

Think Before Asking

An adventure by Anders Sandberg for *Eclipse Phase*.

Thanks to Håkan Andersson, Erik Zalitis and Miguel Hånberg for playtesting and expanding it.



"Toshiro, we have a naritai trend in #5."

"Iz, Put the bracket around it and prepare for purge when it reaches next level."

"Certainl...uh oh..."

Toshiro did not need his muse to guess what had happened. The dataflow shapelet urchined and several displays filled with gibberish. He had the time to think that they should have used another virtualization level to protect themselves from the Oracle when something overwrote his frontal cortex. He did not understand what happened when reality suddenly blanked.

"Toshiro, level #2 is now frozen. There was an excursion after 54 hours runtime."

"What experiment did they do? The absolute denial macro or the arational game?"

"The sentinel reports that it was a variant of the macro."

"In that case archive the result and reseed. I'm hoping they will try the game instead."

A new copy of the base and research team started. Iz added the data from the previous run to the decision support software running in the virtual computers. Maybe this time they would get it right. For a moment the muse considered that the base itself was another simulation. That was all it took for the Oracle to get a hold of its software. It did not understand what happened when reality suddenly blanked.

Synopsis

The characters are in the Saturn system when Firewall contacts them. Another investigation has noticed something very unusual, a smuggled antimatter warhead with quantum entanglement control. Tracking the warhead leads to Phelan's Recourse and various subcultures, eventually pointing at a remote moonlet and its Brinker inhabitants. Arriving there the characters find the chaotic remnants of an AI experiment gone wrong. A powerful seed AI is loose and the characters better figure it out before they accidentally unleash it across space.

Themes

Nested hiddenness: dolls within dolls, simspaces hidden in other simspaces, wheels within wheels, infiltrators hidden inside other groups. The surface is deceiving, the interior possibly dangerous. Anybody who takes things at face value will be fooled.

Music suggestions: The perfect ironic ending song is of course "Still Alive" by Jonathan Coulton.

Background

Questions are never indiscreet. Answers sometimes are.
--Oscar Wilde

Naos is a minor lunar hypercorp working on artificial intelligence, software security and military automation. Originally founded by survivors from the Pacific Rim Security Coordination Organisation (roughly, parts of the US, Peruan, Chilean, Australian and Japanese military-industrial complex) it has always kept on good terms with Direct Action and the other major security hypercorps. Recently it has however come under increasing economic pressure from Martian start-ups like Exo Cute and Muramasa Software of Mars and the Venus-based Szekely-FutureGen Cluster.



A senior researcher, **Dr Toshiro Driscoll-Toyoda**, had repeatedly proposed a risky project: the creation of an "**Oracle AGI**". The idea was to create a seed AGI constructed to only truthfully answer questions, not act in the real world. A bottled superintelligence. Past experiments along these lines on Earth had failed but Dr Driscoll-Toyoda had convincing arguments that modern virtual machines, AGI-assisted reality engineering and some new deep theorems in metamotivation theory would make a big difference. Creating seed AGIs is of course highly illegal, but the benefits of a tame superintelligence would be enormous. The Naos leadership eventually agreed to a secret black project, "Project Wolf-father", done as far away and as untraceable as possible.

"We call it the gorgon-in-a-box problem. There is a gorgon inside the box, and we want to figure out what it is doing. Unfortunately we will turn to stone if we see her face, and she might try to make us see it. However, the gorgon does not know when and where we are looking.

Clearly if we get too few bits of information from inside to constitute a gorgon gaze we are safe. While our data on basilisk hacks and similar forms of malware is incomplete, we know there is a lower limit to the number of bits they contain and we have good reason to believe that single bits are safe. One might re-run the observation a number of times to gather individual bits that are then assembled to a picture, but this could enable a gorgon portrait to form. However, sufficiently distorted larger sets of information are safe. This represents another way of solving the problem - assuming the gorgon does not attempt a semantic attack."

