	Planet “c”, cold, thick ice-covered surface, 1.7 G, large rings, 3 small icy moons
V	2.5 AU	4200 days	Small Gas Giant	Fictional Gas Giant 75% size of Neptune, bluish, small rings, several small icy moons
VI	5.0 AU	11800 days	X111000-0	Fictional world, representative of several icy/dusty outer system objects present in a thin belt from 4 AU to 7 AU





Assuming that the second planet is habitable, and perhaps has some kind of life that generates an oxygen component for the atmosphere, humans would become very interested in the world. The above stats represent an unexplored, uncolonized system.

In a period when Proxima is first colonized by humans, perhaps being explored by a few hundred people, it would look more like this: DA74261-8, with crews scattered across the world exploring, sampling, and documenting the world.

Later, the world would be under colonization, with several sites holding 5-10 thousand people each being exploited—mining, light industry, more detailed exploration, and building infrastructure for new arrivals: CA74511-9.

Finally, once the world is robustly colonized, it might look more like this: BA74873-B. In this case, the hypothetical third world may have a few dozen people looking for resources on the surface, and the hypothetical gas giant may have a moon with a few dozen people studying the small jovian planet, and perhaps operating a fueling shuttle to keep ships topped off when they visit the outer system.

Of course, perhaps the second planet is already inhabited. In that case, the stats for the world are left undetermined. Perhaps the sentient beings on the second planet are pre-technological and are either protected or ignored (while the planet is being exploited) by humans. Perhaps the sentient beings on the second planet are technologically equivalent to humans. Would a war develop over any attempt to colonize the world? Or perhaps some sort of peaceful

coexistence would develop—perhaps with humans occupying one temperate zone on one side of the planet, and the locals occupying the other?

The biology on Proxima Centauri b would be different than Earth's. Photosynthetic (or the local equivalent) life would be black, so it could absorb all wavelengths of light from its dim star. Life with optical senses would have little or no "color" vision like Earth life. Instead, this life would see in reds and infrared.


Alpha Centauri A/B System

What about Alpha Centauri A and B? I will leave that to the reader—we currently do not know if they have planets, and if they do, we have never observed them, directly or indirectly. So, make the system your own! Remember that planets can probably not be found beyond about 2.5 AUs from either star. A habitable planet orbiting [A] would be farther (perhaps 1.5 times as far) from its star than Earth is from the Sun and have a longer "year" (perhaps 1.8 Earth years). A habitable world around [B] would be about 0.7 AUs from the star and have a period of around 0.8 Earth years.

The [A]-[B] system may not have gas giants due to the gravitational interaction between the two stars. This interaction would prevent gas giants from forming at or beyond the "frost-line" distance from the stars, where icy material can form solids when the system is first forming. But there may be a belt of debris that orbits the center of mass of the [A]-[B] system, perhaps fifty or sixty AUs out. Bodies in this belt would be a mix of ice and rocky-metallic dust.

Life on the planets of both stars (if there is any) would be more like Earth life, due to





the similarity of the two stars to the Sun. Any optical senses life has on worlds around these stars would be like the optical senses of life on Earth. Photosynthetic plants, or the local equivalent, would have colors more familiar to green plants on Earth.

Other Game Concepts

Regarding in-game travel, Alpha Centauri is approximately 1.3 parsecs from the Sun. That means that any ship travelling there either needs a Jump 2 engine, or a Jump 1 engine and enough fuel to make two jumps. A TL9 effort to colonize any of the planets that might be present at Alpha Centauri might establish a waypoint station about 1 parsec from Earth. Perhaps a rogue icy body might be found after a survey of the intervening space between the Sun and Alpha Centauri, allowing for refueling transiting J-1 ships

headed for the new worlds. Even if no icy bodies can be found, tankers could bring fuel to the waypoint station for refueling purposes. Or colonizing ships could jump with tankers, refuel, and then jump on to either Proxima Centauri or Alpha Centauri A/B, with the tankers returning to the Solar system to refuel for the next trip out.

Also, remember that a jump-equipped ship can “micro-jump”, travelling a distance less than one parsec. It uses the same amount of fuel as a jump-1 and takes the same amount of time in jump space as a normal jump. This will be much faster than trying to travel in normal space between the stars, given how far away [C] is from the other stars. Ships making micro-jumps between [A]-[B] and [C] will be common if there are habitable worlds orbiting the stars!

Sources and Interesting links:

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The Quarlon

By Jim Hunsinger

The Quarlon (pronounced Koo-war-lon) are a parasitic virus that is sentient when in control of a host sophont. It spreads through a warm blooded host's body just as any other viral infection. If the host's immune system cannot fight off this infection then the host falls under the complete control of the Quarlon.

Any warm blooded creature can be infected by the Quarlon, providing the creature's blood temperature does not fall below 35°C (95°F).

The Quarlon must reside in either a suitable host or within a hot, wet environment between 35°C (95°F) and 110°C (230°F), so the Quarlon can survive even through boiling water but cannot sustain temperatures much higher. The Quarlon could easily survive in a hot spring, near an under-water volcanic vent, hot mud vent or even in an old fashioned water heater! Temperatures between these ranges can sustain the Quarlon indefinitely but anything higher or lower for approximately 30 minutes will destroy them. A difficult (DM -2) Life Sciences or similar skill check while examining a sample of Quarlon contaminated tissue, blood or other fluids could lead to this discovery.

The Quarlon have vectors of physical contact or contact with bodily fluids. Once inside the host's body, the Quarlon begin to proliferate during the incubation period, during which, the symptoms of infection will manifest. When a character comes in contact with another host, infected bodily fluids or an area such as hot water with the Quarlon in it then they must make a normal Endurance check. If

they fail then they have contracted the Quarlon and will start showing symptoms of the infection over the next 1D6 hours.

Initial symptoms are flu-like with body aches, pain, nausea, vomiting, dizziness, and low grade fever. During this time the character is considered to be fatigued. At the end of the incubation period the character will experience a spike in the fever to 40°C (104°F) to 41°C (106°F). This is the host body's last effort to burn out the infection. Unfortunately, the human immune defense provides the higher temperatures the Quarlon need to finish taking control of the host, so it becomes a battle between the host's antibodies and the Quarlon for control. Shortly afterwards (1D3 x 10 minutes) the character will go into a massive seizure and fall into unconsciousness. During this time the Quarlon have an even more accelerated proliferation through the body as they attempt to overcome the host's immune system completely.

At this juncture the character is in the threshold of Quarlon subjugation. The character will make one last normal Endurance check. If they succeed, the fever will break and they will awake 1D3 hours later in a fatigued state but the Quarlon infection will have been purged from their body. From then forward, the character will always receive a +4 DM to Endurance checks involved with contraction and threshold moments involving Quarlon infection.

If they fail the Endurance check the fever will slowly drop to a steady 39°C (102°F) and they will be completely under the





control of the Quarlon. Their own personality and consciousness will be subdued and trapped in their own body and mind. They will still be aware of what is happening in their environment but will not be able to control anything.

Once the Quarlon have subdued a character's personality and consciousness, they have access to all of the host's knowledge, memories, abilities, skills and psionic abilities. If the character does not have psionic abilities then they will gain telepathy and a psionic stat of 6. If the host does have psionic abilities then their psionic stat will remain the same or become a 6, whichever is higher. If they did not have telepathy they will gain it on top of their other psionic abilities.

While the Quarlon gain the host's knowledge, skills and abilities they must also contend with the host's inherent weaknesses, limitations and vulnerabilities.

Externally there are very few clues that a human host has been taken by the Quarlon. Inside a Quarlon host's throat, the tissue will typically have purple streaks running through it that are clearly visible under examination. Also, on a roll of 8+ on 2D6, a human host's finger and toenail beds also take on a noticeable purple hue that can be noticed by another on a successful intelligence check or Recon skill roll.

The personality of the host will not be 100% imitated by the Quarlon. If someone knows the host very well, such as family or close friends, they will be able to sense something is "off" on an easy (DM +4) Social check though they will not know exactly "what" is off. A coworker or acquaintance will sense something with a routine (DM +2) Social check. Someone who doesn't really know the host will sense

something is "odd" about the host on a very difficult (DM -4) Social check.

If an infected host can be placed into hypothermia for 30 minutes, and survive it, the Quarlon will be killed. The host's consciousness and personality will be returned immediately.

A low berth or "cold sleep" will not work to kill the Quarlon infection. The body and anything within the body is placed into stasis, meaning the Quarlon are also placed into stasis. When the host is revived from the low berth, so are the Quarlon. A low berth could potentially be modified to cool the body to hypothermic levels without actually placing the person into stasis. To modify a low berth in such a way would be Electronics or Medical skill, Intelligence, 1D6 kilo-seconds, Average (DM +0).

A character suffers 1D6 damage per 5 minute increment while hypothermic. If they are still alive after 30 minutes they will then be free of the Quarlon infection.

Hosts that become cured of Quarlon infection report that they have memories of what occurred while the Quarlon had control of them but were helpless to do anything.

If the Quarlon are purged from a host's body, any psionic abilities gained while controlled by the Quarlon will be lost.

If a host dies while the Quarlon are in control of them, the Quarlon can remain alive within the body as long as the temperature stays optimal for them and the body remains moist or "juicy".

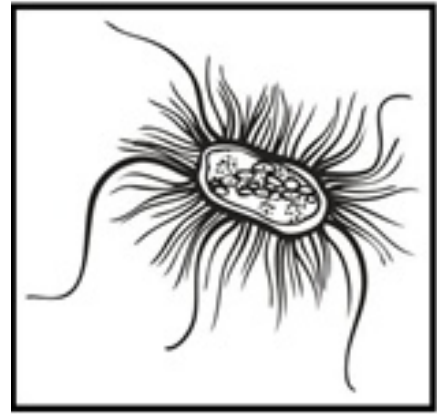
The Quarlon could be used in a simple, short adventure such as checking out reports of something strange going on at



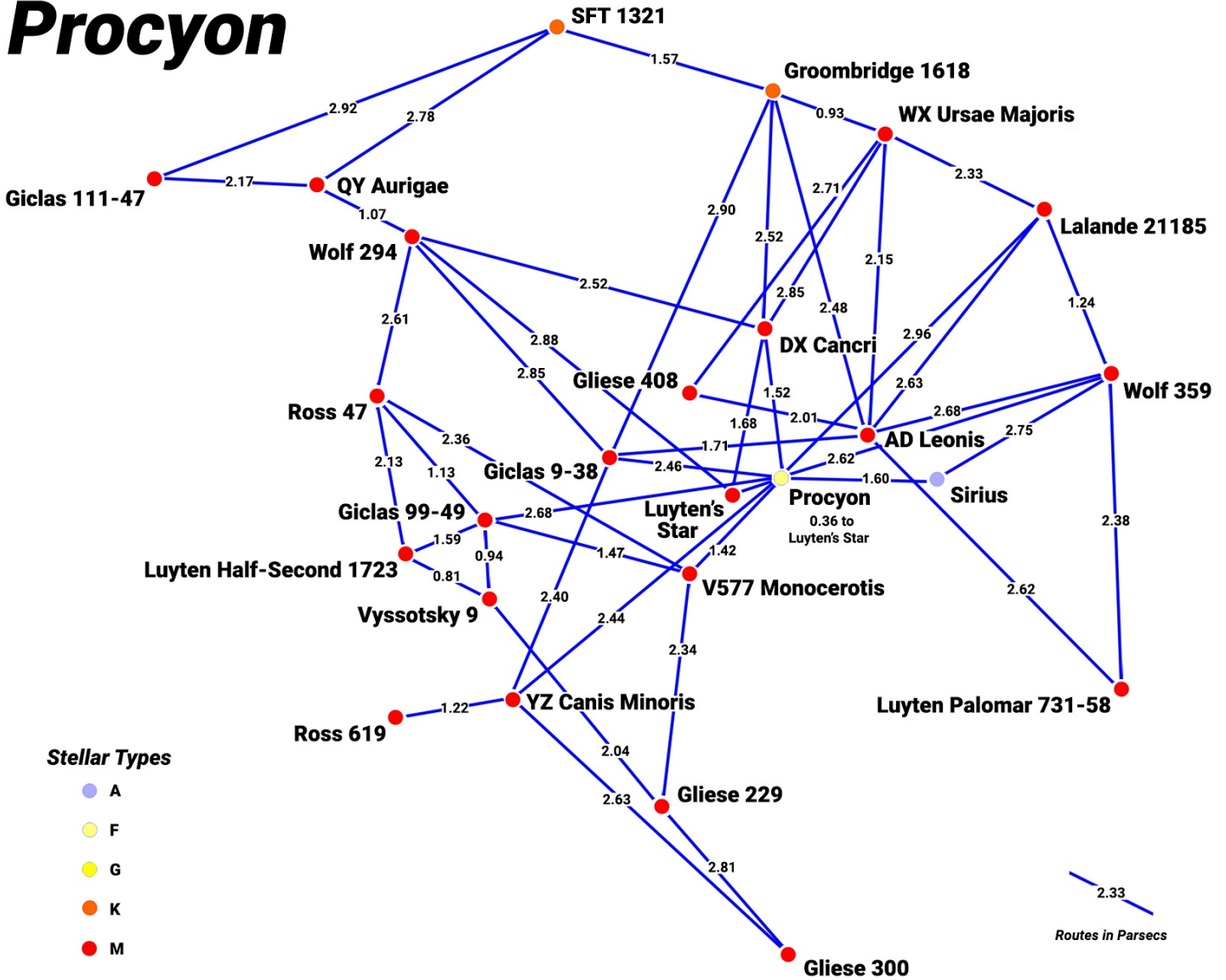


the Epsilon-12 space station, all the way up to a full invasion campaign on the frontier.

