

CEPHEUS JOURNAL

Issue #002



In this issue:
SoC Creatures
Salvage!
TL Equivalents
And More...

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Contributing Authors

Bob Weaver	Michael James Cross
Michael Major	Paul Drye
Paul Elliott	Robert Foran
Tom Mouat	

Art

Cover, Backpage, 9, 19 - Ian Stead
3 - Brett Kruger
Page elements, 2, bottom page 5, 21, 22 - Pixabay
Top page 5 - Emel Akiah
14, 32 - Wikimedia Commons
7 - Paul Drye
15 - Robert Graves
22 - Robert Foran
33, 34 - P-O Bergstedt

Layout and Editing

Brett Kruger

<https://cepheusjournal.com/>





From The Editors

Welcome Citizens to the second issue of CEPHEUS JOURNAL, a free PDF based fanzine dedicated to all things Cepheus Engine related. Each issue will endeavour to add to the ever-expanding universe that Cepheus Engine has become! At the time of editing this issue our Facebook page has reached 147 members but, more importantly, our web site is up and the first issue has over 500 downloads!

In our second issue we have more great articles. There are two articles on CE creatures, how to salvage and repair starships, another Sword of Cepheus NPC, what those technological levels really mean, and an adventure on the earth-like world of Kaldraa. We want to thank all of you who have sent in submissions, and if your submission isn't in this issue, it will be in a later issue.

Our goal will be to release an issue of CEPHEUS JOURNAL as we get enough content, with thirty-two or more pages, although this really depends on any extra submissions we might get. With regards to submissions, we are looking for any genre that can be played with Cepheus Engine, not just Sci-Fi universes. Article submissions can be any length, although we reserve the right for creative editing, in DOC, TXT or ODT formats and should be checked for grammar if possible. We will accept RTF, PDF and Docx Word documents (if macros are disabled) as they can be converted to the preferred formats. Graphics would be great to help out our resident artists.

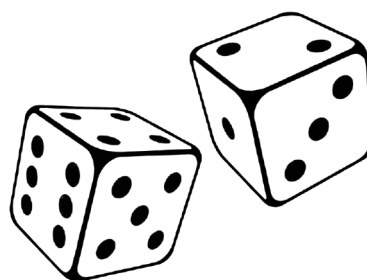
Now for some Cepheus news. Sword of Cepheus is now in print! Grab a copy, a review is in the works for the next issue. This

is an open invitation for publishers of Cepheus Engine compatible gaming materials to send us the details and we'll publish a "Just Released" in each issue.

This fanzine is to be a non-profit endeavour, no ads, no cost, written totally for the love of the game. It is hoped that someone, somewhere will find the content within these pages useful in inspiring a great adventure with a group of friends, and if not then just have a good read. Again, we want to thank Jason "Flynn" Kemp for creating Cepheus Engine, without which this fanzine wouldn't exist.

We hope you enjoy this second issue and keep those dice rolling!

Brett Kruger



Cepheus Journal Editorial Team

Brett Kruger
Ian Stead
Michael James Cross
P-O Bergstedt
Paul Drye

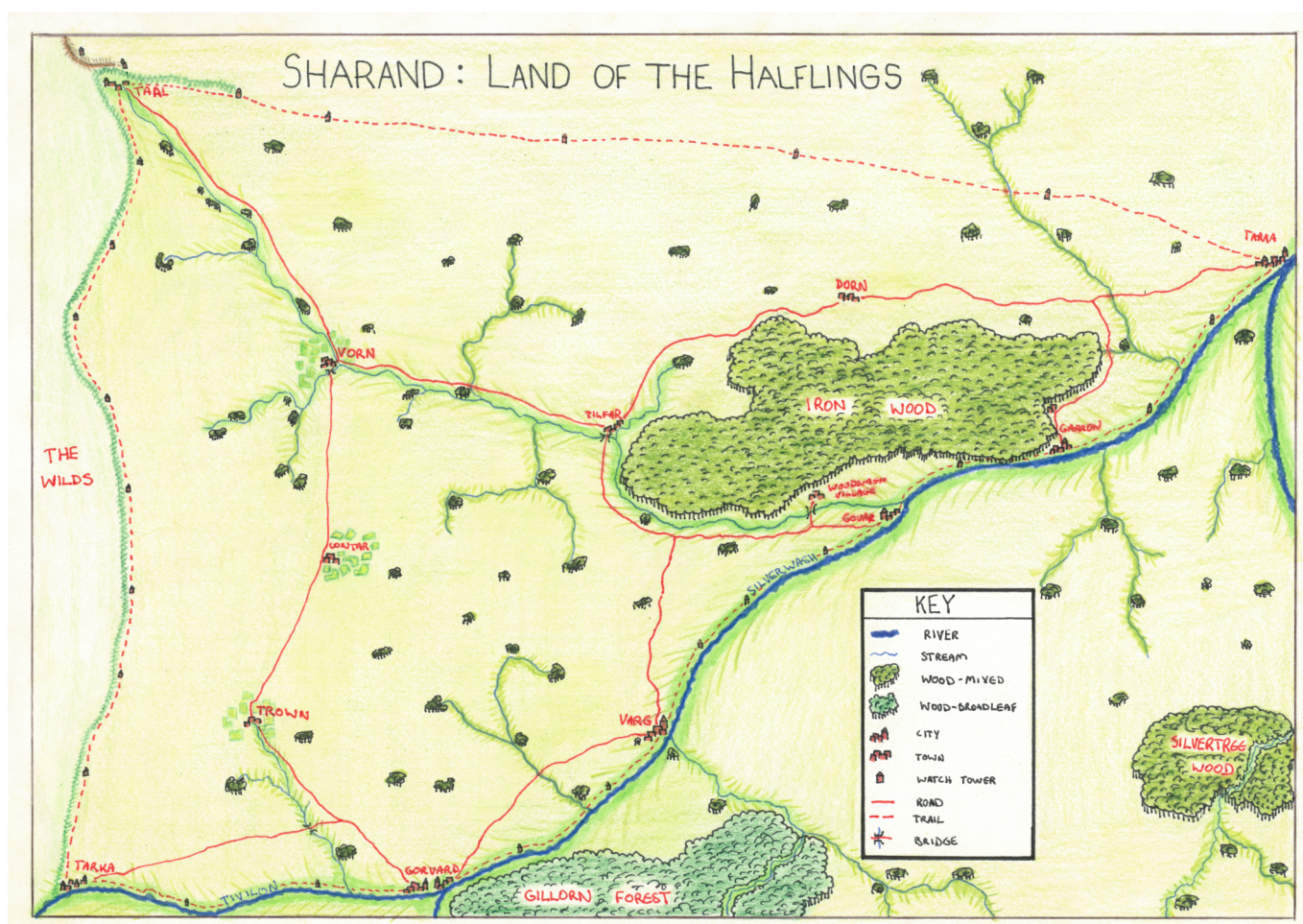




Quick Starts By Paul Drye

The salt pans of La Coulee are a historical site on the balkanized planet Jeon, the site of the last major battle of that world's Fourth Major War. Located about 40 kilometers from the capital of Kambharsait, the major nation on the losing side of the war, it is to this day littered with the remnants of massive grav tanks - a new technology on Jeon at the time and the one that Kambharsait was relying on to turn the tide of battle. Instead they were caught in the open by another new weapon fielded by the winners, Valard: a shower of tungsten rods dropped for orbit. The way to the capital was left open and the armistice signed a few weeks later.

Valard maintains most of the fifty square kilometers of the arid pans as a war memorial, a point of contention with people in Kambharsait. None of their soldiers died, goes the reasoning, and Valard seems to be interested in La Coulee as a way to belittle their former enemy. Characters can tour the site legitimately but get caught up in protests or an attack by local militants. Alternatively, they may be hired by the losing side to disrupt the site deniably.



CE Beasts - The Dragon

By Michael James Cross

Dragons are not living creatures. They are not biological, they do not breed, they do not excrete, and they do not die. Indeed, in many ways dragons are more like events than creatures and have more in common with wildfires, tsunamis, or earthquakes than they do with bears or wolves.

Created by a little understood process that involves the fusion of powerful magic and negative emotions with tremendous quantities of receptive inanimate matter,

dragons are creatures of pure destruction and rage and actively seek out towns, as well as magical people, to consume and destroy. Although dragons are rare, they can spawn from any site where misery, disease, war, or suffering has left its mark.

A typical dragon resembles a monstrous winged serpent or lizard composed of inorganic or semiorganic material including wood, stone, metal plate, and decaying body parts.

Type	Habitat	Strength	Dexterity	Endurance	Intelligence	Instinct	Psion	Pack
Killer	Any Flier (Psionivore)	60	10	40	15	20	25	0

- _ Athletics (strength, flier) 4, Channel 3, Natural (claws and teeth) 3, Persuade 3, Survival 4
- _ Claws and Teeth (8d6), Dragon Hide (18), Breath Weapon (20 meter cone of rot, flame and corruption, 12d6 damage, can make a DM -4 Dexterity check to take half damage)
- _ Magic: Dragons can perform any power found in a house of magic or a knack.

Eyewitness Account, First Battalion Sergeant Ikinda Macey, APR Droptrooper

I've seen everything. I've seen Dreadnaughts consumed with fire, melting as thousands of spacehands and tens of thousands more troopers roasted to death inside. I've seen the devastation caused by nukes on population centers. I've seen smoking craters that you could spot from orbit and mass drivers pounding a world's surface flat. The dragon was by far the worst of the lot.

It wasn't alive. Not really, although you could feel it when it looked at you. It was too much for Bainbridge, he tried to run for it and the thing blasted him with it's flaming breath. I don't know what it was using for fuel, the damned thing looked like it was made from peat moss, a crumbling old tower and the wreckage of a downed dirigible. Whatever it was it burned hot and left an acrid stench like nothing I've ever experienced. Bainbridge just sort of dissolved, and then it stared at me. That was when I could feel the hate it felt. I thought I was going to die.

What saved me of all things was a group of locals, not that they fought the thing off, but the thing went for them rather than me and I got the hell out of there. A lot of the eggheads say it is attracted to psions. I'm damned glad I don't have the talent for it, and if it means I'll never see one of those again, I'm never going to even try to learn.





Major Operation

By Paul Drye

Kaldraa is an Earth-like world located just outside the border of the local interstellar superpower. During the first wave of galactic colonization a terrestrial anti-technology cult selected it as the best site for their new, ideal society: far beyond the fringe of civilization at the time and enough like Terra to support humans living without machinery.

As happens with many utopias, the descendants of the original colonists rejected the ideals of their founders, but the early Kaldraans had quite carefully expunged all technical knowledge from their society. Without even contact with still-distant interstellar civilization, the planet's fledgling societies were forced to make the slow climb of technological discovery the hard way. By the time Kaldraa was recontacted during the last century, they had just achieved the Industrial Revolution and voraciously took what knowledge and equipment they could from off-world, slowed only by the relative difficulty of a pre-stellar society finding enough goods to trade for all that they wanted.