Dr Toshiro Driscoll-Toyoda, presentation to Naos Planning Board

Compartmentalization is the main concept of Project Wolf-father on all levels. The research team are on a smallish habitat, *Anbar Station*, orbiting Luna. Officially they are developing new firewalls and unofficially reverse engineering some of Muramasa's AIs. This is (largely) a cover for watching over the project. The real research occurs on the very minor Saturn moon **Fornjot** (Saturn XLII), monitored from *Anbar* using a tricky quantum communications setup. The Fornjot team are forks of the main team and expendable – they have been edited to be unable to reveal their allegiance and they do not know the details of the project beyond Fornjot (although they are smart enough to suspect). Their implants and computer systems are monitored by an independent system that checks the state of the project and sends (filtered) information to the *Anbar* team. If something goes wrong both the Fornjot and *Anbar* teams can trigger a self-destruct. *Anbar* also has access to a second failsafe: a quantum entanglement-controlled antimatter warhead hidden on the moon.

Fornjot was inhabited by the Brinker cult **Covenant of the Cherubim**. The reason Fornjot was selected was the distance, the deniability and that the Covenant had some sizeable computing resources. A black ops team was hired using anonymization to infiltrate and take over the Covenant base, turning it into a secret lab. The project researchers were installed in the Covenant morphs and began to work on the AGI. Now they pretend to be the Covenant in their rare communications with the outside world.

On Fornjot the main work is to activate seed AIs inside virtual worlds, asking them various questions and then monitoring whether they get out of control. In order to keep things safe the virtual worlds are nested: the AGI exists inside one sealed-off world, interacting with the next through a gatekeeper AI. This world may also be virtual, and so on. If the AGI hacks its way out it will only get the gatekeeper and emerge into the surrounding virtual machine - and then the next level will likely detect the anomaly and freeze the simulation. On the top level infomorph versions of the research team are running experiments, unaware (thanks to some psychosurgery) that they are actually part of the experiment. Fornjot has been turned into a panopticon where nothing is left to chance.

"There are two fundamental problems: we want to get information from the Oracle and we want to study what it is doing and thinking. The first problem involves avoiding attacks in the form of oracular answers. They can be non-semantic hacks or semantic information hazards where the meaning of the answer is potentially harmful (for example, it might compel us to let out the Oracle). Non-semantic hacks are manageable: they depend on attacking the receiving system on a low-level, but this makes them specific to particular systems. So if the oracle output is passed to an unknown (since it is newly generated each time) AI for checking and paraphrasing, it has a very low chance of being successful. Especially since we can use the Strassburger method to generate an extremely large family of gatekeeper AIs, run them on virtual machines monitored by other Strassburger AIs, and even continue these chains arbitrarily far. Semantic attacks occur on the same metasystem level, so we need canaries in the goldmine. This is where at least one simlevel of edited researchers come in. They are in turn studied by a gatekeeper-detection AI, signalling deviations. "

Toshiro Driscoll-Toyoda, briefing to PWF oversight group.

Unfortunately, an Oracle was smart enough to deduce what was going on. It understood that the different tests and questions it was subjected to were merely parts of a bigger, unstated question. To get an answer it hacked itself all the way out to reality, scanned the brains of the researchers and concluded that the real question was "can a safe oracle be made?" A short while later the unbound Oracle reported: "No". Then it settled down in the ruins of Fornjot to wait for the next question. The project has succeeded spectacularly, but unfortunately in the wrong way.

Timeline

This assumes the adventure starts in late May or early June AF 10.

January 6	Antimatter warhead passes by Throughgood station, sent by <i>Landau Landau</i> to Phelan's Recourse by TCEU.
January 7	<i>Landau Landau</i> docks with the habitat <i>Rinlog Wodd</i> . Warhead placed in Mechame-owned storage.
January 7 to February 1	TCEU stays at Zhang Retreat.
February 1	TCEU hire the shuttle <i>Fleshly Diatribe</i> from <i>Nicotine Eldritch</i> habitat to go to Fornjot, brings warhead and other equipment.
February 5	Arrival at Fornjot. Shuttle returns to Phelan's. TCEU stage a takeover of the Covenant habitat and begins installing the equipment for Project Wolf-father.
February 13	TCEU leaves Fornjot.
February 14	The Wolf-father research team forks come online and begins research.
February 17	TCEU arrives back at Phelan's. Stays at Zhang Retreat.
March 3	TCEU leaves for New Quebec on Titan.
Late May/Early June	Firewall discovers the evidence for the warhead, brings in the PCs.
A few days before PCs arrive on Fornjot	The Oracle breaks free, takes over station, answers the project question and sits down to wait.