The interaction of the Quarlon with humans has been presented in this article. The effect on other sophont species or animals is entirely up to the game master. I hope you have enjoyed the article. More so, I hope you will have fun using the Quarlon in your game.



Procyon





Additional Shield Rules for Sword of Cepheus

By Bob Weaver

The shield is mentioned on page 44 of SoC:

“Shield: a personal shield, which can bash enemies for 1D damage and applies DM-1 to opponents trying to hit its bearer. If a shield is used with the Overwatch action in combat, the wielder is treated as having partial cover.”

Here are some additional rules for shield carriers:

- Partial cover is the same as Soft Cover, a DM-1.
- On an attack throw with an Effect of 4+, or a natural throw of “boxcars”, the shield is broken and ruined.
- Most trained combatants will go for center mass, so keeping the shield centered on the body would be cover. Aiming for an extremity to avoid the shield should incur -DMs anyway; it all comes to the same thing. SoC combat is not granular enough to deal with aiming for body parts.
- Any level of Melee Combat skill will cascade to Shield-0. There is no Shield-1+, either you can use it efficiently or you can't. Unskilled shield users attack with a DM-1 while carrying a shield. The shield gets in their way.
- A shield carrier must have a minimum STR 6+, or carrying the shield in combat applies the penalties of Fatigue until the shield is dropped.
- Characters with STR 9+ gain a DM+1 to attacking with the shield, as in a shield bash.

- A larger, and more expensive shield (25-50gp) could provide a defense DM-2, at the cost of a higher minimum STR.

Magical shields could provide better defense DMs without extra weight, but would be far more valuable.

The Shield of Sligh the Invincible

This mythical weapon of great potency guarded the mightiest warrior of the Eastern Steppes as he waged relentless war on the Central Kingdoms. It was described by some as a circle of mirror-bright metal which no sword or ax could mar nor dull. Fearlessly Sligh stood against hordes of foes bearing the shield which only he was strong enough to hold. At the Battle of the Sundered Slopes he alone held a narrow defile against the Army of Five Kings while his forces raised a breastwork in the gorge behind him.

After his death the Shield of Sligh became the prize in a mighty tournament fought by the Five Kings, as they all coveted it. A mysterious knight calling himself The Disinherited One entered the contest, and besting all comers, rode off with the Shield. None were able to follow him, or learn what his right name was. The shield vanished from men's tales after that contest.





Disarm Rules for SoC

By Bob Weaver

Combat Action: Disarm

By grabbing, breaking or knocking away, a character attempts to deprive his opponent of the use of a weapon. Characters must be adjacent, at least in melee weapon range, to disarm. The character attempting to Disarm is the Attacker.

Make an Opposed Strength Throw. DM +1 to the fighter with the heavier weapon (Referee decides); Attempting to Disarm bare-handed means the defender gets the 'heavier weapon' DM; +Melee Combat skill (both); +1 to fighters with swords(either); +2 to the attacker if the defender is surprised (darkness, blinded, from behind).

- On an exact tie, neither combatant controls the weapon; neither can attack with it. Throw again next round unless one combatant gives up.

- If the Attacker wins the Opposed throw, the player chooses Broken, Dropped or Taken. Only unarmed Disarm actions can result in Taken, only armed actions can result in Broken.

- If the Attacker loses, the Defender gets one extra free attack.

- The Defender whose weapon is Taken can try a Disarm action to get it back in the next round.

Example:

Whiteshadow, a PC sorcerer, is Charmed by an enemy magician. The enemy instructs him to disarm Cuthden Redfang, his comrade, who is attentively watching the stairwell down to the next dungeon level. Redfang is guarding against an

attack from below, so he does not notice what Whiteshadow is doing. The Referee decides Whiteshadow gets Surprise in his lunge for Redfang's two-handed sword.

Whiteshadow: No STR DM, +1 for Melee Cbt, +2 for Surprise, total +3

Redfang: +1 STR DM, +2 for Melee Cbt, +1 for heavier weapon, +1 for wielding a sword, total +5.

Redfang's player threw a 4 +5=9. Whiteshadow's player threw 5+3=8. Whiteshadow fails to get the sword out of Redfang's hands. Now Whiteshadow's player gets to do some role-playing to explain his curious behavior. Redfang is unlikely to attack his comrade without clear evidence of treachery, but Surprise is lost. Without it, Whiteshadow's chance of success is slim.



Pencil Laser

The pencil laser is a handheld 1,2, or 3 shot laser weapon, with an internal power supply, all in a case the size of a large barrel ink pen. Its primary utility is as a backup weapon or close range assassination tool. Any Investigation throw that might discover the items nature faces a DM -2.

Pencil laser

TL 12 Cr 1000/1200/1500 Range 5/20 Dmg 3D Mag 1-3 Ammo cost: included in price Aspects: laser





Factions as Characters

By Paul Elliott

Traveller and its related games have always emphasised the use of patrons as powerful adventure elements. Patrons are single individuals, employers with a shady proposition and a suitcase full of credits to offer. Patrons are perfect for creating scenarios, providing motivation and purpose for the player characters. For a Cepheus Engine campaign, however, factions are often a better prospect. A faction can be an organisation, a cult, military unit, secret society, guild, corporation, whatever... Rather than being a single individual, the faction can throw more 'weight' around in the game setting, it is made of many people, with access to bases or headquarters, resources and finances. It can have a presence in multiple locations simultaneously, it can have goals, beliefs, agendas and customs, and it provides a foil for player characters. Several factions can operate within the player character's gameworld at the same time, and has a different agenda and a different role, and interacts with the PCs in a different way. The factions might be small in scale (a town guard) some of more moderate means (a powerful, but local priesthood) and perhaps even factions of setting-spanning scope (a megacorporation or noble house).

A faction can serve several purposes:

- As a source of rumours
- As a source of job offers and employment
- As an antagonist that works against the goals of the PCs
- As a Maguffin that is the source of some power or treasure

- As an ally that can assist with the PCs' goals
- As a roadblock or obstacle that must be overcome

CREATING A FACTION

The gamemaster can decide what role is played in the game by a particular faction at the time of creation.

The gamemaster can detail a faction as much or as little as he needs, in fact, it might be best to only sketch out the faction briefly, initially, and add more depth and detail to it as the game develops over time. Here is a list of useful faction traits, pick three or four to develop. You always want to know how the player characters will eventually interact with the faction, either as an antagonist, an ally or some kind of obstacle.

Name: This is probably not optional!

Assets: Its bases, offices, troops, wealth, labs, hideouts, special projects, ships, and so on.

Agenda: This is the meat of any faction. What is it doing and why? What is its primary goal, and how does it aim to reach that goal?

Origin & History: Not important, at least initially, but over time aspects of the faction's past adventures or its dark secrets might have direct bearing on a current scenario.

Rewards: What can the faction offer the PCs, perhaps as a reward for employment or as a prize to be stolen? Money, magic, contacts, favours, the loan of a ship, a contract, psionic training ... are all boons to be dangled in front of the PCs.



Status: What is the faction's status in society? Is it a well thought-off religion? An illegal crime guild? A hated paramilitary organisation? An innocuous corporation?

Organisation and Leadership: Who is in charge? Someone must be in charge, and there will probably some kind of organisation and hierarchy. It might be loose and informal, such as in a wandering guild, or strict and regimented as within a military unit.

Symbol: Most factions have some unique symbol, heraldry, flag or logo, whether a corporation, noble house, thieves guild or government agency. Some might not be well publicised, and instead could be represented by tattoos, secret signs or codes.

Relationships: Factions do not exist in a vacuum, even those three or four that the gamemaster is creating for his own setting. Each has relationships with others, perhaps it has an allied faction, or a rival, it might have a sister organisation (what a corporation might call a subsidiary) or a parent faction. There may be many rivals, many allies or the faction could even be isolated and secretive, and fear discovery (the Mandalorians? Middle Earth's Rangers of the North?) A faction could be under a debt or burden to another faction, or conversely could be suppressing or exploiting another. Each relationship is some point of contention or linkage which can provide gaming fodder for a scenario.

Let's look at an example:

Crimson Circle



This space-based faction was created following the latest of several interstellar wars. With many soldiers and starforce members being mustered out, a group of high-ranking officers retiring from the services, got together to create a charitable organisation. Veterans are looked after, jobs are found for them and monies saved up in order to assist a veteran in trouble. The Crimson Circle is known for altruism throughout the subsector. However, the true goals of the faction are less altruistic, the faction serves as an underground mercenary hiring group, veterans being paid well to fight in personal wars and violent contracts put out by the officers in charge. The true aim of the Crimson Circle is to overthrow the subsector government after a period of destabilisation and targeted sabotage.

FACTION CHARACTERISTICS

Factions can be rated just like player characters with the very same characteristics: Str, Dex, End, Int, Edu, and Soc. Obviously these characteristics have a slightly different meaning in this context, but the idea is the same. Why bother with characteristics? Well, for the same reason you use them with player-characters – they provide concrete numbers that can be used in task rolls, making a faction a little less nebulous.

Strength (Str) – A faction's military might be represented by legions, troops, bases, ships, artillery units and commandoes.

Dexterity (Dex) – Leadership and/or organisation is rated by Dex.

Endurance (End) – The resources, logistics and raw materials a faction can draw upon is measured by End; it is wealth.

Intelligence (Int) – The quality of a advisors, officials, spies, informants and bureaucrats is measured by Int. A low Int rating indicates young, inexperienced or

misguided advisors or spies, giving a faction leader little incentive to trust his hierarchy.

Education (Edu) – The faction's involvement level in player character plots and scenarios. A high Edu indicates a faction with lots of goals and an active presence out in the setting, the player characters will quickly up over one of their plots or schemes. A low Edu faction may be secretive, subtle or just out of touch and bypassed by the more active factions.

Social Standing (Soc) – What is the political and social standing of the faction? What pressure can it apply through threats, bribes or diplomacy? What chance is there of the public at large turning against the actions of the faction, if they get too blatant? Is it generally well thought of?

These characteristics can play an important role in the game. If a group of player characters allies itself with a faction (always a smart move), then they have a chance to raise or lower one of the values. If the PCs destroyed a lair of pirates who were attacking shipping belonging to the faction, then at the scenario's end the gamemaster might award +1 to the faction's End stat. Likewise, if they managed to kidnap a key scientist from a rival faction, then their own faction might benefit from a Int increase of +1. Obviously being able to have an immediate and

obvious impact on a portion of the gameworld brings the background of the game much closer to the fore. In addition, the characteristic values of a faction have a direct impact on the lives of the player characters. If they are allied with a faction then the gamemaster can use a characteristic roll to resolve all kinds of questions. Most characteristic rolls will be Average (0) difficulty, but some may be Difficult (-2) or even Very Difficult (-4).

Here are some examples of those characteristic rolls:

Str – Can the faction provide some armed back-up if requested?

Dex – Will the leadership respond to a challenge from the PC's? Is there a way to contact the faction in this remote city? Will the commander the PCs just talked to pass the message on up the chain of command?

End – Can the outpost support the refugees? Will the faction be able to help the famine-struck colony?

Int – Will the faction's intelligence service track the PCs down? Can the faction's advisors provide any useful information?

Edu – Is the faction quiet, out of touch or isolated, or is it embroiled in current affairs and working actively to reach its goals?

Soc – Will the embarrassing revelation really damage the faction? Will a rival faction force your own to hand you over to face justice?

CHARACTERISTIC MODIFIERS FOR FACTIONS									
Characteristic	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	24-26
Modifier	-2	-1	-	+1	+2	+3	+4	+5	+6
Note: The letter I is not used in Hexadecimal Notation									





We can go back to the Crimson Circle now, and create those six characteristics to provide that earlier description with some hard numbers:

Str: 6 Dex: 11 End: 6 Int: 18 Edu: 9 Soc: 16

FINAL ADVICE

When creating factions for my own setting, I needed to know the 'limits of power', who exactly were the 'big guns'? What were the maximum characteristic values I was going to find in my setting? After that, I could create all of the other factions within that umbrella. I didn't want to start off imagining a bad-ass mercenary

group with Str 24 (and a modifier of +6), then later have to create the emperor's legion of crack death commandoes and have no where to go, I'd already maxed out those damn mercenaries!

So thing of you extreme factions, even if they don't play a part in your games, think of those bigger factions off-screen that certainly exist and maybe, one day, might make an appearance – you never know, and plan it so that those big ass factions really are the best. Scale all your game setting factions, those involved in the PC's world, at least, to nestle somewhere beneath those faction titans.





People's Army of Vietnam Rifle Platoon

By Ewan Spence

People's Army of Vietnam Rifle Platoon (Trung đội bộ binh) 2019

Within the Modern War rulebook is included a number of possible future war scenarios one of which included a Chinese invasion of Vietnam. This article along with future ones will cover the forces involved along with the equipment deployed.

The People's Army of Vietnam currently consists of eight military regions, four corps headquarters, one special forces airborne brigade, six armoured brigades and three armoured regiments, two mechanised infantry divisions, and twenty three active infantry divisions plus another nine reserve ones.

On the border with China is 2nd Corps Binh

đoàn Hương Giang which includes the 304th Infantry Division, 306th Infantry Division, 325th Infantry Division and the 203rd Tank Brigade.