Unfortunately, all this happened before Kaldraa was politically united. Five main powers vied for advantage with one another over dozens of smaller countries and tribal units. Four of these developed nuclear weapons in the last two decades, a period of relative peace that let them build their arsenals. When crisis came over the dissolution of the fifth, non-atomic power, no Kaldraan nation had ever used nuclear weapons in war and that perhaps made them easier to use. Two weeks after the war began—six months ago—the

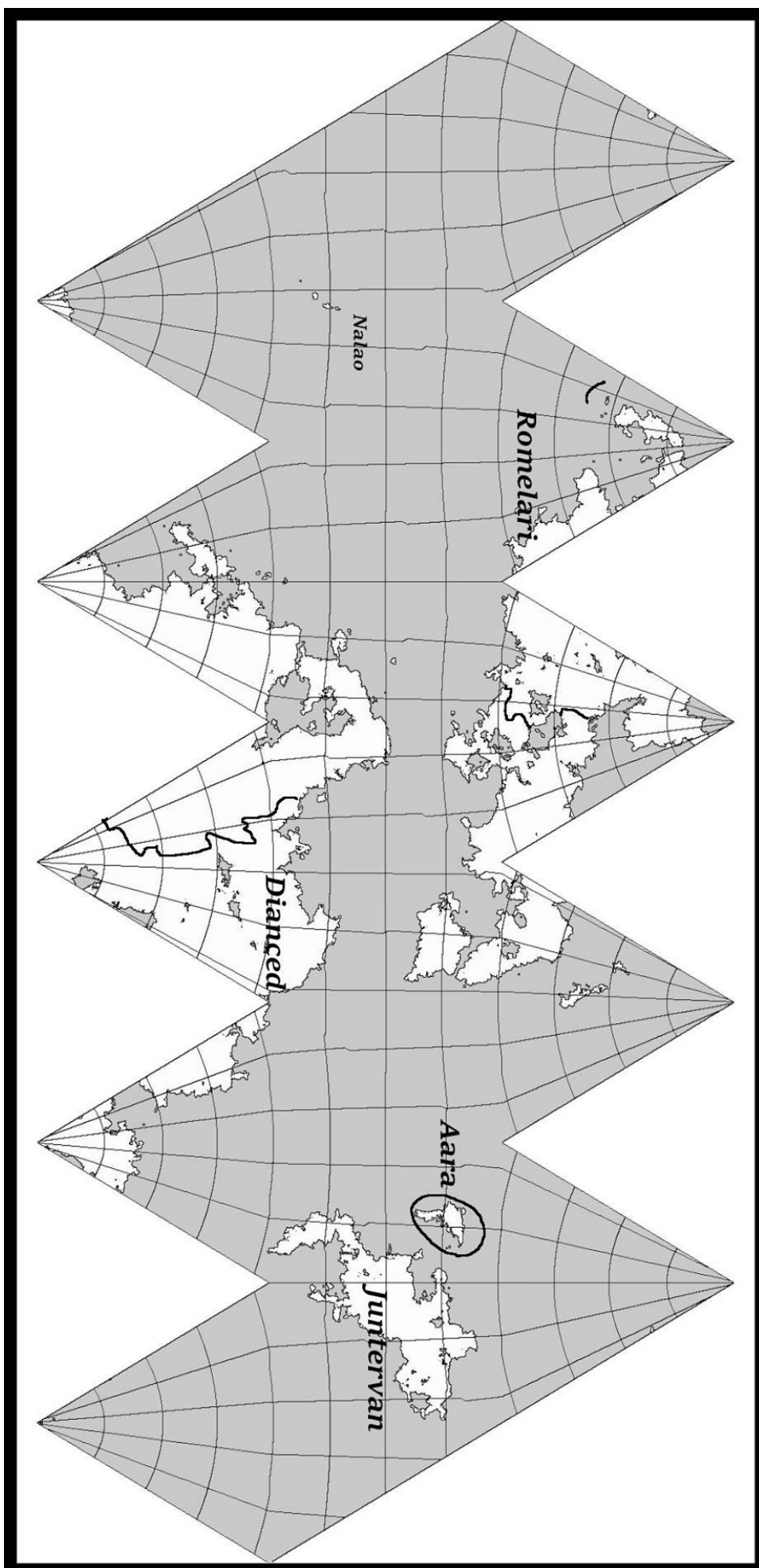
missiles flew and every society on the planet was shattered. Fallout has covered much of the planet, nuclear winter has descended in most places, and what little food and medicine is available remains stuck in depots after the world's major oil fields were set ablaze.

Relief agencies on other worlds have swung into action, and some have even been founded since the war ended so horribly. Other off-world organizations vie for political advantage and some even just try to loot. Ships are desperately recruited for missions but run the risk of being commandeered by what remains of one of Kaldraa's authorities. The amount of work to be done before people stop dying en masse is tremendous and may not be possible. Even in the wider universe, all-out nuclear wars are rare, and many would-be rescuers are running into trouble themselves as their inexperience shows.

The Planet

Kaldraa was selected by its settlers for its similarity to Earth, with the fact that they had to travel quite far out of the then-settled section of the galaxy to find one being an actual point in its favor to them. It is 12,101 kilometers in diameter (95% that of Earth) while being slightly more dense, leading to a surface gravity of 0.93g. The ocean/land mix is similar to the homeworld's and even the air was once fairly close to Terra's—but the war has driven that beyond normal parameters even for Earth during the worst of the 21st century, and it is now considered tainted on a hopefully temporary basis.







Its similarity to Earth's day is less exact, at 21h03m. The planet's sun is an F9 main sequence star somewhat hotter and brighter than Sol, making the year 411 (Earth) days long or 468.6 Kaldraan days. Note that this means even though the War was six months ago, less than half a year has passed since then. The northern hemisphere has yet to suffer its first winter, while the southern is struggling to reach summer.

Before the war Kaldraa's population was 373 million people; after it's estimated to be somewhere between 100 and 150 million people. Where it ends up remains to be seen.

The planet has no moons.

The On-World Situation

The four countries responsible for the War are still going concerns, though severely damaged. As characters are likely to get involved with them in some manner, a rundown is as follows:

Dianced

Dianced is a large country occupying the eastern third of the southern continent, an area that was on the edge of the most advanced parts of Kaldraan civilization, something like North America but with a much longer history of integration to mainstream cultures. For centuries it was relatively backward and agricultural, suffering from poor harbors and relatively little in the way of rivers accommodating travel into the interior, but it had roared its way to near-superpower status in the last century before the War.

Now its eastern coast is the site of the worst nuclear devastation, with shattered cities up and down it from the Antarctic to the

15th parallel South. The Dianceds still have a functioning government but it has retired to the interior, where prevailing winds have tended to push the fallout in the opposite direction.

Romelari

In the north, Romelari occupies the western half of the northern continent. Relatively cut off from the bulk of Kaldraan civilization, they developed their own way while still being on the very fringes of contact with the bulk of the planet's population. After a period of falling behind technologically, they've spent the last few decades with an authoritarian government that managed to create a veneer of industry on top of a still-agricultural country and a military that was supported by it.

Sheer size and population made them a power to be reckoned with, but now they're a country broken by nuclear war with citizens that were already closer to subsistence level than other major nations'. They are hostile to contact while they try to maintain their hold over a starving populace through tight control of what aid does arrive.

Aara

The Aarans are a militaristic nation oriented toward their water navy and owner of colonies around Kaldraa. They had seen several setbacks in the last fifty years as railroad technology allowed the advancement of the continental powers of Dianced and Romelari, and have been itching for a fight as a way of staving off their decline. The core part of their country is the area most devastated by the War, and their strength has proven brittle after the nuclear exchange; most of their holdings have become de facto





autonomous until local military command. Even so, the Aarans are still a factor, as those military forces have a lot of utility in the current situation—if they can find supplies.

Juntervan

For centuries Juntervan was a welter of city states and principalities, but eighty years ago it coalesced into a loose confederation for defensive purposes, sort of a Switzerland writ large. The new nation could hold its own against any other on the planet, but the Juntervani specialized in diplomacy and avoiding war—their diplomats were working down to the last minute before the missiles flew.

Much of the country has been burned, same as the other powers, and some of Juntervan's highest remaining people are shocked into inaction, unable to believe that this time they couldn't talk their way to a solution. But Juntervan is used to working with sliding coalitions of interest in their political process and the fact that many of their component city states no longer exist is just an extreme version of what they're used to: working with the what they have, despite handicaps, to benefit anyone who comes along. If the Aarans dominate the military forces left in this world, Kaldraa's indigenous humanitarian efforts are being organized mostly by the Juntervani. Now it remains to be seen which of the two approaches will work best, if any.

In General

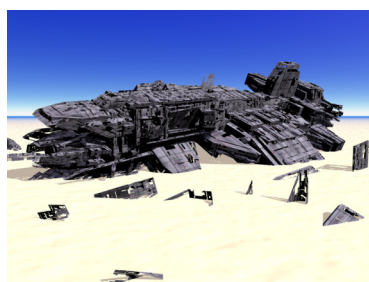
Law on the planet has collapsed, at least insofar as Cepheus Engine's weapon-oriented law levels are concerned. No-one blinks at heavily armed parties anymore, with perhaps the exception of civilians in the middle of military control areas. Justice

is rough, with harsh punishments handed out after quick trials, if at all, and mostly come down to the judgment of those not trained in the law. Judges and lawyers are thin on the ground these days, either dead in the cities or converted to farm labor, if lucky.

The Base

Kaldraa's major starports have all been wiped from the map, leaving only near-wilderness arrangements built up hastily in the last six months. Off-world efforts to help have settled on the island nation of Nalao and its D-class starport as the best place to use as a home base when visiting the rest of the planet. Out in the ocean thousands of kilometers from any major land mass (and near the equator where the winds have only poorly mixed fallout into the air), Nalao is as safe a place as any on Kaldraa. The choice has complicated relief with the Aarans, as the islands were a former tropical colony of that empire and had been under naval-enforced sanctions since gaining independence through revolution twenty-five years go.

The other powers maintained a desultory trade with them and kept the new country afloat, but the Aarans exerted enough pressure to keep any other country from recognizing them right up until the last day before the War. Now the Aarans are reacting badly to the fact that their lost colony is the planet's main connection point to the wider universe.





A Reminder about Radiation

Basic rules for radiation exposure are outlined on p.165 of the Cepheus Engine SRD. What remains is to define the categories for exposure in the context of Kaldraa:

Level	Examples
Irradiated area, severe level	Within the blast crater destroying a city or missile site.
Irradiated area, high level	Immediately downwind from a crater for 1-6km, 2-24 km downstream from any river or other body of water passing through a ruined city.
Irradiated area, moderate level	Anywhere on the two main continents 1 day in 2.
Irradiated area, low level	Anywhere in Nalao on 1 day in 6 (predicted by weather forecast the day before).

Most people on the mainland are suffering some degree of radiation sickness; many have died already, while those left have avoided the worst of the early fallout—iodine and cesium poisoning—as they have decayed. They are still at risk from strontium-carried radiation for years to come, however, a fact reflected in the examples above.