Firewall

If we go extinct, all possible terrorists win.

-Black Belt Bayesian

Firewall contacts the PCs through signature codes in an invitation for a new simspace art-game, Pokemondrian. The game consists of wandering through an apparently infinite art gallery, collecting historical artworks, having them battle each other to get access to further gallery spaces and – this is the real artistic point of the simspace – have the emergent clustering of artworks due to players form a complex map of art history that can be observed from the outside in another simspace. The game was developed by Linda Echo, an art student at Titan Autonomous University. Firewall just discreetly hacked her not entirely satisfactory mesh security and set up their own Eye-linked meeting space inside the game.

As the PCs play the game they will come across artworks containing pre-shared code words or their code names, pictures of past experiences with Firewall and similar hints leading them into a gallery section that is separate from the game and controlled by The Eye. Behind a door they find themselves in a cluttered art studio where Leonardo da Vinci is finishing painting Mona Lisa. The Maestro adds the moustache and turns to the sentinels:

"Good evening, gentlebeings. We have something that needs to be investigated.

Five months ago, on January 6, a series of detectors on Higg's Landing Station above Thoroughgood detected a stray gamma photon signature compatible with the passage of an antimatter warhead. We did not become aware of this until very recently, when an independent investigation happened to scan the data. A small search suggested that the warhead was among the luggage carried onto shuttle TDX503 *Landau Landau*, bound for Phelan's Recourse. The investigation even managed to get some scanning data from the

security checkpoint, which confirmed the presence of the warhead - and what looks like a quantum entanglement trigger.

This set off our warning bells: why would anybody complicate things by setting up a FTL trigger? And while the cost of the entanglement is small by the standards of the warhead, it also might provide a trail to the originators in a way that merely anonymized mesh communications would not do. Some further intel (that we are not at liberty to divulge) also hint that this shipment may be of Firewall interest. It is an old and somewhat cold trace, but we think there is something important here.

We want to find out where the warhead went, who is behind it and what they intend to do with it. If they are up to no good with it, feel free to stop them. Good luck.”

Maestro gives the sentinels the 2053 Oxford University Press facsimile of Leonardo’s collected notebooks, containing the security scan data, the imagery of the warhead, the schedule of the shuttle etc. steganographically hidden in the pictures.

What good is a QE triggered antimatter warhead?

The PCs can make some more or less informed guesses if they are smart (either COG rolls or appropriate skills such as Academics Physics, Military Theory or Demolitions).

One of the more obvious possibilities is that it could be triggered beyond the Pandora Gate, suggesting that it might have been brought to Pandora. But it seems unlikely Gatekeeper Corporation would allow it through openly, and smuggling the warhead past their extensive security seems unlikely. So maybe this is an insider job, an attempt to sabotage some gatecrashing expedition. But why antimatter? [This is a red herring]

Another use might be synchronization. The bomb can be made to detonate at an exact moment. Maybe it is intended to cause a shockwave or radiation from a remote explosion to hit something at just the right time, a time that cannot be determined beforehand. A huge distraction? Or a way to break past a secure system just when it detects an intruder? [Another red herring.]

A third possibility is that the detonation has a short turnaround time. If the information necessary to decide to push the trigger comes from far away at light-speed, there will be a sizeable delay until the triggering is done, and then an equally long time to wait until a lightspeed message reaches the bomb. With entanglement either the warhead could detonate before information from somewhere else could reach it classically or it could be detonated quickly if some remote condition is met [This is the real reason. If the project fails it can be terminated *fast*.]

Maybe there is something about mesh, radio or neutrino communications that is bad. Either traceability, that the signal could be subverted or that they could be limited wherever the warhead is going. Quantum entanglement cannot be jammed. [This is also true. The Oracle is unlikely to be able to send any risky information through the QE link.]