The main battle tank of the PAVN is the T-54/55 (along with the Chinese variant Type 59), also fielded in small numbers is the T-62 and T-90. The PAVN has the following armoured personnel carriers among their inventory; BTR-60s, BMP-1s and BMP-2s along with M113s captured from South Vietnam in 1975.

The platoon is commanded by a Lieutenant (Trung úy) and assisted by a Sergeant Major (Thượng sĩ) and three squads as detailed below to give a total strength of one officer and twenty eight enlisted men.

Section Role	Rank	Role Weaponry	Role
Team 1			
Squad Commander	Trung sĩ	AKM or STV-380	Squad Leader
Light Machine Gunner	Binh nhất	RPD or RPK	Gunner
Rifleman	Binh nhì	AKM or STV-380	Assistant Gunner *
Team 2			
Deputy Squad Commander	Hạ sĩ	AKM or STV-380	Rifleman
RPG Operator	Binh nhất	RPG-7V	Anti Tank Specialist
Rifleman	Binh nhì	AKM or STV-380	Rifleman **
Team 3			
Team Leader	Binh nhất	AKM or STV-380	Rifleman
Grenadier	Binh nhất	M79-VN or STV-380/T-40	Grenadier
Rifleman	Binh nhì	AKM or STV-380	Rifleman

* should have at least Level-0 in Machinegun

** should have at least Level-0 in Heavy Weapons

For squads equipped with the AKM the machinegun will be the RPD and the grenade launcher the M79-VN.

While squads equipped with STV-380 will have the RPK and STV-380/T-40.



STV-380 (7.62 Russian)

Dmg	Range Band	Base Range	Auto	UR	Length (cm)	Req Str	Wgt (kg)	Mag Wgt (kg)	Rds
3D6	Long	125	4	6+	93/85	5/6/7	3.5	0.8	30

This is a licence built version of the Israeli Weapon Industries Galil ACE chambered in 7.62 x 39mm. The Galil ACE is a modernised version of the original Galil first introduced in the 1970s.

AKM (7.62 Russian)

Dmg	Range Band	Base Range	Auto	UR	Length (cm)	Req Str	Wgt (kg)	Mag Wgt (kg)	Rds
3D6	Medium	85	4	6+	88	6/7/8	3.3	0.8	30

The classic version of the AK-47 which has seen service since the 1960s and gradually being replaced by the STV-380.

RPK (7.62 Russian)

Dmg	Range Band	Base Range	Auto	UR	Length (cm)	Req Str	Wgt (kg)	Mag Wgt (kg)	Rds
3D6	Long	200	4	6+	104	4/5/6	4.8	1.1	40

This is the standard Soviet squad automatic weapon of the 1960s and 1970s and is still widely used. It can also use the standard 30 round AKM magazine if required.

RPD (7.62 Russian)

Dmg	Range Band	Base Range	Auto	UR	Length (cm)	Req Str	Wgt (kg)	Mag Wgt (kg)	Rds
3D6	Long	200	4	7+	104	4/5/6	7.1	2.4	100

Standard Soviet squad automatic weapon during the 1950s and 1960s before being replaced by the RPK. It was widely exported and is still in use by many countries today.

RPG-7

Wgt (kg)	Round Weight (kg)	Time	Max Range	Launch	Dmg	Homing	Reuse?
7.0	2.6	2	300	Shoulder	6D6AP2	Unguided	Yes

Introduced in the 1960s the ruggedness, simplicity, low cost, and effectiveness of the RPG-7 has made it the most widely used and recognisable anti-armour weapon in the world. Currently around 40 countries use the weapon, and it is manufactured in several variants by nine countries.

M79-VN (40mm Grenade Launcher)

Dmg	Range Band	Base Range	Auto	UR	Length (cm)	Req Str	Wgt (kg)	Grenade Weight (kg)	Rds
Varies	Long	100	-	6+	73	5	2.7	0.2	1

The M79 was first used by the US military during the 1960s before being replaced by the M203 during the 1970s. This version is a locally produced variant (at Factory Z125) as the M79-VN, it has a plum-red synthetic stock and optical sight.

T-40 (40mm Grenade Launcher)

Dmg	Range Band	Base Range	Auto	UR	Length (cm)	Req Str	Wgt (kg)	Grenade Weight (kg)	Rds
Varies	Long	100	-	5+	38	-	1.4	0.2	1

This is the Vietnamese manufactured version of the M203 however it replaces the trigger for a lever. The grenade launcher is mounted on the STV-380.



People's Army of Vietnam Other Ranks Rank Table

NATO Code	PAVN Rank		Modern Warfare Rank	British Army Equivalent
OR8	Sergeant Major	Thượng sĩ	6	Sergeant Major
OR7			5	Staff Sergeant
OR6	Sergeant	Trung sĩ	4	Sergeant
OR5			4	
OR4	Corporal	Hạ sĩ	3	Corporal
OR3			2	Lance Corporal
OR2	Private 1st Class	Binh nhất	1	Private
OR1	Private	Binh nhì	0	Private

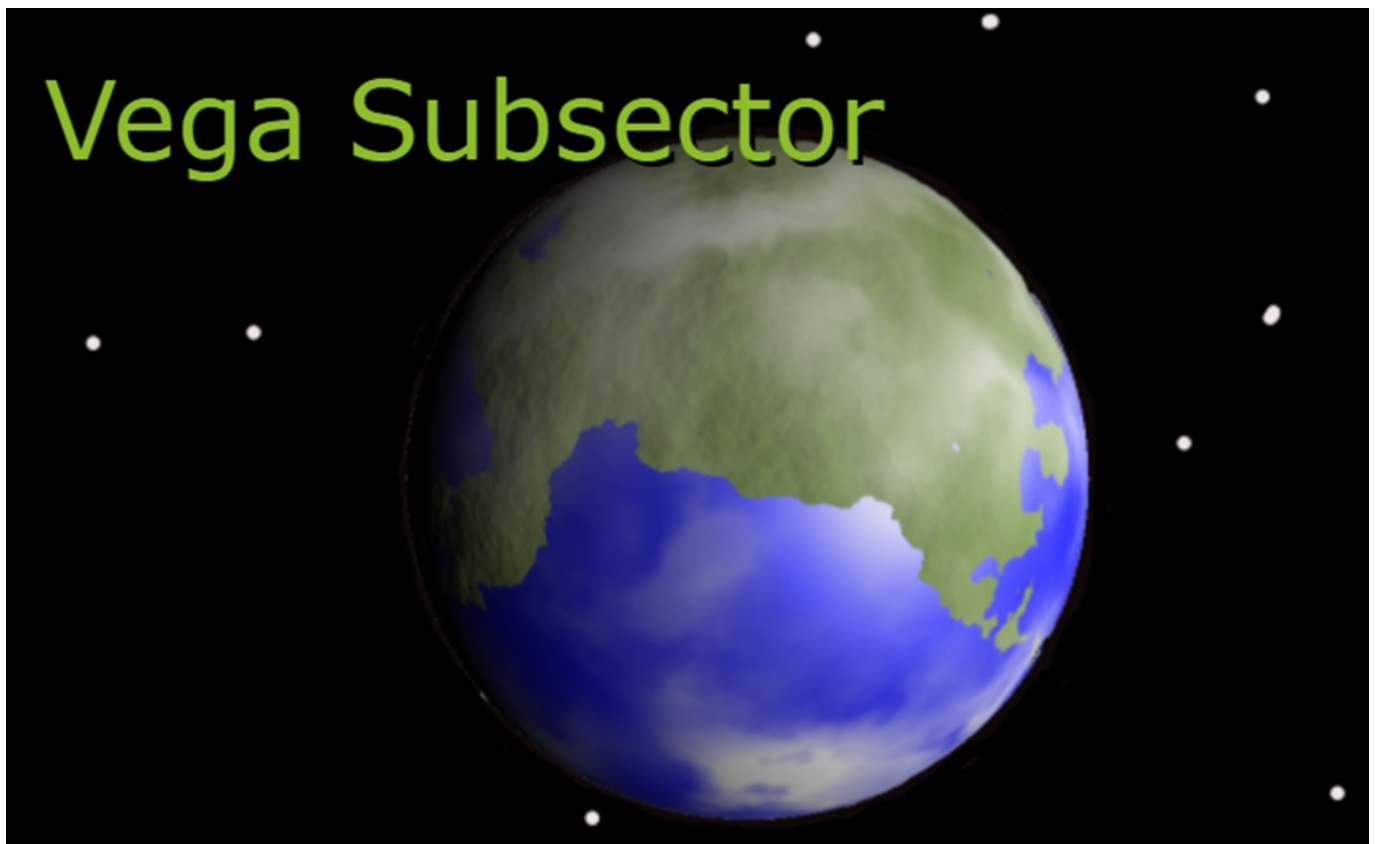
People's Army of Vietnam Other Ranks Rank Table

NATO Code	PAVN Rank		Modern Warfare Rank	British Army Equivalent
OF5	Colonel	Thượng tá	6	Colonel
OF4	Lieutenant Colonel	Trung tá	5	Lieutenant Colonel
OF3	Major	Thiếu tá	4	Major
OF2	Captain	Đại úy	3	Captain
OF1	Senior Lieutenant	Thượng úy	2	Lieutenant
OF1	Lieutenant	Thiếu úy	1	2nd Lieutenant
	Junior Lieutenant	Trung úy		



Vega Subsector

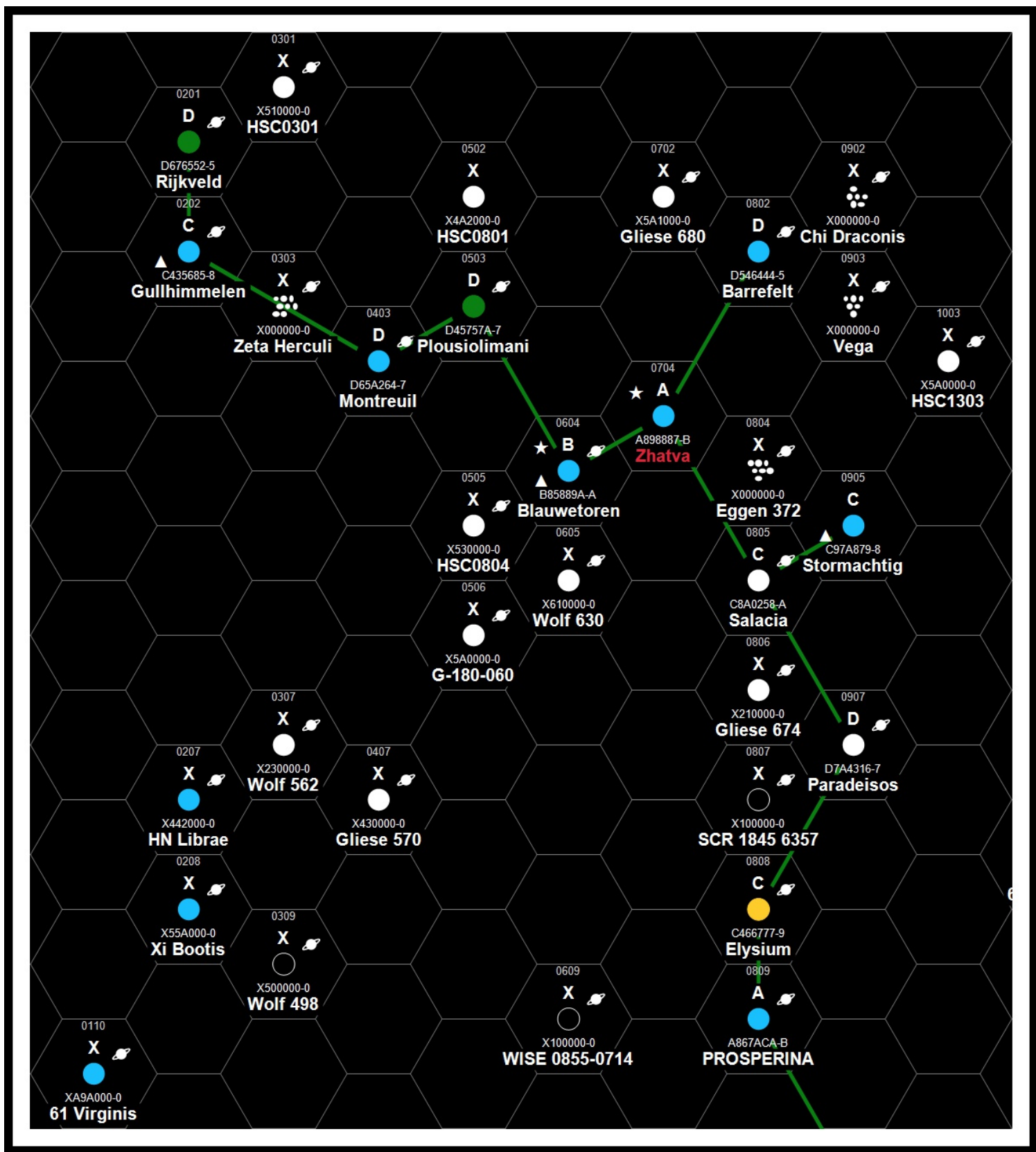
By Neil Lucock




The Vega Subsector is derived from, and is intended for use with, Stellagama Publishing's Near Stars and the Cepheus Engine 2D6 role playing systems.