Under normal circumstances Kaldraa's atmosphere is a standard, non-tainted one but as mentioned previously the war has changed this. The specific problem is the level of airborne pollutants (both radioactive fallout and merely soot from global wildfires), which high enough to require filter masks for protection. Again, most of the population does not have this protection, and they make do with simple cloth face coverings.

Other Environmental Effects of the War

- It is overcast every day and rains most days. The rain is full of mildly radioactive grit that should be washed off of surfaces and vehicles but finding enough clean water to do so is not easy.
- The extra nucleation points in the air and mild ionization from lingering radiation lights the sky with distant lightning through the night—not enough to be a threat, but noticeable to characters from offworld.

You never see the stars, though, and as there is no moon the darkness is particularly dark when the lightning isn't flashing.

- Temperatures are 10-12 Degrees Celsius colder than they should be. The growing season started six weeks late in the Northern hemisphere, and the south is already seeing days of dirty sleet as far as the 30th parallel. A lot of the surviving population has taken to the roads, headed to warmer areas south or north (as the case may be).

Characters

Zamora Ganner 788638 Age 28 Cr45000
Liaison-1, Steward-1, Motorboats-1, Admin-0,
Slug Pistol-0, Computer-0, Carousing-0, Bribery-0, Rotor Aircraft-0, High Passage

Zamora is an employee of Chūō saigai taiō ("Central Disaster Response") an agency that coordinates disaster relief in this subsector on behalf of smaller groups that haven't the time or resources to help off-world but still want to do so at times. She is the point person for anyone just dropping by Kaldraa as she knows as much as anyone else what is happening out in the field—not only does she direct the smaller fry, she has to coordinate with bigger groups to avoid duplication of effort. She also has many odd jobs that have been requested of her for which she needs people to do the work on site.





Juggling a thousand different priorities for dozens of different bosses is a very stressful position

Ingo Oli 552A99 Age 48 Cr85000

Advocate-2, Leadership-2, Computer-2,
Perception-2, Admin-1, Mechanics-1, Sailing
Ships-1, Pistol-0, Screens-0, Bludgeoning
Weapons-0, Survival-0

Ingo is a Juntervani and a man with a vision for the time beyond the nuclear disaster, which makes him a rare and potentially dangerous fellow to have around. In true Juntervani fashion he is a great believer in diplomacy and he has taken it on himself to use the current crisis as a lever for world government, so as to best avoid another nuclear crisis in future—whether it's the next generation or two hundred years from now. Unfortunately, he also suffers from a streak of megalomania and believes that he personally is the only one who can pull this off, and he hypocritically is willing to use coercion and force in aid of his goal. He is a warlord, in the end, though one with the advantage of a unifying and inspiring ideology behind him.

Braxton Distray 452BA7 Age 46 Cr -11250

Jack o' Trades-3, Streetwise-2, Sailing Ships-1,
Mole-1, Motorboats-1, Leadership-1, Tactics-1,
Rotor Aircraft-1, Athletics-1, Advocate-0,
Carousing-0, Electronics-0, Mechanics-0,
Comms-0, Archery-0, Recon-0

A former naval recruit and wharf rat, Braxton is well-suited to the new world, with useful skills for scrounging up goods and finding those who can when he can't. He's a vehicle aficionado too and has made a getaway from some caper in more vehicles than most people have even seen. He's fallen into debt recently and, in the current circumstances, banks are not the source of credit—he's at risk of his life if he can't pay back the funds. He's most

interested in anything that will help him do so, whether it's latching on to an off-world expedition that looks to turn a profit or luring the same into danger on behalf of someone with deep pockets.

Adventure Seeds

Extraction

Though Kaldraa was not fully integrated to interstellar civilization, it doesn't mean that it was cut off entirely. Several thousand off-worlders were visiting the planet when the War turned nuclear and for many their fate remains unknown. Thane Rezall is an extraordinarily rich businessman from a nearby world and his daughter Lionie is one of them. Rezall needs a group of people with a wide variety of skills to find her.

1. Lionie is alive and in a refugee camp. The main complication is that it is one run by an Aaran military unit and they are not inclined to allow visitors or rescues.

2. Lionie is alive and in a refugee camp. Though run by Aarans not inclined to allow visitors or rescues, this is not the main problem. Lionie has become the de facto leader of some 20 local women and children also in the camp and will not leave them behind.

3. Lionie has died recently in a refugee camp, though this will not be known until the group have penetrated the camp, run by Aaran military not inclined to allow visitors. The group has the option of cutting their losses at this point (and disappointing a very rich man) or at least trying to repatriate her remains.

4. As 3, but the group is also stricken with a serious camp disease such as typhoid or a science-fictional malady of the referee's choice.

5. Lionie was last seen in the Juntervani





city of Bieslig, which was reduced to an atomic crater in the first day of the nuclear exchange. If the mission is to be a success, the group must brave the outskirts of a still-radioactive region—to either find she has survived by being in those same outskirts at the time of the attack or prove that she is dead, having been within the blast area.

6. Lionie is definitively dead and the group will find evidence of this early on to bring back to Rezall. On return, however, there is another group (also hired by Rezall, unbeknownst to the adventurers) and they have come back with a severely injured young lady in the belief that she is their target. Rezall will not be inclined to believe that she is not Lionie, and there's a complicating moral issue of proving that she isn't only to have perhaps have the billionaire withdraw her life-saving hospital care when he finally comes around.

Capture

Every known nuclear missile on Kaldraa was either used in the war or destroyed in a counter-strike—or so everyone believed. Now news has come that, in the polar highlands of Romelari, one missile silo and its contents have survived. Control of it would present a huge political lever to whoever obtains it, especially over relatively undamaged parts of the world like Nalao. Its destruction would be the safer course for many who could be affected by it, but the temptation remains.

1. The player character group is the only one currently trying to secure the site, but even without active opposition the job is easier said than done. The missile site is in the Kaldraan Arctic with all that implies for difficult conditions, and the silo itself has been abandoned for six months, complex electrical and hydraulic systems slowly evolving in the direction of a death trap.

2. The group are in competition with

another, a military unit from Aara, that has also learned about the missile and want to control it for themselves.

3. The site has already been taken under control by a small military unit from Aara, and the adventurers will have to either steal control or destroy it under their noses.

4. The site has already been taken under control by a large military unit from Aara, and there's no prospect of the adventurers taking control or destroying it, not with so many soldiers opposing them. However, there are several other groups from around the world that have heard about the missile at the same time as the adventurers who have now made the same discouraging discovery. If they can set aside their differences, they may be able to overcome the Aarans.

5. A pre-war bit of deception comes back to bite the searchers. The missile is not where they believe it to be, and this does not become apparent until they are on site. The actual site is some ten kilometers away over rough and frozen terrain, and there are signs that other searchers have made the same discovery and are already on their way.

6. A pre-war bit of deception comes back to bite the searchers. The site is not a missile base, but the home of a much different and more dangerous thing – a weakly godlike alien entity which had been trapped on Kaldraa millions of years ago. The Romelari had been carefully probing its capabilities (and losing many researchers) when the War came. Now the “missile silo” is home to a partially awakened alien creature with the power to alter reality in surreal ways when provoked. Only its continuing imprisonment and semi-consciousness act in the adventurers' favor.





Winged Skeletons

By Bob Weaver

This frightening undead creature is the skeleton of a man, or at least a humanoid. By dark arts, the sorcerer which animates it grafts on two large bony wings. By magical means these featherless wings can still lift it into the air.

From the Wasted Land of Vargkajuk come the legend of this weird monster, where they are known as volucrae. The Tribes of Vargkajuk tell of the shaman Alortu who forsook the worship of the gods and sought power from the evil spirits of the underworld. The elders confronted him in his hut one night.

When he would not forsake the path of evil, they put his hut and all his magical apparatus to the torch and exiled him from their lands.

Alortu fled to the Thanagast mountains and there besought the spirits to give him power to work revenge. He received a diabolic magic. With it he murdered a wandering shepherd and transformed his bones into the first of the volucrae.

This fearsome apparition harried and slew the clans of Vargkajuk for weeks. Finally the brave scout Lunnien defied the creature. He carried an enchanted war hammer, taken from a raid on the coastal city-states. The battle raged for two hours, Lunnien finally crushed its skull and dashed off its wings, reducing it to a heap of bone fragments.

Alortu survived in the mountains for many years, and whenever he could, he constructed another volucrae to terrorize his former clan. Lunnien's Hammer destroyed many winged skeletons until at

last a band of hunters from the clans found Alortu and slew him. The Hammer's current location is unknown.

Referee's Information

75 kg Undead A99110 # appearing 1
Treasure None
Melee Combat-2, Stealth-2, Recon-1

Attacks at the command of the sorcerer which animated it. Often volucrae are set as guardian over some above ground unholy site. They are seldom found underground where the flight ability would be restricted.

Attack: Claws (1D+3), wing rake (3D) or by weapon. AV 2, move 10m/action walking, 25m/action flying.