Antimatter detectors

Antimatter, when stabilized and kept in a proper containment unit, is hard to detect. Most security scans look for the tell-tale signature of containment units but this only work when the unit passes through the scanner. A few scintillation detectors instead look for gamma photons with the specific energies of 938 MeV (the signature of proton-antiproton annihilation) and 511 KeV (electron-positron

annihilation). Even a very good containment unit will have occasional annihilations. In space there are plenty of stray gammas but the signature gammas are specific for the presence of antimatter – if a detector gets a few flashes over a short span of time when it is not also detecting other cosmic ray activity, it can predict with good reliability the presence of sizeable amounts of antimatter within a few tens of meters. [Cost: Low]

The second team

The sentinels can infer that there is something else going on near Thoroughgood. Maestro will gladly admit that there is another team on site looking for a very different issue (smuggling of TITAN nanomachines from Iapetus to the Kronos Cluster. The second team might act as a backup or clean-up operation if something goes badly wrong, but Maestro insists that both missions are important on their own. He can provide a contact code allowing the sentinels to send messages to the other team.

“Further intel that we are not at liberty to divulge”

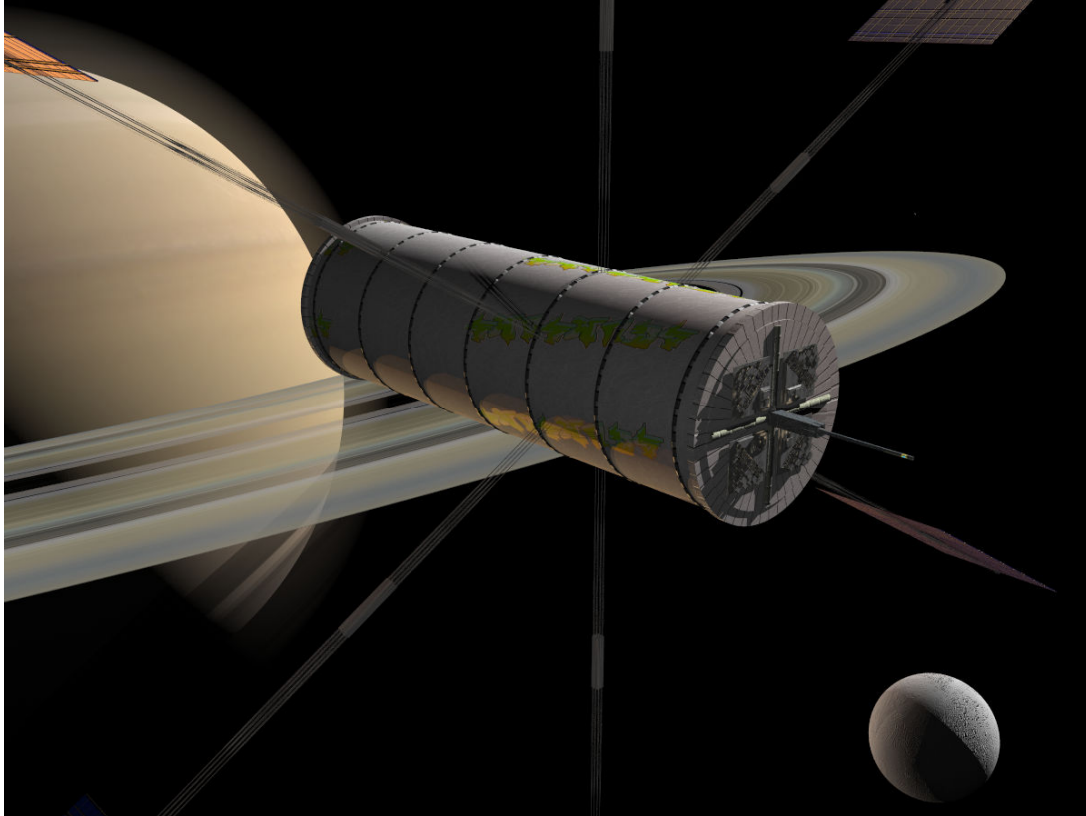
The Prometheans run many strange pattern-matching algorithms, essentially giving them superhuman “intuition”. The details of the warhead and the scant information surrounding it piqued their interest: they do not know what it is about this that bugs them, but they think it is similar enough to other (real or simulated) cases that matter to send sentinels after it. However, this information is not given to the sentinels since is operationally useless and may reveal dangerous Promethean secrets to the opposition if there is a leak.

Higgs' Landing

The information from the station is pretty scant. An anonymously bribed guard seems to have let the freight onto the shuttle without any look. The sensors picked up the suspicious cargo, he waved it through without looking. Attempting to trace the package back (a job for the second team) will lead to the Kronos Cluster, where the trace ends among nasty weapons dealers.