Hex	Original name	New name	UWP	Notes
0201	Beta Trianguli	Rijkveld	D676552-5 Ag Non-ind	
0202	Psi Serpentes	Gullhimmelen	C435685-8	Scout base
0404	18 Ophiuchi	Montreuil	D65A264-7 Low Pop	
0503	Gliese 638	Plousiolimani	D45757A-7 AG Garden Non-ind	
0604	Wolf 718	Blauwetoren	B85889A-A Garden Rich	Navy Base Scout Base
0704	Gliese 667	Zhatva	A898887-B	Navy Base Subsector capital
0802	Mu Herculis	Barrefelt	D546444-5 Non-ind	
0805	36 Ophiuchi	Salacia	C8A0258-A Fluid oceans Waterworld	Space port only
0808	Ross 154	Elysium	C466777-9 Ag Garden Rich	
0809	Barnard's Star	Prosperina	A867ACA-B High pop Ind	
0905	70 Ophiuchi	Stormachtig	C97A879-8 Water world Rich	Scout base
0907	Struve 2398	Paradeisos	D7A4316-7 Fluid oceans Low pop	







Vega Subsector lies to Coreward and Spinward of Earth. Although Prosperina is in the Subsector, it is part of the Earth Core Worlds, with Earth and Proxima Centuri (Vanadis). The subsector is administered from Zhatva. There are navy bases at Zhatva and Blaustoren. The "Scout bases" at Blaustoren, Stormachtig and Gullhimmelen are part of the Koloniebureau, charged with managing settlement across the subsector. They survey worlds, establish an ecology suitable for farming or exploitation and prepare the site for colonists. They then provide technical assistance. Their maps are used by the local navy (and provided free to subsector ship operators) but they have no military role.

The population are mostly Dutch speakers, from the Nederlands Nieuwe Samenleving (on Earth), with pockets of Greek, French, Norwegian and Russian speakers. The official languages of business and government are Dutch and French.

The spinward and rimward parts of the subsector have been mapped by the Koloniebureau but are not explored or settled.

The following are the main worlds of the subsector:

0809 Barnard's Star Prosperina

Prosperina is tidally locked, so one side of the planet constantly faces the Red Dwarf star. Normally this would result in the other side of the planet freezing, but the extensive oceans absorb heat and the weather system distributes it. There is a large ice cap on the side facing away from the star. The sky is fairly dark and the light intensity is low.

Prosperina has the VanderBerg Sterrenschip Fabriek (Vanderberg Starship Factory) at Deventer. The factory town of Kampern exports De Vindt starship parts.

The orbital port is called The Peter Van Der Kamp Hooghaven. The ground port is called The Thandiwe Dijkstra Laaghaven. Pilots say they are calling at Peter or at Thandi. There are many spaceports that also connect to the orbital port.

Prosperina has a population of 6.2 billion. There are two Gas Giant planets in system. The Laaghaven has free water (it's on a coast) they will sell you refined fuel if you wish. There is a regular ship service to Earth, Elysium and Vanadis.

0704 Gliese 667 Zhatva


The subsector capital, Zhatva has three stars in the sky, so while it does go dark at night, the second type K star at 12 AUs provides enough light to see by. The third star in the system is a type M red dwarf, but that is just another star in the night sky. The brightest star in the sky is Vega, just over 7 light years away. This is visible during the day and casts faint shadows at night. The daylight sky is never bright at Zhatva, the K type star only puts out 10 to 15% of the energy that Sol does.

There are 5 Gas Giants in system, one large and 4 small ones.

The high levels of CO₂ (6% carbon dioxide) are the taint in the atmosphere. They are caused by sea algae. Buildings are sealed and filtered to remove the excess CO₂, travel outside requires a filter mask to avoid hypercapnia. Brief exposure is unlikely to be harmful, but prolonged exposure without a filter results in dizziness, disorientation, headaches, increased heart rate and confusion. Prolonged exposure can result in heart attacks, mental confusion and death.

If someone is outside without a mask, roll under END as a difficult roll (-2DM) after 10 minutes of exposure. This is rolled after 2 minutes if someone is doing anything physical (e.g. running, combat, dancing, digging, carrying heavy weights).





if If the END roll succeeds, roll again after every 10 minutes with the difficulty increasing on each subsequent roll. If the roll is failed, all skill rolls are more difficult (-2DM for the first failure, increasing by -2 for each subsequent failure). Once the negative DMs are equal or greater than the character's END score, they fall unconscious. Continue to roll every 10 minutes. Once they reach twice the END score, they are dead.

Once a filter mask is used (or the person is taken into a filtered environment), roll END after 30 minutes. Once END has been rolled, the person is back to normal. A Medic adds their skill level to the roll. If you failed it, re-roll after each 30 minutes.

The Class A starport has both orbital and ground facilities. The ground port offers free water as unrefined fuel. The De Jong Sterrenschip Fabriek is at Kortrijk and is the main exporter of ships to the Vega Subsector. It has recently achieved TL 11 and has a contract to build 6 more Provincial Liners.

The Subsector Government (De Senaat) is at Zevenhuizen and the Governor's residence is at Zwolle. The Joan De Groot University at Zwolle accepts students from over the entire Subsector.

Zhatva has a population of 862 million. There is a regular ship service to Blauwetoren and Salacia.

Zhatva has a navy base in orbit and has a training academy at Zandstrand.

0604 Wolf 718 Blauwetoren

Blauwetoren orbits a M1V red dwarf star with only 3.5% of the luminosity of Sol. The planet is tidally locked so has one side constantly facing towards the star. The sky is dark red and the day side is in a perpetual twilight. The centre of the bright side has tolerable temperatures, towards the edges it gets colder, there is an ice cap at the centre of the dark side. Like at Prosperina, the seas remain liquid under

the ice. The Donkerewind blows from the dark side to the centre, where the warmed air rises and drops rain over the outer parts of the daylight side.

There are 2 gas giants in system. Unrefined fuel (water) is available for free at Zwartewater Laaghaven.

Blauwetoren was originally called Schemering (Twilight) until the De Jong en Dijkgraaf Ruimteschip Company (Called "DJD Space Ships") opened at Zwartewater. The huge blue tower of the main construction building was always illuminated and was visible for many kilometres. Staff at the Navy and Scout bases called the place Blauwetoren, soon no one called it by the official name. Governor Amanda De Wit put it to the popular vote and the name was changed.


Blauwetoren has a good standard of living. It exports crops and Zeewezen (a marine swimmer with a good taste). Fishing ships are often attacked by the huge Tandgezicht, a 18 metre sea serpent with aggressive behaviour.

0808 Ross 154 Elysium

Elysium orbits a Red Dwarf star which normally gives out under 4% of the energy of Sol, the world is tidally locked with one face always towards the star and the other always dark. There are no Gas Giants in the system, there is a considerable dust, asteroids and several small rocky planets. The star has a tendency to flare at odd intervals, becoming suddenly brighter and emitting X-rays. All buildings have lead roofs with a generous overhang, outdoor workers use protected vehicles or lead coats and hats. There is a national system of alarms from satellites.

About 70% of the 69 million population is





Dutch-speaking, the other 30% speak Greek and live in a separate state called Kaligeorgia. The Dutch settlement of Montparnasse has the Class C Laaghaven, there is a spaceport at Neakorinthos in the Greek state. Both offer water for free as unrefined fuel. Only the ground port at Montparnasse offers repairs to space vessels.

The two populations get on well enough, as each recognises that their prosperity lies in growing crops for export, cooperating rather than fighting.

0805 36 Ophiuchi Salacia

Salacia has three type K stars in system. The main world is called Guniibuu and orbits 36 Ophiuchi A. Star B has an eccentric orbit that brings it closer to Guniibuu every 57 years. Most of the time Guniibuu is frozen. It thaws and blooms for about 5 years. The world is covered by water (there are a few small islands) and suffers violent storms. The atmosphere is contaminated by the spores of a floating sea plant.

There is a research station on Oosteiland and a D class port, water can be taken as unrefined fuel at no cost. The atmosphere is not breathable, visitors must wear an oxygen supply and a filter. Most of the world's population is at the Class C Hooghaven in orbit.

Salacia was established when J3 drives were uncommon and most ships needed somewhere to refuel. The port has two fuel shuttles that bring water to the orbital port. There are Gas Giants in system.

Salacia's research station is looking for ways to make the world habitable. There is extensive sea life and it is edible, if a little odd-tasting.

0905 70 Ophiuchi Stormachtig

Stormachtig has a binary star system, consisting of two K class stars. The world is never brightly lit, but the companion star

comes closer every 88 years. The world has very little land, only a few mountain tops poking out of the stormy seas.

The air is not breathable due to methane produced by the numerous Zeeslangen (a kind of sea snake that is the juvenile form of a kelp-like plant). Methane displaces the oxygen in the air, making the levels of oxygen too low to breathe. When combined with oxygen, methane is explosive. All it needs is a lightning strike or a spark and hundreds of square kilometres of gas suddenly ignite. This is called a Knaller. They can be seen from orbit.

Players must wear breathing equipment if working in the atmosphere. All locally produced tools and equipment are designed to not cause a spark if struck. If using off-world equipment outside, roll under 11 on 2D6 once an hour to avoid causing a Knaller. This does not apply in submersibles, space vessels or undersea habitats.

If the players cause a Knaller, each should take 3D6 damage (4D6 if inside a building, cave or similar).

The surface of Stormachtig is far too dangerous, so the population lives in undersea cities. The main industry is food production. Submarine trawlers and harvesters gather edible animals and plants and release shipping containers which float to the surface. Shuttles collect them and take them to orbit. Shuttles accumulate static electricity on entering the atmosphere and must make sure that they discharge (causing a local Knaller) by releasing an empty winged container from altitude before picking up the loaded one floating on the sea.

Most visitors will visit the orbital Hooghaven. There are extensive warehouses and food production businesses. Waste from the food plants is used as fertilizer in massive greenhouses in space around the orbital port. These



grow flowers and seedlings for export.

0202 Psi Serpentis Gullhimmelen

Gullhimmelen has three stars in the sky, Gullhimmelen orbits Psi Serpentis B, the K2V star. The world is brightly illuminated by the three stars in the system. The sky has an attractive golden tone. The low gravity and thin atmosphere made Gullhimmelen an unattractive proposition, but the Hårfagre Undersøkelsesselskap (usually called HU) bought the rights to settle the world. It is now the centre of the colonisation effort on the spinward and coreward part of the subsector.

The world is mainly Norwegian speaking, although Dutch is an official secondary language and many educated people also speak French.

Travellers must wear respirators and cold weather clothing if outside. As is usual in Vega subsector, water as unrefined fuel is available for free at the C Class starport. Note that Gullhimmelen does not have an orbital port.

The remaining worlds in the Subsector are colony start-ups.

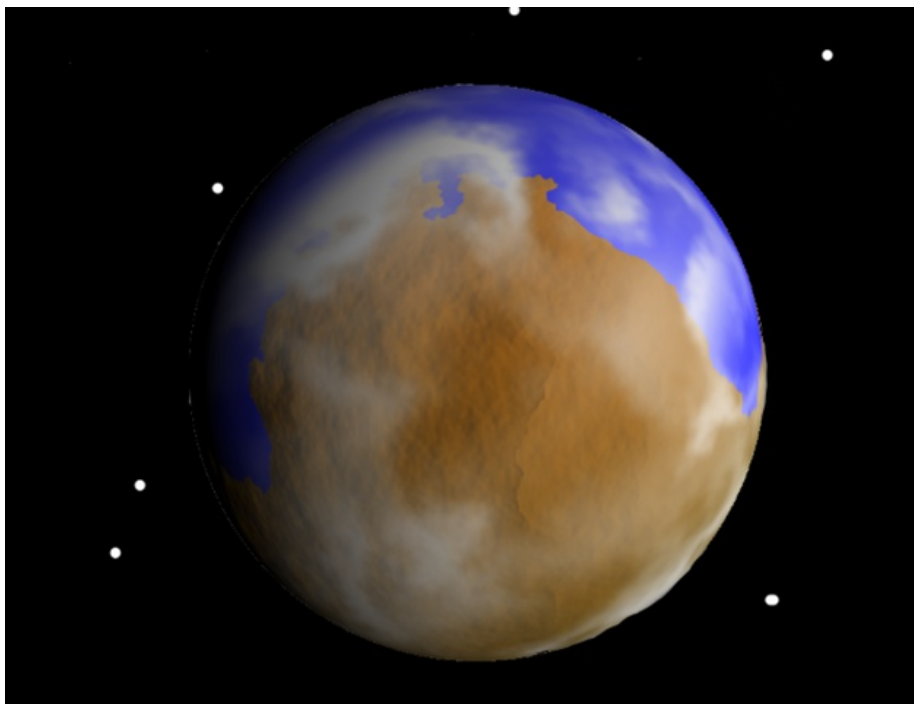
Montreuil is not yet accepting settlers, the

planetary science team have not yet completed their work.

Paradeisos has a lot of traffic passing through on the main route from Prosperina to Altair and 61 Cygni in the adjacent subsector. The world is Greek-speaking, although Dutch is spoken by officials and educated citizens. The Maragos Company have a contract with the subsector government to build a Class C port, work is expected to take 5 years.

Plousiolimani should be considered an amber zone. The population is 10% Spanish speakers, 90% Greek. The Spanish are the rich part of society, they hold all the political posts and are better educated. The Greek speakers are resentful, they claim that they are treated unfairly in law and are cheated politically. There is a breakaway Greek enclave called Eleftheria, the planetary government has started hostilities and anyone attempting to go there is placed under arrest.