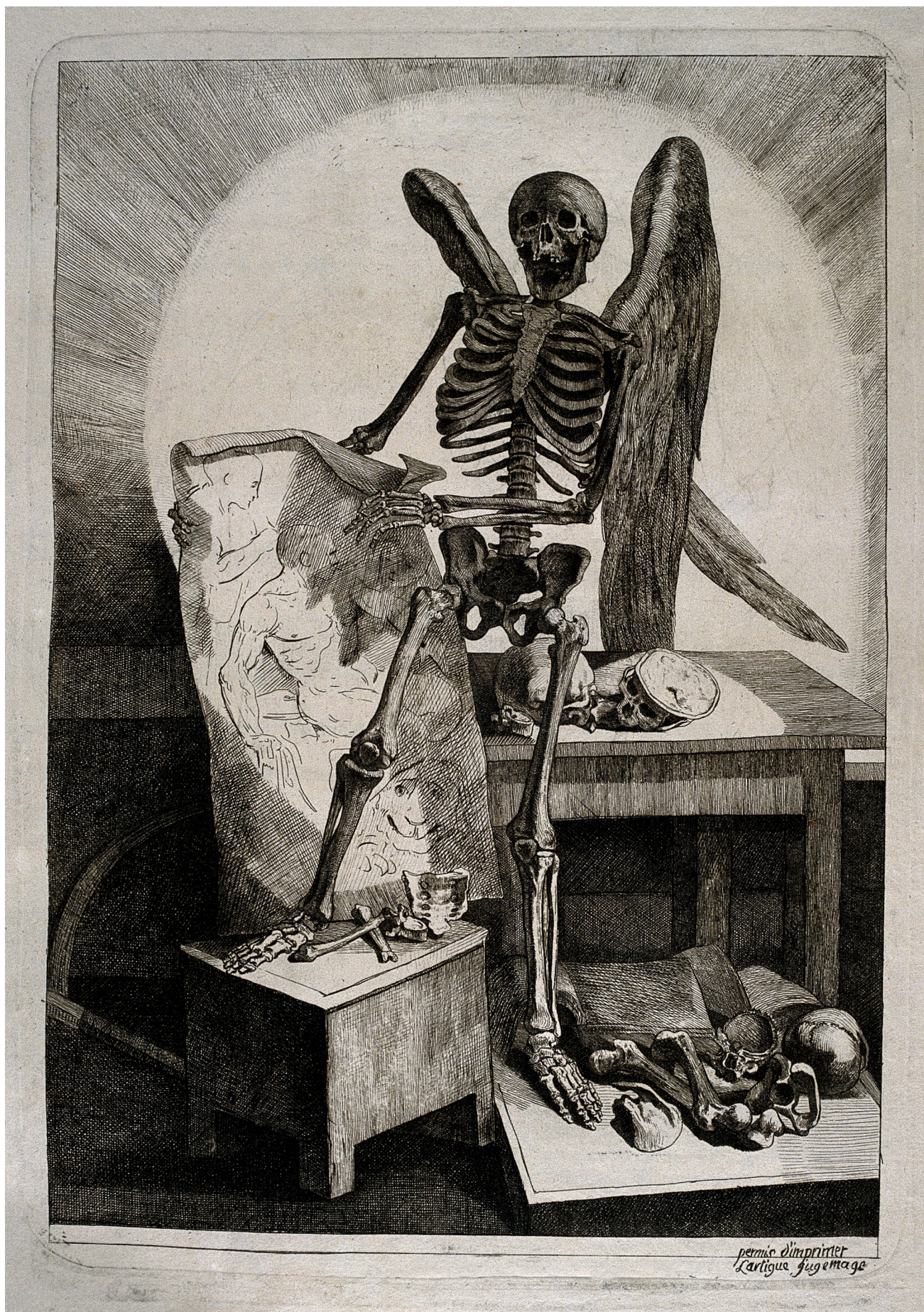
Chaotic, Morale automatic success

Special attack: Wing rake. The volucrae can lash at opponents with its wings, which end in bony spikes.

Special Defense – Magical resistance. They can only be harmed by magical weapons. They take half damage from non-bludgeoning weapons.

The power to create Winged Skeletons comes from a demonic twisting of the spell *Animate Dead*. PCs will not be able to use this further degenerated spell unless they undertake a suitably dangerous quest to find a sorcerer who already knows it. For starters, the person providing the skeleton has to be alive when the spell is initially cast . . .





permis d'imprimer
L'artigue jugement





Salvage, Prizes and Repairs

By Tom Mouat (Edited by Michael James Cross)

Salvage Money for Recovery or Assistance in Peril:

In order to claim salvage, the following points must be met:

- The ship must be in peril (lost power in a gravity well, being attacked, or something similar). A "parked" ship in a stable orbit or location (E.g. a Lagrange point), does not qualify unless some other hazard exists.
- The ship's Master or Owner must request help or declared they have abandoned the ship.
- The ship or a substantial part of its cargo must actually be rescued from the peril or an environmental hazard or potential for loss of life is avoided (E.g. Diverting a wreck from an impact).

If a ship is rescued (or diverted) under these circumstances, the rescuer may claim salvage. Salvage is awarded at a Salvage Court, with representatives of the System Authorities, the Ship Owners, those seeking Salvage, and in some cases the System Authorities from where the ship is registered. Salvage Courts are normally located at the Sector Capital, or larger systems in a Sector or Sub-Sector may have their own Courts.

Normally the salvage value is based on a baseline of 25% of the replacement value of the ship and cargo, less the costs of repairs (if carried out by the owner), or plus the cost of repairs (if carried out by the rescuer). But this is subject to the degree of peril (so sending an engineer to help repair a simple drive failure, when the orbit is only decaying slowly, would attract negative

DMs, whereas fighting off pirates with loss of life or damage to the rescuer would attract positive DMs). The normally accepted maximum is one-third of the value of the ship and cargo. In the case of avoiding a disaster from a wreck, additional DM's can apply due to the scale of disaster avoided. The maximum is 50% of the value of the ship and cargo when it was fully functional.

Insurance and Legal Process.

Salvage Courts can take a long time to reach a verdict (2D6 months). If the ship is insured, the insurance company may pay more quickly, but to a lesser degree (usually no more than 20%).

Salvage Value Index Dice roller:

- | | |
|------------|-------------|
| • 2 = 0.10 | • 8 = 0.26 |
| • 3 = 0.20 | • 9 = 0.27 |
| • 4 = 0.22 | • 10 = 0.28 |
| • 5 = 0.23 | • 11 = 0.30 |
| • 6 = 0.24 | • 12 = 0.5 |
| • 7 = 0.25 | |

Salvage Example:

A small Yacht suffers a drive failure off a gas giant during refuelling. They roll to repair the drive but fail needing a vital spare part that they don't have. The orbit is decaying rapidly, and the antigrav-vehicle on board will not be able to carry the crew to safety. As a result, the Captain broadcasts a Mayday message for help. A Trader comes to their assistance and is able to repair the drive, with spares from their ship.





The Trader crew claims salvage. Both sides trade certified copies of their sensor data and logs and report in due course to the Salvage Court. The Yacht's mortgage company offers 20% of the value as an insurance payment, plus Cr 10,000 for the spares and repair. The Trader crew turns them down, being prepared to wait.

After the Court hearing, some 8 months later, the eventual award was 22% (the Court decided that there was very little hazard to the Trader, so a DM of -3 was applied). The value of the Yacht and cargo (MCr 30 and 8 tons of luxury textiles cargo at Cr 12,000 per ton) is Cr 30,096,000. Add to that the value of the repairs carried out by the Trader at Cr 10,000. The total is Cr 30,106,000. The Salvage Money is therefore Cr 6,623,320.

Prize Money for Pirate Ships:

In order to claim Prize Money, the ship claimed must have committed a hostile act. Failure to stop when legally ordered to, does not constitute a hostile act, unless in breach of a formally constituted blockade. Small craft and lifeboats fleeing their parent craft are considered part of the parent craft, for prize purposes.

If a ship is captured under these circumstances, the captor may claim Prize money. Prize money is awarded by a Prize Court. Representatives of the Authority offering Prize money, those seeking the Prize money and possibly a representative from the System Authorities may be present. Prize Courts are normally located in the system offering Prize Money.

Normally the Prize value is based on a baseline of 50% of the auction value of the ship and cargo, less the costs of repairs. This is subject to any rules or incentives

offered by the Polity offering any Prize money. There is no accepted maximum value for Prizes. It would be extremely rare for it to be more than the value of the ship and cargo.

If the ship claimed is outside the jurisdiction of an Authority offering Prize money, the ship can be auctioned locally, if the authorities agree. Locally auctioned ships attract a -4 penalty on the Prize Money Index.

Insurance and Legal Process.

It is important to note the difference between Pirate Ships (operating in a hostile manner) and ships confiscated illegally by Pirates. In essence stolen ships where clear non-pirate ownership can be established. The differentiator is if these stolen ships are operated as pirate ships or are merely contraband.

Ships recovered from Pirate crews attempting theft of said ship are treated as salvage and are returned to their operators. Ships that have committed a hostile act beyond any act occurring in the course of their theft are treaded as Prizes. Prize Courts tend to reach a verdict much faster than Salvage Courts (as an incentive) (2D6 weeks).

Prize Money Index Dice roller:

- | | |
|------------|-------------|
| • 2 = 0.10 | • 8 = 0.55 |
| • 3 = 0.10 | • 9 = 0.60 |
| • 4 = 0.35 | • 10 = 0.65 |
| • 5 = 0.40 | • 11 = 0.70 |
| • 6 = 0.45 | • 12 = 0.80 |
| • 7 = 0.50 | |





Damage and Repairs:

There are basically three levels of damage to a ship:

1. First Line:

Capable of being fixed by a trained crew member within a short period (2D6 minutes). Examples would include re-setting circuit breakers, replacing smaller modular components, or extemporised repairs such as plugging air leaks with a patch. These parts are expected to be regularly available on board.

2. Second Line:

Capable of being fixed by several crewmen working together in a more extended period (2D6 hours). Examples would include disassembling a major ship system to reach the faulty module or part or welding a panel over a hole. If work is required outside the ship's hull, in vacuum, this will take longer (3D6 hours).

Having carried out half the work and identified what needs replacing roll 2d6 to determine the status of any needed repair items. These may be held on board as a spare and can be fitted as normal (9+ on 2D6). It may be that the item is not held on board, but can be fabricated by machining, 3D printing, or by cannibalising less critical systems or components (6+ on 2D6) but taking an additional 1D6 hours for repair.

Finally, it is possible that the item required cannot be fabricated on board or is not held as a spare (5- on 2D6); in which case the system cannot be repaired by the crew.

3. Third Line:

Only capable of being fixed at a repair installation and taking longer (2D6 days for the repair itself. It is highly likely that there will be delays and competing priorities before the work actually starts). This involves replacement or overhaul of one or more major ship's systems, structural repairs, or turret replacement. It is assumed that the necessary parts are readily available for common systems. Non-standard items and larger weapon systems may have to be ordered in from stockpiles elsewhere, adding to the delay.

First Line repairs cost Cr 1,000 and are for near misses, violent manoeuvres, and other role-play opportunities. Second Line Repairs costs Cr 10,000.

Different weapon systems will cause different numbers of hits. In the example I use below, there are 1D6 hits caused by proximity warheads, 9 hits from impact warheads, 3 hits from Beam lasers and 1 hit from Pulse lasers.

Every 4th hit causes 1 point of Structural Damage (modified by armour plating and hull structure). Structural damage requires Third Line repair, and costs Cr 500,000 per point.

Prize Money Example:

A Trader is refuelling at a gas giant in system when it is attacked by a modified mining ship. The mining ship has a double beam turret, with a jury-rigged missile pod containing 2 missiles. The mining ship calls on the Trader to surrender, which is refused. The mining ship fires its lasers, causing only minor hits to the cargo compartment. The Trader returns fire, causing a fuel leak and a system failure to