Rijkveld and Barrefelt are typical colonies. Rijkveld is a food exporter and there are plans to improve the local starport to a C Class.





Provincial Cruiser

By Neil Lucock

The Provincial Cruiser is built by the De Jong Sterrenschip Fabriek at Zhatva in Vega Subsector. They had a suitable design in production for their 900 tonne Provincial Liner, this was modified to include a pinnacle bay, weapons and fire control. The ship was intended to sort out local problems, to have enough firepower and performance to deal with armed civilian ships and to carry a few marines. It was never intended as a true warship.

The nine turrets are arranged around the middle of the hull, with three on each side and three on the top. They can all shoot to the front or rear of the ship. The bridge is in the centre of the ship.

It was called De Glazen Kruiser (The Glass Cruiser) because the crew of the Utrecht thought it would shatter at the first blow. However, the crews using the class appreciate the ship's reliability and spacious layout. Saying you serve on a Glass Cruiser is now a source of pride.

The following ships are in service;

5300 Utrecht	Provincial Cruiser
5301 Groningen	Provincial Cruiser
5302 Friesland	Provincial Cruiser
5303 Gelderland	Provincial Cruiser
5304 Overijssel	Provincial Cruiser
5305 Zuid-Holland	Provincial Cruiser
5306 Zeeland	Recovery and repair ship
5307 Limberg	Hospital ship. Unarmed, called Het Witte Schip.
5308 Noord-Brabant	Transport. Unarmed.

Design notes and history

The De Jong Sterrenschip Fabriek Provincial liner was designed around high performance. With occasional piracy by armed traders, visiting the outlying worlds could be risky. With the previous generation of transports unable to outrun trouble and not having the range to avoid certain systems, the De Jong ship has the power to outrun the converted transports it encounters.

The provincial liners are subsidised, the Senaat at Zhatva wishes to improve trade and mobility through the subsector it controls. Only Middle Passage is offered at 8,000 cr per jump.

There is a freighter version of the provincial liner that has only 22 staterooms for the crew but can carry 300 tonnes of cargo. It costs 341.28 Mcr (volume discount applied). 5308 Noord-Brabant is an unarmed freighter of this type.

This freighter was a J3 version of an earlier design with all details the same except it only had J2 capability but carried 400 tonnes of cargo. The Zeelander class freighters cost 32328 Mcr (volume discount applied).

TL 11 Provincial Cruiser "De Glazen Kruiser"

Using a 900-ton hull (18 Hull, 18 Structure),





the Provincial Cruiser is intended to patrol large areas of space. It attempts to reduce the costs of a true warship while retaining a good deterrent capability. It mounts jump drive L, manoeuvrer drive M, and power plant M, giving a performance of Jump-3 and 3-G acceleration. Fuel tankage of 342 tons supports the power plant for 6 Weeks of Power and one jump-3. Fuel processors of 17 tonnes can refine the tank contents in one day.

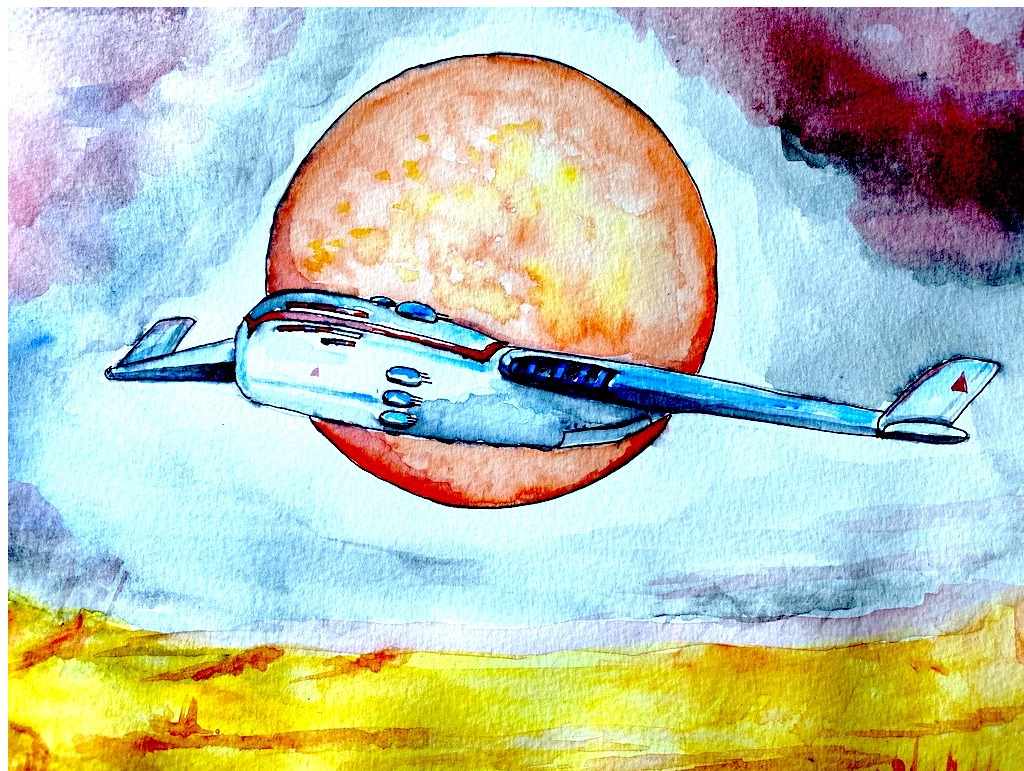
Adjacent to the bridge is a computer Model 3 Bis/fib. The ship is equipped with Basic Military sensors (+0 DM.) and Jump control software. There are 56 staterooms and 0 low berths. The ship has 9 hardpoints and 9 tons allocated for fire control. Installed on the hardpoints are 9 triple turrets equipped with beam lasers. This ship has no screens. There is one small craft hangar, equipped with a standard 40 ton Pinnacle. Cargo capacity is 81 tons. The hull is streamlined, and is unarmoured. Special features include fuel scoops. The ship requires a crew of 56: 6 Bridge crew, 4 engineers, 4 medics, 10 gunners, 4 pinnacle

crew, 28 marines. The ship can carry up to 56 additional passengers at double occupancy and 0 low passengers. The ship costs Mcr 421.7553 (including discounts and fees) and takes 100 weeks to build. The costs include the pinnacle.

TL 11 Provincial Liner

Using a 900-ton hull (18 Hull, 18 Structure), the Provincial Cruiser is intended to service undeveloped areas of space. It mounts jump drive L, manoeuvrer drive M, and power plant M, giving a performance of Jump-3 and 3-G acceleration. Fuel tankage of 342 tons supports the power plant for 6 Weeks of Power and one jump-3. Fuel processors of 17 tonnes can refine the tank contents in one day.

Adjacent to the bridge is a computer Model 3. The ship is equipped with Basic civilian sensors (-2 DM.) and Jump control software. There are 56 staterooms and 0 low berths. The ship has no weapons and no screens. Cargo capacity is 152 tons. The hull is streamlined and is unarmoured. Special features include fuel scoops.



The ship requires a crew of 56: 6 Bridge crew, 4 engineers, 4 medics, 7 stewards. The ship can carry 34 high passengers, 68 at double occupancy and 0 low passengers. The ship costs Mcr 360.18 (including discounts and fees) and takes 100 weeks to build.





The Gebbebem

By P-O Bergstedt

The Gebbebem is an insectoid sophont race. They are not big, about one and a half meters tall when standing on four legs, (or one meter when standing on six); their front legs are usually used as arms. They also have four small manipulators around their mouth. The head is a sensory cluster with eyes, ears, and antennas and holds the sentient brain. The head rests on the back of the Gebbebem and is connected with the body by a chitin joint. The mouth is located at the front of the main body (not in the head).

The Gebbebem are usually very loyal to their queen. However, when new queens emerge, one of the new queens may try to overthrow the local Gebbebem interstellar government. As a result, their empires do not last very long. Individual Gebbebem are not always aware of treaties made with other empires and may go on raids and attack human worlds. They believe that what they do is for the best of the hive.



The Gebbebem head

The head of a Gebbebem is a separate organism to the rest of the body. The head is a parasite worm that attach itself to a young body. The head and the body then

grow together, and after a year, the head becomes sentient.

In the case that the body dies, the head will die within minutes. The head cannot communicate by itself and it cannot be placed on a new body. The connection between head and body can only be made while both the host and the parasite are young.

In case the that the head dies, the body will die within a day or two since it will not eat or sleep without direction from the head. If this happens in a Gebbebem community, the body is killed.

Relations with humans

A Gebbebem empire usually exists for about 100-200 years. It will then collapse due to internal fighting between new queens. Gebbebem empires are rarely larger than a few subsectors, but they can still be problematic for neighboring human worlds. Since the Gebbebem are very different from humans it is hard to understand them and make treaties. There cannot be mixed Gebbebem and Human worlds; the Gebbebem are omnivores and may eat humans.

Home planet

The original Gebbebem home world is unknown. The Gebbebem do not know and for them it is not even important. They have been found in multiple places in the Orion arm.

The Gebbebem Language

For humans, the Gebbebem language is very hard to learn. The language is built up of syllables and the words change meanings depending on the number of



times the syllables are repeated and in what sequence they are changed. Some scholars have described it as solving a Rubik's cube using Morse Code.

Using a translator program is the usual way of communication between humans and Gebbebem.

Mepalele Subsector

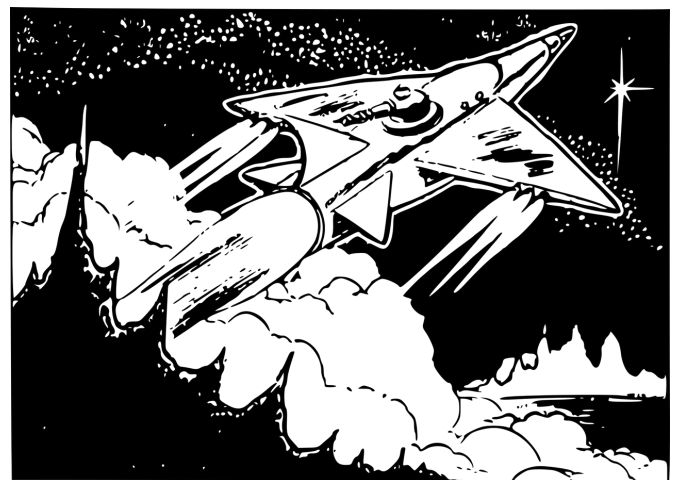
PlanetName	Loc.	UPP Code	B	Notes	Z	PBG	AI
PAMPAZEL	2528	B300976-C	N	Hi In Na Va	113	Gh	
Zelalapp	2529	B610344-B	N	Lo	412	Gh	
Arara	2530	B9B7679-8	N	FI Ni	610	Gh	
BIANA	2622	CA879A9-6		Hi Pr	223	Ck	
Dulcova	2623	C9628CE-4	S	Ph Ri	A 212	Ck	
Armina	2624	X545000-0		Ba	R 024	Ck	
Meppara	2626	C8B3753-A		FI	124	Gh	
Greguz	2627	C667875-5		Ga Ph Pa Ri	523	Gh	
Ezrareel	2629	D872477-6		Ni He	904	Gh	
Grarapp	2630	A434301-B	N	Lo	300	Gh	
Lippelia	2722	A8D5687-A		Ni	200	Ck	
Mureek	2726	A536558-A		Ni	134	Gh	
Kuzper	2728	B547226-8		Lo	424	Gh	
Ambreek	2729	C21155A-B		Ic Ni	212	Gh	
Leleel	2827	X68A000-0		Ba Wa	R 010	Gh	
Mepalele	2828	A434786-D	N	Cp	824	Gh	
Mepumuz	2829	D7AA7AB-7		FI	621	Gh	
Zempez	2830	E683658-6		Ni Ri	225	Gh	
Lorele	2921	C000755-A	S	As Na Va Pi	422	Ck	
Zazeel	2927	C8A7330-7		FI Lo	303	Gh	
Fafameel	2928	C210568-A		Ni O:2828	213	Gh	
Ampuppuz	2930	C632365-7		Lo Po O:2828	104	Gh	
Aquitas	3022	D668658-4		Ag Ri Ni	A 714	Ck	
Dummez	3027	D6438AF-6		Po Ph Pi	214	Gh	
Damaruz	3028	D7B8673-7		FI Ni	A 520	Gh	
Gagadrell	3030	D6698AA-3		Ph Ri	113	Gh	
Kerara	3127	A663534-A		Ni Pr	802	Gh	
Alababark	3130	B655544-8	N	Ag Ni Ga	310	Gh	
Braskia	3221	B431375-A		Lo Po	A 113	Ck	
Asporia	3223	X624000-0		Ba	R 004	Na	
Emamama	3225	C626763-7		Pi O:3127	100	Gh	
Grumem	3227	B525346-8	N	Lo	610	Gh	

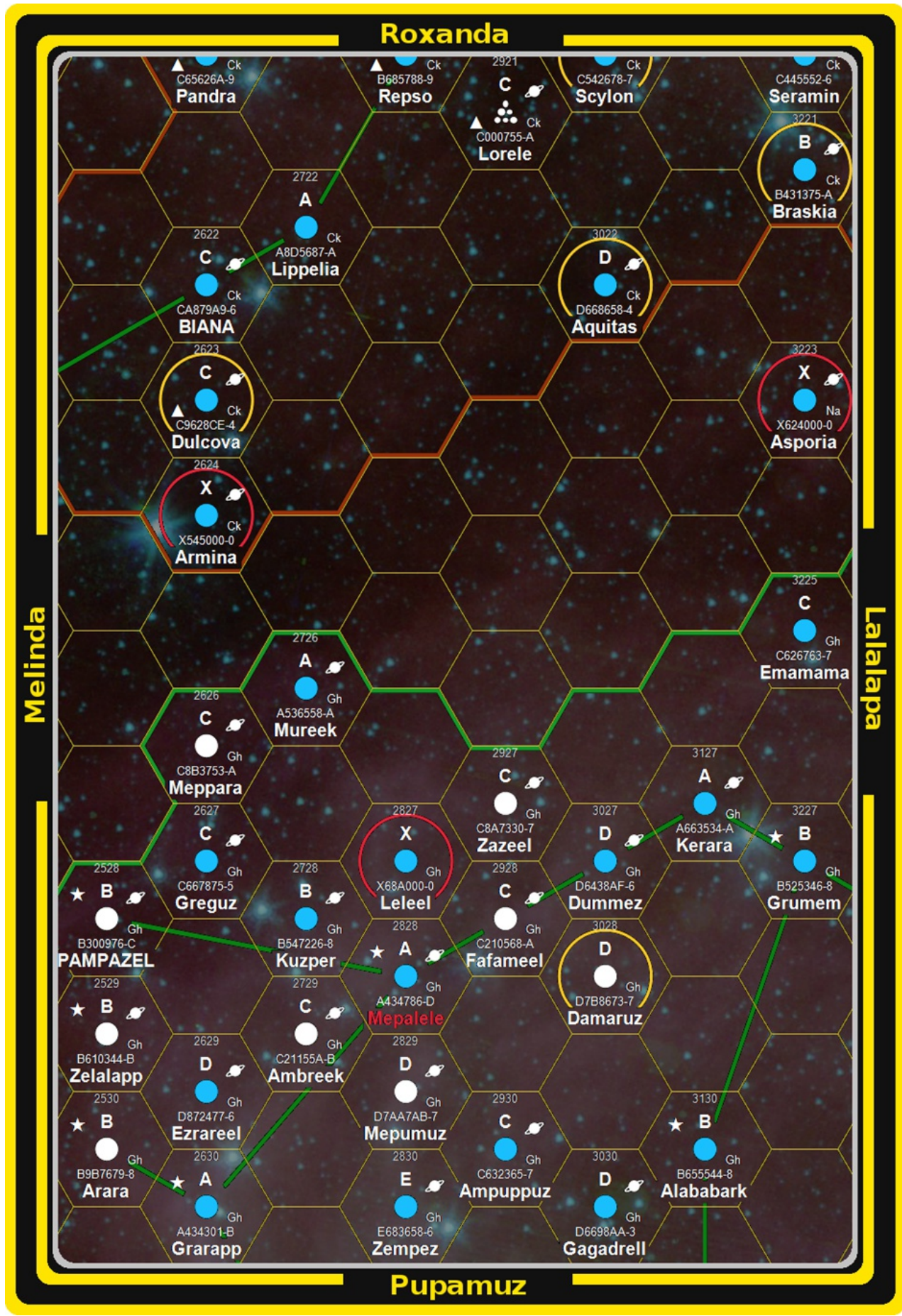
Generating Gebbebem Characters

Roll dice for the UPP as normal with a DM-2 for Intelligence. For each level of Social Standing above 8, add 1 to Intelligence and Education. Since they cannot cooperate very well with other sophonts, the Gebbebem can only select Gebbebem careers. However, the skill results from those careers would be quite similar to what other races would get and the normal generation tables may be used. The Gebbebem isn't very well suited for being a playable race but works fine as NPCs.

In this subsector The Gebbebem Hive (Gh) and the Cepheus Kingdom (Ck) meet. The closest distance is only two parsecs.

A war has been fought that taught the Hive that you cannot just kill humans and occupy their worlds. Armina was the world that the Hive occupied. The Kingdom took it back and killed all the "bugs". After a few punishment strikes into Gebbebem Space there has been an uneasy peace.







Tau Ceti

By Randy McDonald

The star Tau Ceti has rightly become famous over the past decades, as a nearby star quite similar to our own sun that is known to support several planets and might plausibly support life.

The star Tau Ceti

First catalogued by Johann Bayer as Tau Ceti in 1603, the high proper motion of Tau Ceti as it moved across the celestial sphere brought this star to the attention of astronomers at a relatively early date. It soon became clear that Tau Ceti was one of the stars closest to our solar system. As astronomers studied Tau Ceti, it became increasingly clear that this star was exceptionally like our own sun. Like our own sun, Tau Ceti was a yellow dwarf on the main sequence, the second-closest yellow dwarf star after Alpha Centauri A. Unlike Alpha Centauri A, Tau Ceti was a single star, lacking companions. Tau Ceti was recognizable as one of the closest solar-type stars.

Tau Ceti is a G8 star somewhat smaller and dimmer than our own G2 sun (or, for that matter, the G2 star Alpha Centauri A). Tau Ceti has a mass only 78% of the mass of our sun's and is only 52% as bright, with barely more than a quarter as many elements heavier than hydrogen and helium as our sun. Most estimates of Tau Ceti's age place it at 5.8 billion years, roughly one billion years older than our sun.

Many factors make Tau Ceti appear at least as suitable a location for planets and life as our own sun. Tau Ceti is a stable star, not prone to flares like most red dwarfs or even some yellow dwarfs; planets orbiting

Tau Ceti are not likely to suffer heavily from outbreaks of bad stellar weather. More, the relatively low mass of Tau Ceti means that this star will have a longer lifespan than our sun, estimates suggesting a lifespan for Tau Ceti of eighteen billion years where our sun will last only ten billion years. Tau Ceti and its worlds, simply put, will last substantially longer than the sun and our worlds.

The planets of Tau Ceti

Despite having substantially fewer elements heavier than hydrogen and helium, recent decades of study by astronomers suggest that Tau Ceti supports an extensive planetary system.

The first reliable report of planets orbiting Tau Ceti came in 2012, when a team of astronomers tracking the movements of Tau Ceti found signals suggesting that five planets with minimum masses greater than Earth or Venus orbited the Tau Ceti closely, all orbiting compactly within what would be the orbit of Mars. Later analyses have confirmed the existence two of these worlds, planets substantially more massive, while introducing two other candidates and casting potential doubt on others. None of these worlds have been detected directly, and a variety of factors suggest that some of these worlds might well have not super-Earths but rather mini-Neptunes, more like an ice giant than like a rocky world.

More recent studies suggest that there could plausibly be other undetected planets orbiting Tau Ceti.

A 2019 study suggests that there could be a massive world orbiting relatively





distantly, possibly a gas giant comparable to Jupiter, while a 2020 study predicts the existence of a planet orbiting in the large gap between Tau Ceti e and Tau Ceti f.

Outside the immediate neighbourhood of Tau Ceti's planets, Tau Ceti is known to support an analogue to our solar system's Kuiper Belt, a belt of icy debris orbiting beyond the planets. Tau Ceti's Kuiper Belt seems to have ten times as much material as our solar system's, suggesting that any worlds of Tau Ceti might have received substantially more bombardment from this belt than the worlds of our solar system did from our Kuiper belt.

Tau Ceti e and Tau Ceti f

The two worlds of Tau Ceti e and Tau Ceti f are particularly interesting, as plausibly rocky worlds which orbit within the limits of the circumstellar habitable zone of Tau Ceti, the zone where planets orbiting a star could manage to support broadly Earth-like environments.

- Tau Ceti e orbits close to the inner limits of the circumstellar habitable zone, at a distance of 0.552 AU and with a year of 168 days. The planet has a mass of at least 3.93 Earth masses, making it a super-Earth, but this could plausibly be much greater, making a candidate for a rocky world into something like a hot mini-Neptune. Orbiting closely to Tau Ceti, Tau Ceti e receives more than 80% more light than Earth, and even if it is a rocky world could be Venus-like or could plausibly be on the edge of tipping over into a Venus-like state. It is possible to come up with scenarios where Tau Ceti e is Earth-like now—if it rotates slowly, the resulting permanent cloud layers could help counter the greenhouse effect—but these would be special circumstances.

- Tau Ceti f, meanwhile, orbits at the edge of the circumstellar habitable zone,

with an orbit of 1.334 AU, a year of 1.7 Earth years, and a minimum mass of 3.93 Earth masses. Like Tau Ceti e, Tau Ceti f could plausibly be a mini-Neptune. Unlike Tau Ceti e, Tau Ceti f is cold, receiving only 29% as much radiant energy from its star as Earth does from its sun. (Mars, for comparison, receives 44% as much.) Tau Ceti f might have entered the circumstellar habitable only a billion years ago, after eons of Tau Ceti's slow expansion. If Tau Ceti f is at all Earth-like, it is likely a very cold world.

Tau Ceti e and Tau Ceti f might support Earth-like environments, based on what little is known about their physical characteristics, but it does not seem likely. There are scenarios in which Tau Ceti e could be a habitable world with broadly Earth-like characteristics, but these scenarios would require a long and not necessarily likely chain of events to come about. Tau Ceti f, similarly, might be broadly Earth-like, but it seems more likely that it could simply be a cold wasteland. Beyond that, it is not at all clear that these are rocky worlds; Tau Ceti e and Tau Ceti f might well be substantially more massive mini-Neptunes. Beyond this, local factors mean that these worlds could evolve differently: Mineral physicist Sang-heon Shim pointed out in 2015 that the excess of magnesium relative to silicon in Tau Ceti could mean, among other things, that the worlds of Tau Ceti might well be more volcanically active than Earth.

It should also be noted that the minimum masses for these planets would include these planets and their hypothetical moons. It is imaginable that these moons could be quite large. Kim Stanley Robinson imagined, in his 2015 *Aurora*, that both Tau Ceti e and Tau Ceti f were binary planets, with the larger worlds having smaller and more Earth-sized





moons. There have been no exomoon detections in Tau Ceti, but nothing precludes their existence.

It is also worth noting that, as described above, other worlds might exist. The gap between Tau Ceti e and Tau Ceti f encompasses the heart of the circumstellar habitable zone, a space where an undetected world less massive world than either of its neighbours could easily enjoy an Earth-like climate. At least one team of researchers has predicted the existence of another world there.

Tau Ceti and its neighbourhood

By sheer chance, Tau Ceti just happens to be located in a neighbourhood with a relatively somewhat denser population of stars than our solar system.

- The nearest star to Tau Ceti is YZ Ceti, a very dim red dwarf star just over 1.6 light-years away, known for its flares and for possessing four Earth-mass planets.

- Luyten 726-8B is a binary pair of red dwarfs that includes the famous flare star UV Ceti (Luyten 726-8B) just 3.35 light-years from Tau Ceti

- One very interesting neighbour is Epsilon Eridani, just 5.45 light-years away, a very young main-sequence orange dwarf believed to have planets and itself frequently imagined as a home for life.

- Van Maanen's Star is a solitary white dwarf some 1.3 billion years old, one of the first white dwarf stars discovered, a bit more than 6.2 light-years from Tau Ceti.

- Teegarden's Star is a very dim red dwarf only discovered in 2003, located 7.7 light-years from Tau Ceti. It is known to host two planets, both of which happened to be located in the star's circumstellar habitable zone, though flares may well have eroded the atmospheres and hydrospheres of these worlds.

- Omicron 2 Eridani, also known as 40

Eridani, is a trinary system roughly as old as Tau Ceti (and our solar system) that is only 10.15 light-years from Tau Ceti. A is a bright orange dwarf star, known to support a super-Earth orbiting more closely in an orbit tighter than Mercury's, and is orbited at 400 AU by a binary pair of a red dwarf and a white dwarf. A might conceivably support planets with Earth-like environments, and indeed Star Trek has located the planet Vulcan in this system.

- Kapteyn's Star, 10.86 light-years away, is an ancient red dwarf star eleven billion years old that may possess two super-Earth planets. Kapteyn b seems to be located in the star's circumstellar habitable zone, though flares (as with Teegarden's Star) and sheer age may have worn away its atmosphere.

Any civilization based at Tau Ceti, whatever its origins, will have an interesting neighbourhood to explore.

Tau Ceti imagined

We know so much about the Tau Ceti system that it is possible to come up with a preliminary model of the Tau Ceti solar system. Because of the indirect nature of the detection, most candidates are uncertain. Candidates b, c, and d were proposed by the 2012 team but have not been confirmed, while candidates g and h were proposed by a later revision, and Tau Ceti i is a gas giant suggested to exist in the outer Tau Ceti system by two recent papers. And j is a hypothetical planet orbiting in the gap between e and f. Tau Ceti e and Tau Ceti f are the only two planets that have been consistently detected.

What could a system record for Tau Ceti look like? It might look something like the below table adapted from Wikipedia's Tau Ceti article, drawing from what we



know and can reasonably project from computer models. Tau Ceti could plausibly be a planetary system dense with living worlds, lithopanspermia transferring life between these tightly packed worlds. Consider this portrait:

and flocks at the start of each day.