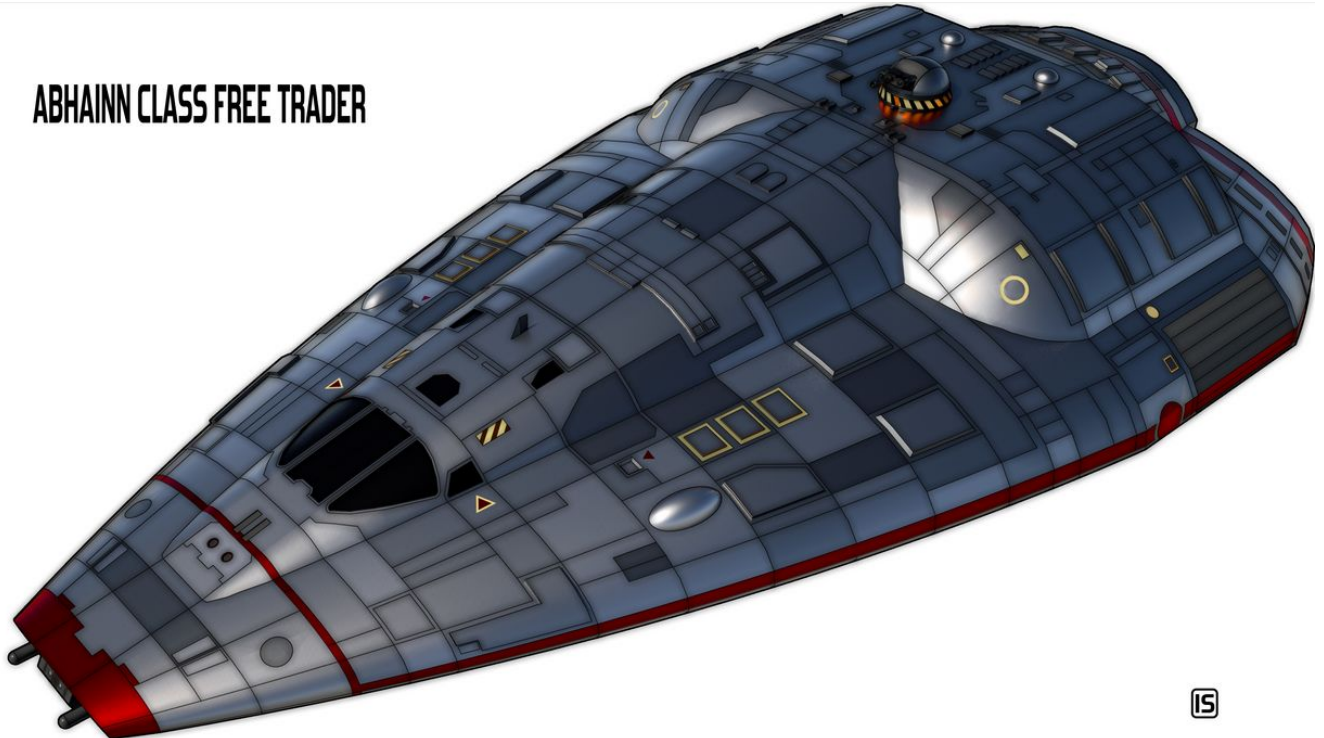
life support for the mining ship. The crew of the mining ship, now hampered by vacc suits, fire the missiles; one of which is hit by a lucky shot from the Traders Gunner, the other of which strikes the Trader, causing the computer to be damaged and cut out, and the Pilot to be injured. The Trader returns fire, relying on their Gunners abilities as the computer is off-line, but scoring two hits, disabling the mining ship's drive and cutting out the power to the turret. The crew and passengers from the Trader elect to board the mining ship, killing the mining ship's crew with the loss of only one crewmember.

The Trader crew repairs the mining ship, and seeks Prize money to compensate for the damage to their ship. Unfortunately, this far out on the Rim, the system does not have a Prize Court, so the ship must be

sold at auction. The mining ship's value is MCr 23 and it has no cargo. It has suffered 4 hits equating to 4 hits and 1 point of structural damage, with a total repair cost of Cr 540,000. Sadly, there is little demand for a damaged mining ship at auction, fetching only 10% of the Cr 22,460,000 value: Cr 2,246,000.

The Trader suffered 11 hits, equating to 11 hits and 3 points of structural damage, with a total repair cost of Cr 1,610,000. They are able to cover the cost of the repairs to the ship with Cr 636,000 left over. The Crewman who died had basic insurance, but the crew elect to give an additional Cr 300,000 to his widow and child. Leaving Cr 363,000 to be split among the crew and passengers who helped in the boarding action.

ABHAINN CLASS FREE TRADER



IS





SoC NPC - Gytha

By Robert Foran

Another Sword of Cepheus character.

Max Skill Levels: 14

Note: I roll two different colour dice for attributes, one represents the genetic component of a characters stats (the number in brackets) the other is the part developed during childhood and adolescence (this rule is taken from T5). When/if the character has children they will inherit the number in brackets from their parents (which parent they inherit from is determined randomly for each stat). Your offspring will then roll 1d6 and add the result to the base stat, inherited from their parents, to find their own stat. Example: Harles (below) fathers a child with Gytha the tavern wench. Harles' STR is (5) 10, Gytha's STR is (4) 8.

It's a girl and a random roll has determined that she inherits her STR from her mother which means she starts life with a 4+1d6 for STR. (EDU and SOC are not usually inherited, but one could argue that educated parents generally see to their children's education, and noble titles do pass down to the younger generations sometimes. Therefore I've included them in the inheritance rule I'm using).

Gytha (Commoner, Apprentice) Age: 26
10GP

Attr.	Gen.	Score	Bonus
STR	(4)	8	+0
DEX	(4)	6	+0
END	(1)	7	+0
INT	(4)	6	+0
EDU	(5)	8	+0
SOC	(4)	6	+0

Skills: Carousing-3, Animals-1, Art-1, Athletics-1, Steward-1, Religion-1, Riding-0, Craft-0, Streetwise-0

Traits: Empath

Equipment: Dagger, Ally (Harles), Ally (Brunner)

Gytha is a 26 year orphan, raised by and employed by Brunner in his tavern, appropriately named Brunner's. Gytha of course calls it Gytha's Tavern. She fully expects to take over when Brunner gets too old to run it anymore.

Growing up and working in a tavern, Gytha grew to regard the regular customers as her extended family, treating them as uncles and aunts. One old codger she used to think of as a grandfather-like figure is Neags Jarmer, an old gambler. The locals all refuse to play him. No one has ever caught him cheating, but he sure does win an awful lot of the time. Neags taught Gytha how to play cards and soon no one in town would play her either. She, like Neags, must often wait for travellers to get a paying game going.

Another of her extended family, an "aunt" named Maia Thar, also played a prominent part in Gytha's education. At first young Gytha found what aunt Maia did a bit mysterious, whatever it was the men seemed to appreciate it and often thanked her. Although the mystery didn't last too long, and "aunt" Maia saw to it that Gytha knew enough, for her to be able to get her way with men, without





seeming to do so. It was Maia who taught Gytha to dance as well.

When she had spare time she would sometimes go to the stables, or listen to travelling priests talk about their various gods, demons and other beliefs. Sometimes she would even visit a friend's farm just outside of town, where she enjoyed helping with the animals. When the war with Bremoor broke out, Gytha was 18 and found herself conscripted along with a few others, originally for her ability with animals, but was soon tasked with serving in the officers mess of the Arondel Legion barracks.

When off duty she would often gamble at cards, with some of the soldiers. In one of these games she took an entire months pay from one of the younger soldiers, but he looked so crestfallen at his loss, that she gave half of it back later. His name was Harles and although he never played cards with her again, they became friends. They would spend as much time together as their duties allowed.

During the last few years of the war, Gytha was released from service and returned to Brunner's. Harles would visit as often as possible and eventually the couple married. Months later Gytha gave birth to their daughter Merrey.

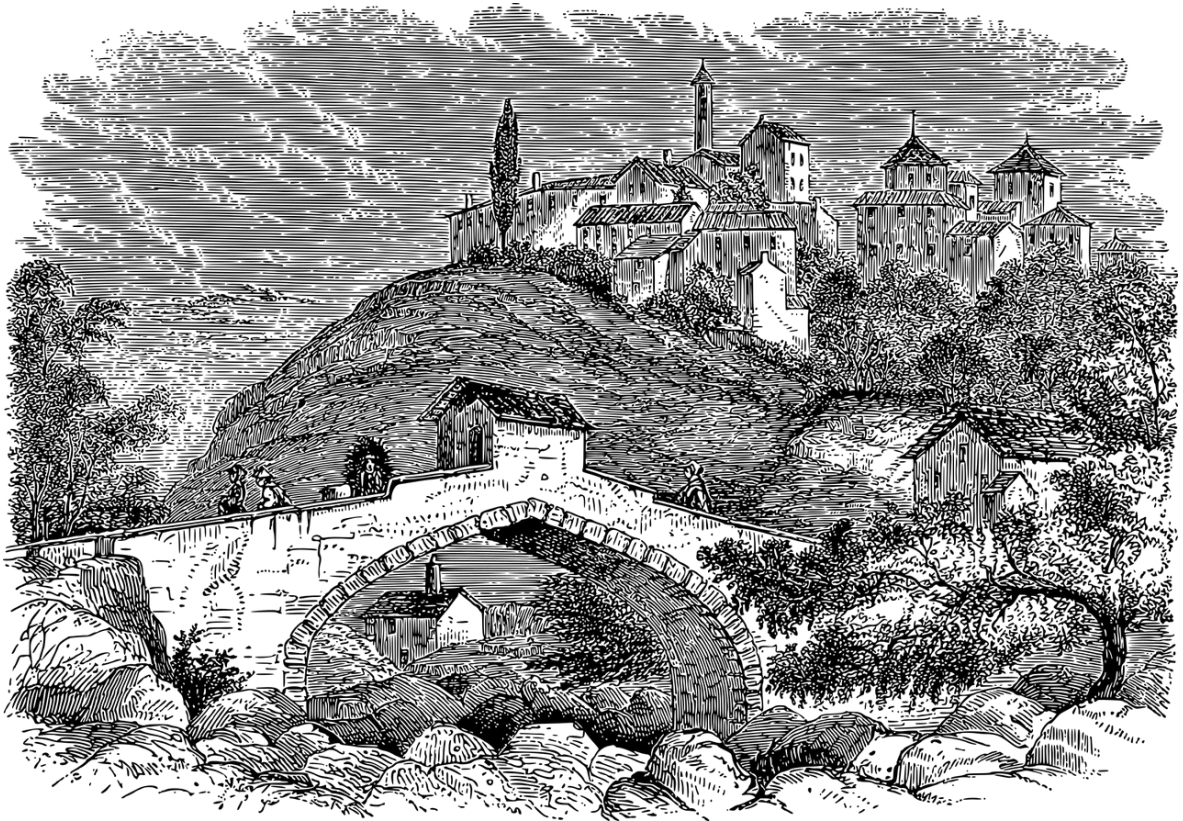
Gytha has started to worry a bit about Harles as he seems restless and she knows that he went off to talk to those two loudmouthed brothers who were in the other night, bragging about their adventures.

Merrey (Infant daughter of Harles and Gytha)
Base attributes inherited from her parents

Attribute	Base	Inherited From
STR	(4)	Gytha
DEX	(4)	Gytha
END	(3)	Harles
INT	(4)	Gytha
EDU	(5)	Gytha
SOC	(5)	Harles

Merrey is as yet an Infant and essentially has minimal attributes of 1 across the board, as she grows up she will fill out these base attributes and by the time she is 14 years old she will add an additional D6 roll to each to find her adult attributes. Merrey is very much her mother's daughter inheriting most of her base attributes from Gytha, Gytha will also see that Merrey has a bit more education than her father received. She gets her endurance from her father and some of her fathers renown (SOC) has passed to her as the daughter of a war hero.







Starship Ownership

By Michael Major

I get asked about this from time to time by players and generally have to explain things. It's very clear that 'skipping' happens and there are also piracy concerns which touch on the same issues (ie ship ownership).

For my own universe, here's how things work. Obviously Your universe may vary but I thought I'd share my own bit:

Ownership - the first thing to do is define ownership, which is simple enough if someone pays cash for a ship, but more complex if it is financed. More complex again if it is subsidized. So let's start there.