- Tau Ceti j is the immediately recognizable gem of the Tau Ceti planetary system, immediately recognizable to visitors from Earth. A warm water world, Tau Ceti j is a perfect

Companion (in order from star)	Mass	Semimajor axis (AU)	Orbital period (days)	Eccentricity	Planet type
b	2.37 M	0.11	13.97	0.16	Super-Earth
g	1.72 M	0.13	20	0.06	Super-Earth
c	3.96 M	0.2	35.36	0.23	Super-Earth
h	1.83 M	0.24	49.41	0.23	Super-Earth
d	3.14 M	0.37	94.11	0.08	Super-Earth
e	3.71 M	0.54	162.87	0.18	Post-Garden
j	3.33 M	0.85	322	0.17	Garden
f	4.93 M	1.33	636.13	0.16	Glacier
i	1.81 Jupiter masses	6	4606	0.15	Gas giant
Debris disk		6 – 55 AU	(12.61 Earth years)		Kuiper Belt analogue

- The five closest worlds to Tau Ceti are super-Earths all, large rocky worlds orbiting much too close to their sun to avoid superheating. Of the five, only d is able to retain an atmosphere, thanks to its mass and its relative distance from Tau Ceti. There may well be much of mineral or scientific interest on these worlds, but these are barren.


- Tau Ceti e is a world much more fortunate than Venus, having escaped the global resurfacing event 700 million years before the present that transformed Venus from a relatively warm Earth-like world into a wasteland. Tau Ceti e's slow rotation and dense cloud cover, product of its broad oceans, have combined to let the planet remain relatively temperate, though only the polar areas would host environments with temperatures comfortable for humans. Land-based life tends to hibernate, sheltering first from the extreme heat of the day and then from extreme cold at night, erupting spectacularly in great fields of blooms

host for local life. Visitors from Earth would note that Tau Ceti j's has relatively high gravity compared to Earth, while its eccentric orbit—a trait shared with all of the Tau Ceti planets—makes for harsh seasonal changes.

- Tau Ceti f and Tau Ceti f I are each living worlds, the life transferred by lithopanspermia from the inner worlds eons ago taking advantage of the warming of local environments over the past billion years. Tau Ceti f, though, only barely escaped becoming a mini-Neptune, and even now retains a superdense nitrogen atmosphere. The smaller Tau Ceti f I, with a mass barely half that of Earth and tidally locked, supports a considerably more human-friendly environment, with a breathably thin atmosphere existing alongside abundant water and local life. Any human settlement in the Tau Ceti system might well start here, not on the warmer super-Earth j.

- Superjovian Tau Ceti i, the single gas





giant of the Tau Ceti planetary system, acts somewhat like a guardian, diverting some objects from the Tau Ceti debris disk from impacts with the inner rocky worlds (and doubtless directing others towards those planets). Like Jupiter, Tau Ceti i possesses an extensive collection of moons, with dozens of captured rocky and icy bodies of different sizes existing alongside a collection of six different planet-sized moons akin to Jupiter's Galilean moons. Many of these moons support subsurface oceans which could themselves support local biospheres of some complexity, drawing energy from the fading gravitational tides binding Tau Ceti i together with its moons.

Tau Ceti in fiction

Tau Ceti and its planets, imagined and otherwise, have made numerous memorable appearances in science fiction.

- The Viagens Interplanetarias series of L. Sprague de Camp, begun in the late 1940s, was set in a 22nd century where an Earth-dominated by Brazil came to form an interstellar community with other advanced neighbours. Tau Ceti, though home to three broadly Earth-like planets, was not one of these. Most of the stories in this setting were located on the emergent world Krishna, and adventurers could fit themselves into, perfect material for Sprague de Camp's more scientifically grounded planetary romances. James Cambias' excellent 1997 supplement for GURPS, Planet Krishna, goes into great detail about this setting.

- Tau Ceti makes surprisingly few appearances in the Star Trek universe. At some point before 2152, the star gave its names to the Tau Ceti Accords, which established clear frontiers between the spheres of influence of the Andorians and the Vulcans. Later appearances provide

more data, with Kirk defeating at Romulan vessel near Tau Ceti at one point, a Tau Cetian language being spoken, and with the famous freighter Kobayashi Maru having a home port on Tau Ceti IV. Non-canon materials have gone into greater length, Worlds of the Federation establishing Tau Ceti as the home system of the insectoid Kaferians, noted for their agricultural achievements; other worlds host substantial populations of humans and other species.

- In Isaac Asimov's Robots and Foundation series, Tau Ceti hosted the first colony world of the Spacers, a world named first New Earth then renamed Aurora. Thriving in the era of the Robots, the world later declined in subsequent millennia. After the fall of the Galactic Empire, rare visitors found that Aurora had become deserted.

- In her 1974 novel The Dispossessed, Ursula K. Le Guin chose to make Tau Ceti home to the binary planet of Urras and Anarres. Urras, like nearby Earth one of the scattered human-populated worlds of the Ekumen, was home to rival nation-states; Anarres, its neighbour, was a world with a harsher environment that became home to a utopian community of scientists and anarchists.

- Tau Ceti made its first appearance in the Alliance-Union universe of C.J. Cherryh in 1981's Downbelow Station. A local Earth-like planet, Pell, supported the large Downbelow Station, a meeting point for the rival factions of human space. Pell also had its own indigenous species, the technologically unsophisticated hisa.

- In the Traveller RPG setting, Tau Ceti hosts the world of Ilike, a relatively dry world with a thin atmosphere that became a major early battlefield in the Interstellar Wars between the Vilani Ziru Sirka and the Terran Confederation. Ilike eventually became a world notable for its alignment with the Solomani,





- In the Vorkosigan novels of Lois McMaster Bujold, Tau Ceti is frequently mentioned as a major power, technologically sophisticated and rich through a concentration of wormholes used for interstellar travel in its planetary system.

- In the 2300AD game setting, Tau Ceti hosts the garden world of Kwantung, home to colonies from Manchuria and Tau Ceti. Curiously, even though Tau Ceti is physically close to Earth, the short range of the stutterwarp drive used for interstellar travel by humans (and other species) meant that the Manchurian and Mexicans needed to take a circuitous route to Tau Ceti. This world's colonies were substantially younger and smaller than those of worlds orbiting stars much more distant from Earth but more conveniently located than Tau Ceti.

- The 1992 novel *The Sails of Tau Ceti*, written by Michael McCollum, imagines a Tau Ceti that mysteriously went nova in 1999. Centuries later, a spacefaring humanity discovers that Tau Ceti had actually been home to an indigenous

Resources

- There is an abundance of online material regarding Tau Ceti and its planets. The pages at Wikipedia <https://en.wikipedia.org/wiki/Tau_Ceti> and Sol Station <<http://www.solstation.com/stars/tau-ceti.htm>> provide excellent overviews of the current state of knowledge, with links to different papers and studies.

- Many papers regarding Tau Ceti's planets are online. The 2012 paper from Tuomi et al announcing the discovery of five planets is online at Arxiv <<https://arxiv.org/abs/1811.08902>>, as is the 2020 paper by Dietrich and Apai suggesting other worlds including a Jovian world and a habitable zone world <<https://arxiv.org/abs/2010.14675>>.

- Andrew LePage at Drew Ex Machina has a thorough examination of the potential habitability of Tau Ceti e and Tau Ceti f at his blog, part of an intermittent series examining the potential habitability of different exoplanets <<https://www.drewexmachina.com/2017/08/18/habitable-planet-reality-check-tau-ceti/>>.

- The blog *Centauri Dreams*, written by Paul Gilster, has a back catalogue going back decades of posts on exoplanets, space travel, and extraterrestrial life. Notable post relating to Tau Ceti include one from 2004 looking at the discovery of a dense cometary cloud <<https://www.centauri-dreams.org/2004/09/24/the-comets-of-tau-ceti/>>, another from 2012 reporting on the planet discovery <

- <https://www.centauri-dreams.org/2012/12/19/tau-cetis-five-planet-candidates/>>, and another from 2015 looking at challenges to habitability <<https://www.centauri-dreams.org/2015/04/24/habitable-worlds-around-tau-ceti/>>.

intelligent species, one that had successfully fled the destruction of its sun and with billions of refugees seeking refuge among humanity.

- Sid Meier's *Alien Crossfire*, the expansion pack for the 1999 4x video game *Sid Meier's Alpha Centauri*, established Tau Ceti as a site of a great disaster. A local faction of an advanced galactic civilization, known as the *Manifold Usurpers*, had attempted to alter an inhabited planet in the Tau Ceti system in the so-called "Tau Ceti Flowering", accidentally triggering a mass extinction. Survivors fled, followed by the conservative *Manifold Caretakers*, both alien factions ending up stranded on the planet of Chiron in the Alpha Centauri system that had itself been only recently settled by divided refugees from Earth.

- The 2015 Kim Stanley Robinson novel *Aurora* is told from the perspective of a generation ship and its human colonists as they were about to arrive in the Tau Ceti system, to fulfill their mission of colonizing an Earth-like moon of Tau Ceti e.





These Stars Are Ours Review

By Jonathan Sherlock

This review originally appeared on The Zhodani Base April 5, 2017

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"The more deeply we are cast under a story's spell, the more potent its influence." Underlying all passionate Traveller fans is a desire to tell and participate in grand science fiction narratives. We can worry about Canon and setting and what game Traveller is supposed to be. Or we can write sweeping histories such as "These Stars Are Ours!". Published by Stellagama Publishing, its goal is to provide an immersive Traveller universe that explores a variety of themes and stories, drawing upon well known science fiction tropes.

A consequence of separating the "engine" of Traveller from the "setting" is that it liberates writers and publishers to create their own settings for adventures. Echoing the great product the Twilight Sector, "These Stars Are Ours!" is a successful and comprehensive setting that includes new and modified rules relevant to the setting and takes advantage of Stellagama Publishing's existing work in extending the Cepheus Engine. It entrances the reader immediately and provides a powerful basis for Traveller adventures.

Alegis Downport has already written an informative review. The comment thread below the review already contains positive responses from the publisher promising



further material for the setting – great news for fans. This review will comment more on the history and nature of setting itself.

The star charts draw upon Stellagama's earlier work "Near Space". It makes Earth ("Terra") the centre of the setting – and so players have an immediate stake in the game, connecting to the future of our own planet. The setting approximately 400 years into the future, not thousands, also making it more immediate to us as readers and players. The period is clearly parallel to Traveller 2300 but this setting has a very different flavour. The Reticulans are the almond-shaped-eyed aliens of





Area 51 fame who conquer Terra and rule it with an iron fist until thrown off by the free-spirited, fighting and proud Terrans. Play begins in the aftermath of this revolutionary war.

The history of the war itself is a great read. This reviewer saw clear parallels to the Russian Civil War of the 1920's and to World War II – there was even a ‘Stalingrad’ moment in this setting’s history. While the ‘fighting Terran’ spirit is reminiscent of fiction such as *Starship Troopers*, the setting is also clearly influenced by the gritty realism of *Firefly* and its themes of the real social consequences of war and oppression. This theme carries through in describing the history and culture of the various non-human sophonts of the setting. None are cardboard cut-out “bad guys” and all have redeeming qualities as well as flaws. How these various aliens react to the Reticulan Imperium and the United Terran Republic causes us to reflect upon the reasons for our actions – the best part of role play games (although I also enjoy blowing things up).

The patrons provided are all great hooks firmly grounded in this detailed and nuanced setting. There are familiar industrial espionage, smuggling and exploration themes, but all layered with the particular history of the setting, including a mysterious race of Precursors who have left artefacts. But on top of this there are very specific adventures interacting with the various alien races in ways other than at the other end of a weapon. The Reticulans are divided into competing feudal houses. The Zhuzzh are untrustworthy and nomadic – but as a wise man once said, you can always trust an untrustworthy man to be untrustworthy. The Cicek are fierce fighters and dashing pirates, but also divided along gender lines Aslan-style. The Ssesslessians are mysterious respecters of ancient

traditions. Once more familiar with the setting, all of these species would make interesting player characters.

This setting book also offers careers and advanced career rules including setting-based events that affect characters, drawing players into the history and engaging them with the background. All of the new rules and alternate career paths are clearly based on the story needs of the setting. This is an excellent use of a rules engine: it obeys the story needs, not the other way around.

While the deck plans and starship designs are few, the generic ship designs from the Cepheus Engine will fit this setting well. The publishers have promised further ships for the setting in the future. The ‘flying saucer’ designs were a real treat, and the text justifies ‘mysterious UFOs’ at TL13 by showing how mysterious true gravitics would be to 20th Century earth – but always by example, never by telling the reader. This kind of excellent descriptive writing strengthens the setting and is an excellent example of ‘show don’t tell’ in RPG writing.

The star maps provided give plenty of contrasting settings for adventure, right on the border of four different political entities. “The Frontier” is always a good source of adventures and conflict. What *These Stars Are Ours!* shows is that you can pack a lot of adventure and campaign ideas into just two subsectors. This is plenty for a typical Traveller sandbox campaign.

Priced at a very reasonable \$20, any Referee can pick this up and plan adventures for hungry players quickly. You will not regret the purchase.





The Nissi

By Neil Lucock

"The steward says we have served meals to eight crew and our seven passengers for 3 days. That is 45 meals, but 54 meals have been used since we left port. That's 9 extra meals. It suggests that we have an extra person on board." The captain wasn't pleased. She liked order, was irritated by things that didn't fit. "What have you done?"

Zarah Molina, the freighter's first officer, had checked the invoices at the last port, checked the food storage arrangements, had even gone through the trash, but couldn't find any evidence of anyone eating extra meals. They had plenty in stock, both as an emergency reserve as mandated by regulations and to satisfy the occasional passenger who wanted more food than the average. They would not run out. "I think someone's taking stuff and eating it in secret."