1) If a ship is 'flat out' owned by someone - ie they paid cash for it, then it's theirs and remains theirs unless sold, destroyed or abandoned.

2) If a ship is financed, ie - has a bank lien on it, then technically the folks 'own' the ship, but the bank has an interest, much like with a house or other real property. If the loan is defaulted on, the bank or financier will have certain rights, depending on the nature of the original contract but that will likely include recovery rights – and finally –

3) Subsidized – this is similar to financing, however the government has an interest and co-signs and guarantees the loan. While the bank has rights here, generally they just handle the financing, in the event of some kind of a skip, the guarantor will generally pay off the bank and then pursue the 'skip' themselves.

Ownership can, of course, change. First a

ship may be sold. If this is a 'flat out' ownership this is simply a matter of transferring funds and the title. Commonly, when those making the sale are known to each other, this is fairly simple and straightforward and involves the title being handed to the new owner and the funds being received by the old. When a sale is to take place and the parties do not know (or do not trust) one another there will generally be a check for 'clear title' to ensure that the ship has no liens or claims on it. Transponders (see below) play a part in all of this. If a title is not clear the ship may still be saleable, depending on the nature of the claim or lien, but the claim/lien transfers with the vessel.

In some universes, it's fairly common for titles to be transferable without clear title. Banks and/or government subsidies don't generally care who is making the payments or fulfilling the subsidy, as long as these things happen. If a ship's owner doesn't want to (or cannot) operate a vessel anymore and wants to transfer the vessel, as long as the new owner keeps making the payments, the bank is happy to accept. In the event of a subsidy, the subsidy payments not only need to be made, but the subsidy terms need to be held to as well.

Another key element of ownership is – what if the ship is abandoned, destroyed or stolen?

Abandonment - Ancient maritime rules have specific laws concerning vessel abandonment and many of these, in a form-follows function manner, have been





carried out into the stars. With starships, as in many things, jurisdiction plays a significant part of how vessel abandonment works. In ancient maritime days a vessel was 'abandoned' if it was not in port and no one was aboard. While there were many variations in general this was a good 'rule of thumb' to go by.

However in starfaring periods with power systems, station keeping computers etc. etc. things are not quite so simple. While different stellar polities have different rules (and unexplored space in a lot of places there are no rules at all) the ruling empire has a fairly simple but functional set of rules for abandonment of space faring systems. This can include starships, non-starships, stations and habitats and various other space faring systems such as robotic or automated machinery, data gathering systems etc.

The in-principal rule is:

"A ship or other space faring system is considered to be 'abandoned' if it is uncrewed AND has been without power/non-operational for more than 6 months."

There are some exceptions and fine points in the law to deal with unusual exceptions to these rules. For example ancient alien (and sometimes human) space faring systems have been found which are still operational even after centuries and sometimes even thousands of years since the last owners visited. While these systems, being powered and operational would technically not be considered 'abandoned' there are laws to adjudicate ownership if the owners are long dead, vanished, left that region of space, descended into barbarism etc. Another thing which sometimes come into play is that the ruling empire, being the

force that 'rules the starlanes' may have a claim over very high tech finds located by adventurers, salvage companies and the like.

This will usually be any technology greater than the highest available (TL16+ in my universe) or any technologies which has deemed restricted, dangerous or forbidden. There is, of course, a thriving black market for such materials and, as many of these kinds of finds can be dangerous or very advantageous to the ruling empire as a whole, there is a very reasonable finders fee for those who go through proper channels and report such finds. The ruling empire will, as a policy – be more generous than not over such matters, although it is not unknown for local nobles to pocket some of this or try and treat such finders unfairly – possibly even grabbing such finds for their own uses. None of this is encouraged but could make for a good adventure seed.

Another area of abandonment exceptions are military vessels. These are always considered to be the property of the military/government which produced them or their successors. If said military or government no longer exists, there is no legal protection for them, but if they were lost with crew they are considered war graves so there may be political or PR considerations depending on how such things are handled.

Destroyed ships are in many ways similar to 'Abandoned' ships above. The difference being that, almost by definition, they are not operational. Like abandoned ships they may be salvaged if not military vessels. If crew have survived they may still retain ownership of the wreck, and the wreck will remain property of the original owners for six months once rendered non-operational, thus effectively giving the





original owners 'first crack' at recovery and/or salvage.

Salvage Claims – Abandoned or Destroyed vessels may be marked for 'salvage claims'. In the case of a system with a planetary navy, the individual system laws for salvage claims will apply. This also applies to the orbit of the main world even if the planetary government has no spacegoing body. For areas in a stellar empire not claimed and enforced by a mainworld, the empire's laws apply. To place a salvage claim the salvor leaves a note of some description which includes the name and contact information of the claimant, the date of claim etc. on or in the immediate presence of the claim.

Commonly these are short ranged computerized radio buoys but even a hand written note with the relevant information will suffice. This 'resets' the ownership claim to the claimant for a six month period, after which the claim expires. To be fully legal, the claim must also be registered with the nearest stellar authority, but in practice this is sometimes not done and generally does not invalidate a claim although it can be supportive if the claim is challenged.

Stolen Ships – Ships which are taken illegally (stolen) legally remain the property of the original owners. When recovered they are to be returned to the original owners. This is commonly done by the local stellar authorities but can sometimes also occur when ships are recovered by other parties such as mercenaries, other parties perhaps defending themselves against the stolen ships etc. If the ship is abandoned it will generally remain the property of the original owner for 6 months (just as with any other abandoned vessel) after which it may be salvaged. However if the ship remains operational (captured and used

as a pirate ship, perhaps, or re-sold to unsuspecting purchasers) the vessel remains the property of the original owner who is entitled to reclaim it should it ever be recovered.

If a group recovers a stolen vessel, they cannot simply sell it or salvage it as they do not actually own it. However it is very common for the original owners of the ship to pay a bounty for the return of their vessel which, after all, is generally a very large investment. The normal recovery fee is most commonly 5% of the current value of the starship. This is to include the current state of repair, effective resale value as well as any battle damage which may have occurred. If a vessel is recovered this is the amount which will always be paid – however haggling over the proper value of the ship can be a matter of some contention and will sometimes wind up in court if the parties cannot agree.

As an example, a standard scout that might cost 29,430,000.00 Cr to build/purchase new. Starships which are well maintained lose some value over the years but, as a well maintained ship can continue in operation for decades or longer, hold their value reasonably well. The example ship with a bit of wear and tear but decently maintained for some twenty years will commonly still be worth around 20,000,000.00 while a poorly maintained but operational ship will be more like 10,000,000.00. So a battered, old and used by pirates ship which still operated might be worth a bounty of 500,000.00 when returned to the owners.

Insurance – Some vessels are covered by insurance. Due to the sometimes distant nature of the ruling empire, by far most itinerant ships are 'self insured' meaning that they do not carry any kind of





insurance. If they are lost the vessel's owner replaces it. Various merchant lines, with permanent offices and large physical presences can manage insurance and some choose to purchase it for some vessels. In this case, if the vessel is lost, the insurance company will pay out according to the contract, but they become the owner of the wreck and any salvage etc. Tramp ships and even small companies will usually have a difficult time acquiring ship insurance as assurance companies will see single ships and companies as too high of a risk of losing or improperly maintaining their vessels. Even when available, the costs of these kinds of insurance plans are often not economical save for the very largest carriers operating in the safest areas.

Identification – All starships, of course, have hull registration numbers, various parts numbers etc.

The ship's registration number is generally displayed on the hull and is also etched into the hull in various places, some of them fairly inaccessible. Each of the ship's main components also have serial numbers (often a set of them for very complex systems). All of these are recorded as common practice in the ship's computer – for repair parameters if for nothing else. These records must also be kept up to date by the crew when repairs or replacements are done and are automatically updated during annual maintenance, which always sees some parts replaced as a matter of course. If the records are found to be out of synch in the ship's computers, fines can result as these are a safety violation and also contribute to various nefarious parts sales schemes, black marketeering etc.

Government Transponders - In some empires, the most important single identification system is the governmental

IFF Transponder. By law, all vessels operating in these empires must carry a transponder or an emulator. Transponders are extremely difficult to forge, requiring extensive levels of computer and forgery skill and regular firmware updates. While a transponder may be turned off by a crew, running silent in normal operations is an offense which carries a considerable fine. If the transponder is damaged or otherwise not operational, this fine will be lower and may be waived depending on circumstances.

Transponders operate by carrying a highly encrypted block-chain based set of protocols. Each time the transponder interacts with another transponder, they 'handshake' exchanging data and updating each other. The same occurs with each arrival at a starport where part of the landing process is an automated update of both the starport's records and the ship's transponder. The reason that these transponders are so reliable is that the information in the chain also gets passed through the mail network and even through itinerant ships passing through.

In this way, if a ship's record were to be faked or altered, the ship encountering it would have an entire history of port of call visits and ship encounters within its own transponder and if any of those did not match up, the ship would be flagged as questionable. The ship's individual transponder code also contains key part serial numbers in addition to its registration number, so that if these are sold somewhere illegally it is possible to flag them as stolen (or salvaged etc.)

At each annual maintenance, updating of the ship's transponder with current part codes is part of the maintenance process. Any starport repairs will also update the





transponder. Any field repairs done should result in a transponder update and if not done, there is the potential for a customs/navigation fine. In this way the transponder and anything it comes into contact with automatically 'knows' the ship and its main component parts as well as their entire history, going back years.

Because of this, most pirates simply run 'silent' and a ship not running a transponder is a sure sign of danger. Military ships run their transponders as a digital 'flag' displaying their nationality, allegiance etc.

Transponder Emulators - Ships visiting these empires are fitted with a computer program that emulates a transponder. While not as tamper proof as a real transponder, they function in much the same way. They are initially loaded with the ship's primary information – generally just the hull number for non-flagged ships although options for more are available if desired – as well as its travel history starting from where the emulator was fitted. When the ship leaves the local empire the emulator is generally turned off until its return.

False Transponders – While all major empires maintain that transponders are completely 'tamper proof' and 'inviolable' this, of course, is far from the truth. Any secure system always has people trying to defeat it in some way and some will succeed, at least for a time. This is just as true with transponders as with anything else. The reason that transponders are considered tamper proof is the full history of a ship which it requires, from build to current encounter and everything in between and how that is fully shared with any ship or port it meets. There are two ways to defeat this and both have been used in various forms of False Transponders.

1) The first is simply 'copying' an existing ship and layering its history into the transponder. While this still requires a certain amount of tampering with a very secure and tamper proof system, it has been done from time to time. There are two issues with this. First if the copied ship is still operational, the history will become corrupted as soon as there are two ships in operation out there (resulting in both of them being flagged as possible violators). The second is that the Transponder system receives frequent firmware updates – at least several times a year. These are done as part of the routine docking procedures at Class A, B and C ports. The corrupted transponder will likely not survive a firmware update, meaning that it will quickly become useless.