Captain Iulia Kalinin shook her head. "Everyone knows you just ask for another meal if you want one." The cost of the prepared meals was minimal, the reputation of the company as a generous company to travel with was worth more than a few meals.

There was a knock on the office door.

"Enter," the captain said.

Ivan, the assistant steward entered.

"Captain, I went through the security recordings."

"Out with it, don't keep us in suspense!"

Zarah prompted, irritated that the youngest member of the crew had found the problem.

Ivan looked to the captain, then to the computer. The captain nodded.

"Access interior Corridor Four security recording. 15.43 hours yesterday."

The captain typed in a permission code

and the display went blank.

Iulia looked at Ivan. "Is this a joke?"

"No, Captain Kalinin. Look at computer terminal 2 at 15.45 yesterday."

Iulia typed in the details. Again, the screen went blank. "What are you trying to show me, Ivan?"

"Choose any other time and the recording is intact. There are 30 to 45 second blanks in the recordings that match up. So, when you move out of view of the security camera on Corridor Four, you are then in view of the camera covering computer terminal 2. If you try to see what happened at Intersection 4 at 15.48, you get a blank. Intersection 4 is next to computer terminal 2. It's as if someone has selectively erased the security recording of someone as they moved through the ship."

"Only the Captain and myself could do that and it would be logged." Zarah Molina replied. "Has someone got our command security codes?" The captain asked, worried.

The light on the desk flashed. "Yes?"


It was Leike, the engineer. "Captain, I was intending to service the compressor air filters today. I went to get the replacement filters and found they were gone. It looks like someone's already done the service. I've checked, they've used my filters, the packaging is in the trash. They've done a good job too."

Iulia looked puzzled, then tapped a search into her computer. "I'm sure something like this was discussed on Commander's Rumours."

Zarah and Ivan waited while the computer found the information. "It's possible we have a stowaway on board."

The captain announced.





The Nissi are a minor race originating on Hadiqa (C 764747 TL 12) . Originally an amphibian, they prefer moisture in the air but can exist within the same environments as humans. They are typically 1.3 metres high with green, yellow, or brown skin. They have a liking for cloaks and hoods and prefer dull colours. They have a long reptilian head and three digits on the hands and feet. They have excellent night vision (but cannot see in total darkness). Their hearing and teeth are comparable to a dog's. Their main defence is their psionic skills, although their comparatively high intelligence usually helps them to avoid detection.

The Nissi are descended from a small scavenger that developed psionics to hijack prey that other creatures had caught. They have very little concept of private property, anything that others have is theirs to use, anything they have is yours.

Their ancestors liked to range far and wide, looking for food that others had caught. Nissi have never been violent or aggressive. Their home world has many predators that were bigger and stronger than the early Nissi. Fighting predators always resulted in failure, they found that they prospered when something else did the hard work involved in catching a meal. They just had to develop the skills to take it off them and not get caught.

Their world was settled by humans 350 years ago. The technology level of TL 12 is the human part. Hadiqa now has a population of 41 million humans. The number of Nissi is unknown but is estimated at 10 to 20 million.

Early Nissi young had to leave their parents once hatched and find a new place to feed. Although there is no longer a need to avoid over-exploiting food resources in one place, once mature, Nissi travel off-world and show that they can manage on their own in distant places. There is an informal competition between them as to who can

get the furthest without being discovered by humans. When they choose to return, they can take a mate. Young Nissi are persistent stowaways on larger civilian ships. They are rarely detected and don't seem to get any form of punishment.

Their statistics are:

STR D6	DEX 3D6	END D6
INT D6 + 6	EDU 2D6	SS 2D6

Social Standing refers to their place in Nissi culture.

Nissi youths like to secretly spend time at the C Class starport to learn useful shipboard skills before venturing off world. They can remain hidden while reading the thoughts of the people doing maintenance and repairs. This ability to learn at a distance, combined with their above average intelligence means they quickly become skilled technicians.

Choose 2 shipboard skills at level 1 and 2 more at level 0. A typical youth will have D6 other skills at level D6/2.

On ships, Nissi prefer to remain hidden. They will service and repair shipboard systems when no one is there, they clean floors and rooms if they are empty. Nissi take a pride in "their" ship. They will never integrate with the crew.

If they think that they may be discovered, they will leave the ship at the next port. They prefer larger ships as they can more easily remain undetected.

Nissi take things that are not being used. They have no intention of keeping anything, if someone really wants it back, they will usually be aware and arrange for it to be found.

Relationships with humans

Humans tend to ignore Nissi on Hadiqa. Nissi have their own towns (usually underground) and while the humans know they are present, the Nissi have very little interaction





with them. Nissi prefer to be ignored, to be overlooked. Their success as a race depended on stealing food from bigger and more capable carnivores and evading them.

Nissi Psionic abilities

All Nissi have the following psi abilities. Roll 3+ on 2D6 to successfully use.

Detect other lifeforms

They can detect the presence of other lifeforms and get an impression of their emotional state. Range is 50 metres (Medium), DM -1 for each range band beyond Medium, DM +1 for each person approaching.

Hide self

Nissi have the psionic ability to be unobtrusive. If they stay still and silent, other lifeforms tend to miss seeing them, even if actively looking for them. The Nissi must not interact with the other lifeforms present or draw attention to themselves. It's as if people see them and think, "that's not what I'm looking for" and continue searching. DM +1 if already hidden or otherwise out of sight when they use the skill.

Distract

They can make lifeforms attracted to something else. This is the psi version of tapping a spoon 10 metres away to make someone search there instead of where you are.

Have players roll 2D6. Irrespective of the result, tell them that they think that there is possibly something in another location nearby. They can roll to search that location, without success.

Read Minds

Nissi can usually pick up surface thoughts or concerns. They can read an access code when a person is operating a door, read computer passwords, pick up that fact that the engineer is concerned about the sensor

calibration and oil things that people think need lubricating.

If the ship's engineer doesn't complete their maintenance, the Nissi will do it. If the engineer does everything they need to do, the Nissi do things that give the ship improved reliability. They will clean up a mess in the lounge, make beds and clean without being asked or seen.

Nissi can liven up a journey from one location to the next, making the players think that they have a haunted ship. They can be a distraction from the real problem and add to the dramatic tension.

Plot suggestions;

A large passenger carrying ship suffers a life support failure just after entering jump. The crew do not know how to repair it and decide to put themselves and their passengers into Low Berths and set an automated Mayday beacon to give them a chance of survival. While the crew are in low berth, Nissi stowaways repair the defective equipment. They also decide to take a few items that they like from the passenger's and crew's rooms.

The Mayday beacon attracts the authorities at their destination who send someone to revive the crew. The life support is now working perfectly. The Nissi have deleted security camera video and altered the computer logs to show the life support malfunction never happened.

The crew are in trouble for their actions (passengers who booked luxury travel will not be pleased at travelling Low Passage), there are accusations of theft by the crew as things are missing, a claim by the local authorities for the unnecessary rescue and the parent company will start disciplinary proceedings against the officers for their mistaken actions.

Players can be the unfortunate crew that have to justify their actions, the crew of another freighter sent to help or could be





investigators hired by the company that owns the ship. This incident could be someone's background. They have high levels of skills but have a bad reputation making them unemployable due to them having been an officer on that ship.

The Sector Navy Intelligence has been trying to study Nissi. They are not sure how Nissi manage to remain unobtrusive but believe that they would make good spies. Their operatives have captured three Nissi and tried to force them to act as spies, taking them to their ship. The Nissi have escaped and now control the 5000 tonne TL 14 Dreadnought. The ship is in orbit but cannot move or fire. At present only a few senior officers are aware of the problem. If news got out, at best it would mean the officers would be court-martialled and the Sector Admiral would lose their job. At worst it could mean an adjacent hostile power attempts an invasion knowing that the fleet is now understrength.

The player characters are asked to resolve the situation and restore control to the command crew without anyone becoming aware of the problem. Depressurising the hull or otherwise killing the Nissi means that the ship will have to have the Model 6 /fib computer replaced at a cost of 30 MCr plus labour costs. This is unacceptable.

The Navy are keen to avoid a scandal and avoid the bad publicity that would result if this was made common knowledge. They do have nearly new Scout Couriers on their books that cost less than the Model 6/fib computer, one might be made available if this issue was resolved without anyone finding out what had happened.

The players are asked to provide security for a new building project. A new spaceport is to be constructed on Hadiqa, but the project is behind schedule due to the high number of setbacks. Construction vehicles regularly fail, plans go missing,

materials and tools become mislaid. Work seems to be constantly needed redoing, one contractor has been dismissed as the management thought that they were trying to make profits by falsifying records. The new contractor cannot keep construction staff. Some people say the site is built on a graveyard and the dead have returned. (Nissi have picked up this idea from the workers and are doing their best to encourage them to believe the site is haunted). The players must resolve the problem and help the contractor build the spaceport.

"What kind of stowaway could get on the ship and remain hidden?" Zarah asked. "How would they get the command security codes? Only the captain and I have them. If you had the command security codes, the ship is yours. Why have we still got control?" She looked to the captain and Ivan, inviting them to answer her. No one replied, so she continued.

"Why would they service the air filters? This doesn't make sense. It's probably a stray burst of x-rays that has burnt out the recording. Leike has probably forgotten doing the air filters. What's more likely, that a stowaway has somehow found the security codes and is now spending their time doing maintenance jobs, or Leike got it wrong?"

Captain Kalinin shrugged her shoulders. She closed the Commander's Rumours document. Zarah was right. The Nissi on Hadiqa lived apart from humans. The suggestion in the document required too many improbable explanations, she would look stupid if she suggested they were responsible. "I'll request a check on our security cameras and recording system. Thank you both for your help. Anything else?"

Zarah and Ivan shook their heads.





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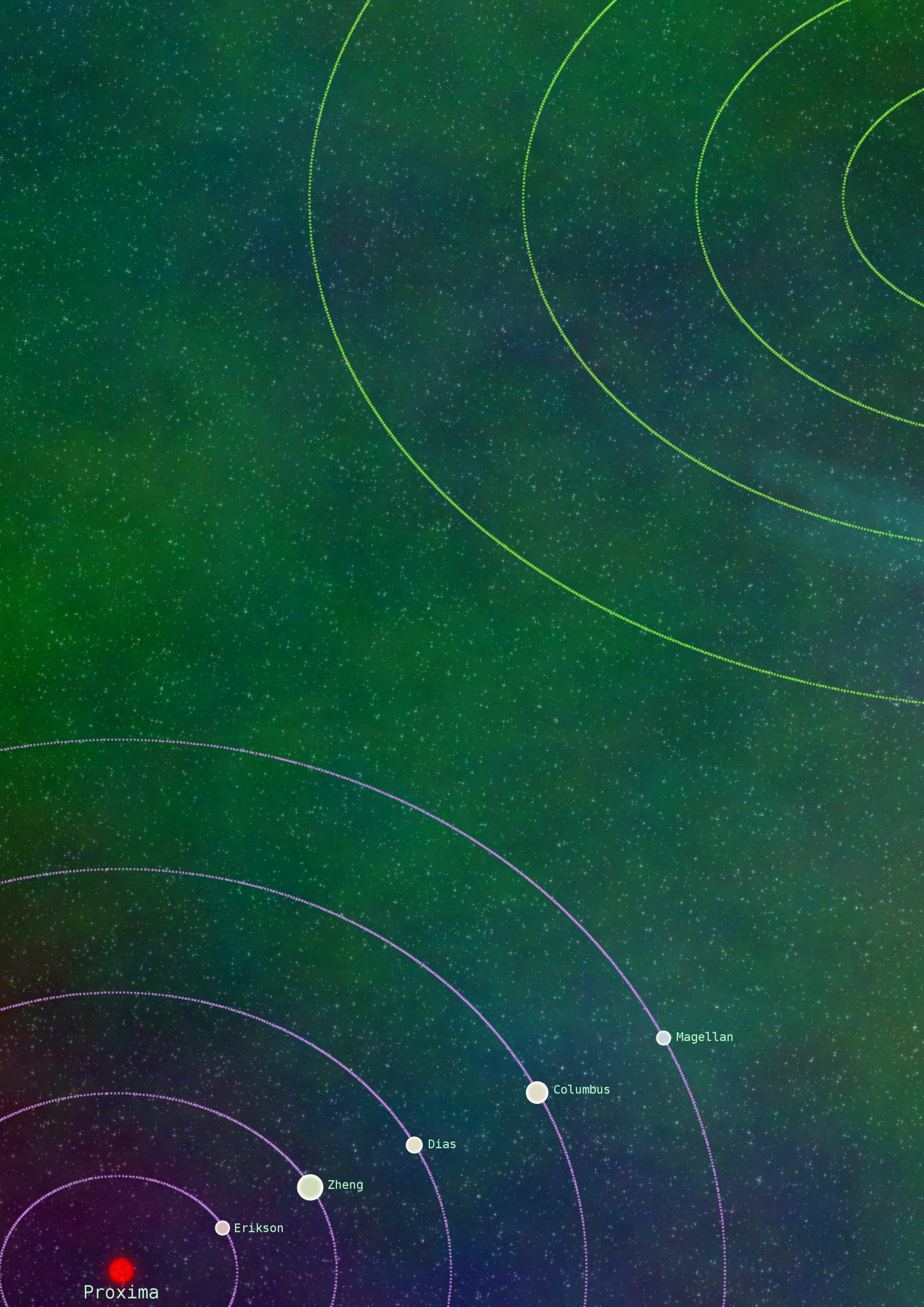
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