2) The second system directly tries to 'hack' the receiving transponder and provide it false data and a false history overwrite to go with it. This is much more difficult than the first solution due to the very high level of program security in the Transponder system. Still it has been done, although this, too, often does not survive a firmware update. In addition periodic reconciliations will eventually find and correct the overwritten data invalidating the efforts and perhaps even identifying the person running the false transponder.

Note that false transponders can be either the software or hardware sort. In order to keep operating both need to accept or somehow emulate the various firmware upgrades which are put out by the authorizing empire. Some get around this for awhile (perhaps a year or so) by having readings which do not show the false ship reading ever putting in at the kind of port which would provide a firmware update, allowing them to run on 'old firmware' for awhile, but even these are eventually caught out.





Tech Level Equivalents

By Paul Elliott

Cepheus Engine is a wonderful tool-kit for adventuring across hundreds or thousands of worlds and at all levels of technological progression, from the stone age to the far future. The full range of technological levels is laid out in a table at the start of chapter 4. Technology Level, also known as Tech Level or TL, is a measure of the scientific and production capacity of a world and the complexity and effectiveness of a piece of equipment.

The notable characteristics of each 'tech level' are decidedly brief, but do give a quick, short-hand summary of what to expect from the industrial capacity and technological development of a particular world. Tech Level 2, for example, has the descriptor 'Primitive' and the Notable Characteristics 'Renaissance technology'. Earth today, at least in the most advanced nations, can be described as Tech Level 7, 'Pre-Stellar', with the ability to 'reach other worlds in the same system, although terraforming or full colonization is not within the culture's capacity'.

TL 0 Primitive
No technology.

TL 1 Primitive
Roughly on a par with Bronze or Iron age technology.

TL 2 Primitive
Renaissance technology.

TL 3 Primitive
Mass production allows for product standardization, bringing the germ of industrial revolution and steam power.

TL 4 Industrial
Transition to industrial revolution is complete, bringing plastics, radio and other such inventions.

TL 5 Industrial
Widespread electrification, telecommunications and internal combustion.

TL 6 Industrial
Development of fission power and more advanced computing.

TL 7 Pre-Stellar
Can reach orbit reliably and has telecommunications satellites.

TL 8 Pre-Stellar
Possible to reach other worlds in the same system, although terraforming or full colonization is not within the culture's capacity.

TL 9 Pre-Stellar
Development of gravity manipulation, which makes space travel vastly safer and faster; first steps into Jump Drive technology.

TL 10 (A) Early Stellar
With the advent of Jump, nearby systems are opened up.

TL 11 (B) Early Stellar
The first primitive (non-creative) artificial intelligences become possible in the form of "low autonomous" interfaces, as computers begin to model synaptic networks.





TL 12 (C) Average Stellar
Weather control revolutionizes terraforming and agriculture.

TL 13 (D) Average Stellar
The battle dress appears on the battlefield in response to the new weapons. "High autonomous" interfaces allow computers to become self-actuating and self-teaching.

TL 14 (E) Average Stellar
Fusion weapons become man-portable.

TL 15 (F) High Stellar
Black globe generators suggest a new direction for defensive technologies, while the development of synthetic anagathics means that the human lifespan is now vastly increased.

You'll notice that these descriptions are pretty vague and a close inspection of the equipment lists is really needed to work out just what is and is not available at each Tech Level. Although the Tech Level concept was introduced in 1977 with a certain classic 2D6 rule-set, it wasn't until latter publications that we saw actual historical dates assigned to the earlier Tech Levels – these provided a very succinct guide to the 'package' of inventions, developments and technologies that exist at each level. I think that reassigning these tentative dates to the Cepheus Engine (CE) Tech Level table would be a great help for CE referees and players.

Evaluating the TL and using it to create an interesting and workable society can be tricky, because Tech Level is not a historical timeline - it is a guideline. TL 5 roughly equates to the period 1900 to 1939, but that only means that some or all of the technology on the world in question is of a similar level. There may actually be something in everyday use in that society

from TL 4 or from TL 6, the referee should not be afraid to mess with the technological base. More often than not, such 'mixing up' will be forced on a planet by its resources. A world without fossil fuel reserves may cling to inefficient wood-burning steam engines, while a planet with a dense atmosphere may invent the dirigible airship at TL 3 rather than TL 4.

The biggest danger is in looking at that TL 5 designation, seeing that it represents 1900-1939 technology, and then assuming that life on planet X must be similar to 1920's America or Edwardian England, with all of the cultural and social baggage that comes with it. There are certainly good reasons for assuming a historical society is the product of the technology around it, but doing so creates clichéd planets that remind us of Star Trek episodes like A Piece of the Action (mobsters in space) and Patterns of Force (Nazis in space).

Instead, try to divorce the technology from the timeline, it happens all the time in the developing world. I have seen Masai herdsmen on the edges of the Serengeti, driving along their cattle while talking on a mobile phone and there are villages in India and Nepal, little changed from the 17th century, that now boast wind turbines and solar power arrays.

Whatever the TL, it must suit the planet on which it exists. In fact, TL is the way in which the unique landscape of the world being created can be brought to life, particularly by emphasizing one particular piece of equipment or technology.

TECH LEVELS FROM THE PAST

Let's put some approximate dates to those early Primitive and Industrial Tech





Levels and discuss some of the developments that took place within that level.

TL 0 Stone Age

This society depends on muscle power and stone tools, transport available is limited to carts, canoes and rafts. Weaponry is limited to clubs, bows and spears. While tribes of savage cave dwellers are associated with the Stone Age, in fact there were many societies later in history, that used stone tools, but which lived in small villages, farmed the land and herded cattle or sheep.

Co-operation can achieve great stone structures and building projects and their communities, although equipped with primitive tools, may still have complex and interesting societies. Note that some cultures, especially in Polynesia, where flints and obsidians were rare, used animal teeth as tools, an example of which is the shark-tooth sword of the Maori warrior. In a post-holocaust scenario, scrap metal and scavenged parts might replace stone as the working material.

TL 1 Early Metal Age

Tech Level 1 represents the technology of the first societies and city-based cultures. Muscle power is now supplemented by the water wheel. Tools are now made of metal, leading to more efficient production of crops and the ability to feed larger populations. Transport now includes large wagons, oared galleys and small sailing ships. These ships do not sail easily across open ocean due to lack of reliable navigation devices.

Weaponry now includes daggers and swords, axes, crossbows and military catapults. Beacon fires, heliographs, medical instruments and the abacus are also available. This is the technology of ancient Greece and Rome. When one

considers the huge cities of the Roman Empire, with villas, public baths, sewers, aqueducts and heated rooms, a TL 1 planet certainly does not have to be primitive or uncivilized.

TL 2 circa 1400 to 1700

The biggest change from TL 1 to TL 2 is in science. The invention of the printing press helps to disseminate learning in chemistry, physics, astronomy and biology. Wind power now supplements muscle, and weaponry now includes early cannon (including matchlock and wheelock muskets and pistols), two handed swords and crossbows fitted with powerful winding devices (cranequins). Metal plate armour is also available at this tech level.

TL 3 circa 1700 to 1860

The very beginnings of the industrial revolution are represented by TL 3. Of greatest significance is the invention of large steam engines used as power plants in the newly established factories. The growth of cities accelerates as the new industries need large amounts of labour, some of which is skilled, requiring the establishment of schools for the masses.

Innovations in transport include the sextant, hot air balloon and the sophisticated multi-mast sailing ship, capable of trans-global voyages. The accurate chronometer also assisted in navigation. Street lighting first appears, powered at this TL by coal and oil gas. The first electrical telegraph is invented at this TL and new weaponry includes the flintlock musket which, although developed later on in TL 2, dominates warfare and hunting in TL 3.

TL 4 circa 1860 to 1900

Tech Level 4 represents the full development of industrial manufacturing, with coal burning steam technology now





advanced enough to power railway engines and ocean-going steamers. Airships are invented within this tech level and used for passenger transportation and warfare. Innovations in medicine include anaesthetic and the discovery of germs and microorganisms.

Electrical power generation allows public street lighting to replace gas and the telephone supplements, then replaces the telegraph. Flintlock muskets are replaced on the battlefield with percussion rifles which use preloaded powder cartridges and efficient percussion caps, to increase the shooter's rate of fire. Rifled barrels also extend the weapon's range and accuracy. They are soon supplanted by breech loading rifles using brass cartridges, supplemented by revolvers. Sophisticated artillery guns and hand-cranked machineguns now appear on the battlefield. The elevator and the steel-framed skyscraper come into limited use at TL 4.

TL 5 circa 1900 to 1939

TL 5 heralds mass production, the introduction of the production line, the internal combustion engine and the aeroplane. The development of the light-weight combustion engine paves the way for cars, tanks and propeller-driven aircraft and accelerates road-building and oil extraction. As a result, the plastics industry develops significantly during TL 5. Diesel-electric submarines become feasible, as do aircraft carriers.

Electrification spreads to businesses and private homes. Radio is invented, as are mortars, modern rifles, self-powered machineguns, automatic pistols and submachineguns. Large analogue computers using vacuum tubes first come into use for a variety of specialised tasks. In the medical world, antibiotics are first discovered and the X-Ray machine is

invented, while law enforcement is able to use fingerprinting to identify criminals. Development of steel and reinforced concrete frameworks allow skyscrapers to be built more easily.

TL 6 circa 1940 to 1969

Mass production continues at TL 6, and although the automobile continues to dominate ground transport, there are innovations in jet aircraft and helicopters. The concept of an all terrain as well as an amphibious vehicle is created. The battlefield now sees the arrival of the automatic rifle, the light machinegun and the missile launcher. Fission power is harnessed to allow the construction of power plants as well as atomic weapons, although cost prevents nuclear energy from replacing coal and oil fired power stations.

Ships, submarines and large aircraft are now able to be powered with small nuclear reactors. Computing technology leaps forward as transistors replace vacuum tubes, although computers are still very large and expensive pieces of equipment. Television emerges at TL 6.

WHAT IS TODAY'S TL?

With TL 7, running from 1970 to perhaps 2000, we enter the realms of the modern world. New methods of transport include supersonic and wide-bodied passenger aircraft, hovercraft and tilt-rotor aircraft. Space capsules that are capable of reliably reaching small orbital stations now exist, as do reusable space planes. The nuclear thermal rocket is invented early on in the Tech Level and is capable of sending manned crews to planets within the solar system.

On Earth, lack of funding and political will prevented such expeditions, but there is no doubt such a vehicle could have been produced and tested before the end of the Twentieth Century. Tentative manned





exploration of neighbouring planets is now made possible. Computing reaches the microprocessor stage and its development from then on accelerates almost exponentially, bringing powerful computers on to citizens' desks, laps and into their hands. Cellular phones become feasible at TL 7.

Robotics enter mainstream industry and create efficiencies in manufacturing, and a global computer network is established later on in the Tech Level. A complex world-wide communication network now allows for global credit and debit card services to be established. Solar, tidal and wind turbine projects begin generating electricity at this Tech Level. In warfare, ballistic body armour, grenade launchers and assault rifles enter service with regular troops. Medical breakthroughs include organ transplantation and DNA profiling.

Tomorrow's tech would be classed as TL 8. In Cepheus Engine, the primary TL 8 development is fusion power which scientists today predict will become feasible 'in a few decades'. Without this invention, however, Earth probably reached TL 8 at the turn of the century with the wholesale adoption of the internet by personal, commercial, academic and military users.

This coincided with the rise in smartphones, mobile computing, electric aircraft and the commercial adoption of electric road vehicles. Since 2000 there have been other breakthroughs, including the deployment of ship-based laser weapons. Medical breakthroughs have included the mapping of the human genome and the invention of an artificial heart implant.

TECH LEVELS OF TOMORROW

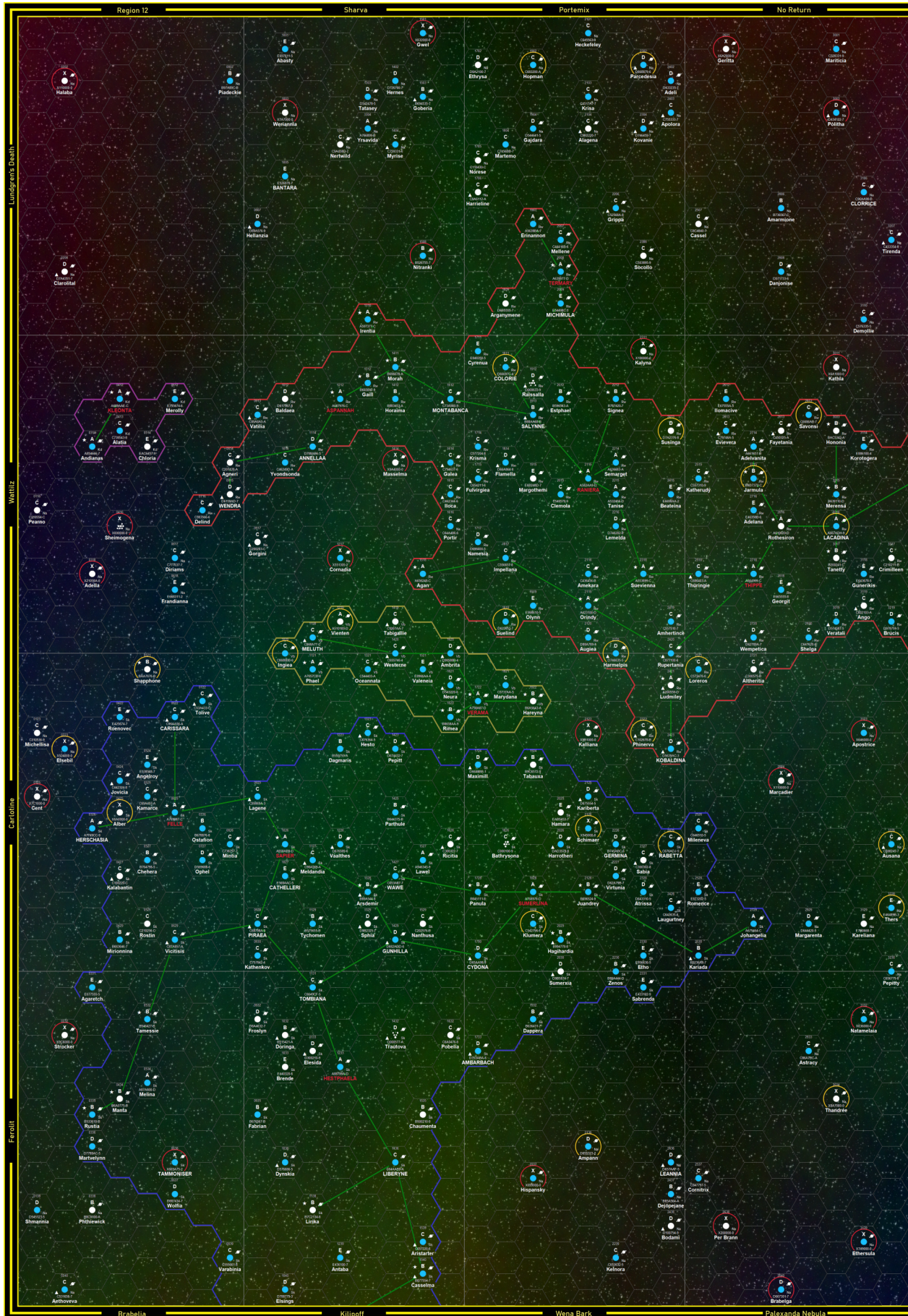
Although beyond the scope this article, a few words should be said about the Tech Levels of the future. TL 9 ushers in anti-gravity technology as well as laser rifles

and tank-mounted laser cannon. Medicine now allows the regeneration of human limbs. TL 10 advances enough with the new jump drive, that interstellar exploration and colonization can now begin. Fusion motors are now small enough that they can be vehicle-mounted. At TL 11 we see the introduction of self-aware robots, and advanced gravity manipulation used for civil engineering. In warfare, advanced combat rifles are adopted along with the devastating meson gun.

Tech Levels 12 to 15 are closely related, and could be seen as subdivisions of a single TL. There are developments in weaponry, in starship technology and gravitics, but none of the new innovations seem to change the nature of society in quite the same way that earlier Tech Levels did. With the invention of grav technology, society takes a new turn, cities are redesigned with flying vehicles in mind and planets spread their populations out into orbit and beyond.

Control of the environment is assured at these Tech Levels and humans can live in extreme climates and terrains with ease. The information net is ubiquitous and accessed by everyone all the time, and powerful fusion weapons and smart drones dominate the battlefield.





A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

SUBSECTORS
WITHIN A SECTOR

- A Halaba Void
- B Yrsavida
- C Ternary
- D Clorrice Solitude
- E Kleonta
- F Aspannah
- G Raniera
- H Thippe
- I Felle
- J Sapier
- K Sumerlina
- L The Two Sheep
- M Tammoniser
- N Hestphaela
- O Leannia
- P Per Brann Nova

Map Legend

Base: Startpoint, Bas Giant, Route, Asteroid Belt, Alignment Code, Travel Zone, Amber Zone, Border

World Types

- Water Present
- No Water Present
- Asteroid Belt

Bases

- Naval Base
- Scout or Patrol Base

Travel Zones

- Red Zone
- Amber Zone

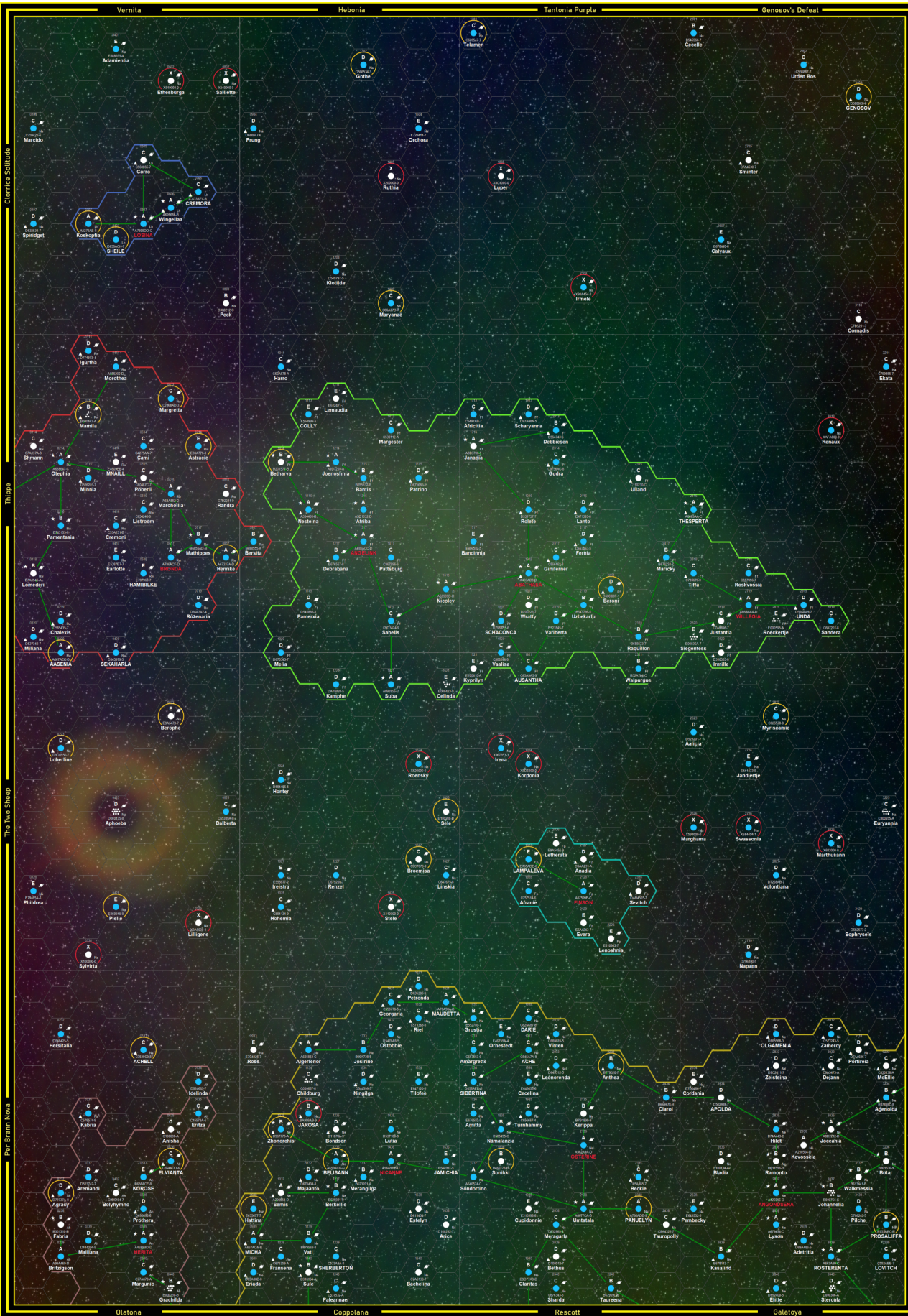
Population

- Wichana: Over 1 billion
- Under 1 billion
- World Names in ... are Capitals

ADSALIS CLUSTER

Just Another Sector from the Cepheus Journal





A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

**SUBSECTORS
WITHIN A SECTOR**

A Losina
B Ruthia Zone
C Lupurion Void
D Admiral Genosov
E Bronda
F Angelink
G Abathaea
H Willegia
I The Wolf
J Broemisa Bridge
K Finson
L Volontian Veil
M Ang Herita
N Nicanne
O Osterine
P Angondsena

Map Legend

Base: Starport, Gas Giant, Asteroid
World Type: UNP, Asteroid, Asteroid Belt
World Name: Ganster, Asteroid, Asteroid Belt
World Name: Asteroid, Asteroid Belt

World Types

Water Present
No Water Present
Asteroid Belt

Bases

Naval Base
Scout or Patrol Base

Travel Zones

Red Zone
Amber Zone

Population

Millions: Over 1 billion
Under 1 billion
World Names in red are Capitals

FANTANA SPÜR

Just Another Sector from the Cepheus Journal



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