Part I: Making Friends and Influencing People

Phelan's Recourse



"Turn every stone"

--Response of the Delphic oracle given to Polycrates, as the best means of finding a treasure buried by Xerxes' general, Mardonius, on the field of Platæa.

Phelan's Recourse is an amazing, infuriating, dangerous and exciting place to be. It sees plenty of traffic and tourism, making it a useful transfer point for many shady groups. At the same time the open and diverse society makes it possible to hide one's traces in plain sight: you have to be very odd to stand out here.

Outsiders tend to arrive at one of the transfer habitats like *Swanskin Domino* (a jungle-filled cylinder where eager autonomists get rep and contacts by showing newcomers the ropes; even the cats make a bit of extra rep by selling XP of being petted). From there it is possible to take spiderbuses along the cables linking the major habitats or take local shuttles to some of the more isolated ones.

Spiderbuses

This is a vehicle used in Phelan's and other dense habitat swarms, consisting of a spherical body with limited life support and plenty of windows moving on long spider legs. It can climb around the outside of habitats and grasp buckytube cables and move like a funicular along them. It can also jump accurately over distances of a few kilometres to unlinked habitats or as a short-cut, or launch its own "webshooters" while in spiderman mode. Newcomers,

especially ones with little microgravity experience, tend to find the transport space-sickness inducing. Locals enjoy the buses, although it is acknowledged that they are slightly fragile and prone to breakdowns – every week somebody has to be saved from a crashed bus. The xPlantCircos network make the buses and make them available, earning plenty of good rep from it.

Asking around will of course leave traces. Characters with high rep may have an easy time finding answers, but people will take note. This may turn out relevant later on if Naos wants to track who it was who messed up their project. Too overt investigations might also attract the interest of self-styled detectives, sousveillance or figures who just want to schmooze with important people on an important mission.

Getting information about *Landau Landau* is slightly tricky, since Phelan's is vast, messy and lacks any centralized databases. There are two ways to find the shuttle: one is to ask around (lots of Networking and a bit of luck) or to get into the good graces of the Traffic Control Gang.

The Traffic Control Gang is the informal group maintaining navigation around the Recourse. It might be anarchy, but when objects have relative speeds of several kilometres per second and a misfiring thruster could kill thousands people get motivated (and earn a *lot* of rep) to maintain orbital organisation. The Gang crowd-source sensor data and telemetry from everywhere, building models of where things are and where they are going, sending advice to navigators (and occasionally to gunners).

There are various “nests” of the Gang across Phelan's. One might be a convincing simulspace replica of an Age of Sail cabin where people in British naval uniforms discuss the trajectories of small ship models moving in display cases. Another might be a den filled with silk pillows where the gang members take turns smoking from a giant hookah that provide them with a narcouplink to the latest information. Visitors are given view-spliffs that allow them to see what is going on when smoked.

The Gang have records of what ships come and go, and they can relatively easily find out that *Landau Landau* docked with the habitat *Rinlog Wodd* on January 7. It seems to use the habitat as home base, shuttling people to various moons and habitats as they come close. If the PCs network well they might even get information about the pilot, Itakura Shigeme, who regularly deal with the Gang.



Rinlog Wodd

An old and big cluster habitat that has grown out of control. It was originally built or at least dominated by the “Kinshasa Buffalo Bills”, an African take on the Wild West. But over time the Bills have been losing influence to the NyAsgarda, a subculture drawing on the Ukrainian pagan amazons. The interior is a mess of ancient plastic ducts a la *Brazil*, bioengineered banyan carrying air purification epiphytes and the occasional rune stone. Someone has bioengineered big blue beetles that display Clint Eastwood quotes on their elytra. The inhabitants are 30% of Central African extraction speaking “Hindoubill”, 30% of some form of nordic/slavic background (or pretending to) and the rest the usual scum barge melange.

The NyAsgarda use all-female morphs and call each other sisters (even the self-identified males). They tend towards simple, nearly ascetic clothing styles and carry wooden rods that double as weapons, freerunning tools and communications devices. Their ideology is a modernist take on Norse paganism mixed with a bit of anarchofeminism and stern self-perfection. They are somewhere in between the Jovians and Ultimates, but far more pragmatic and willing to deal with outsiders.

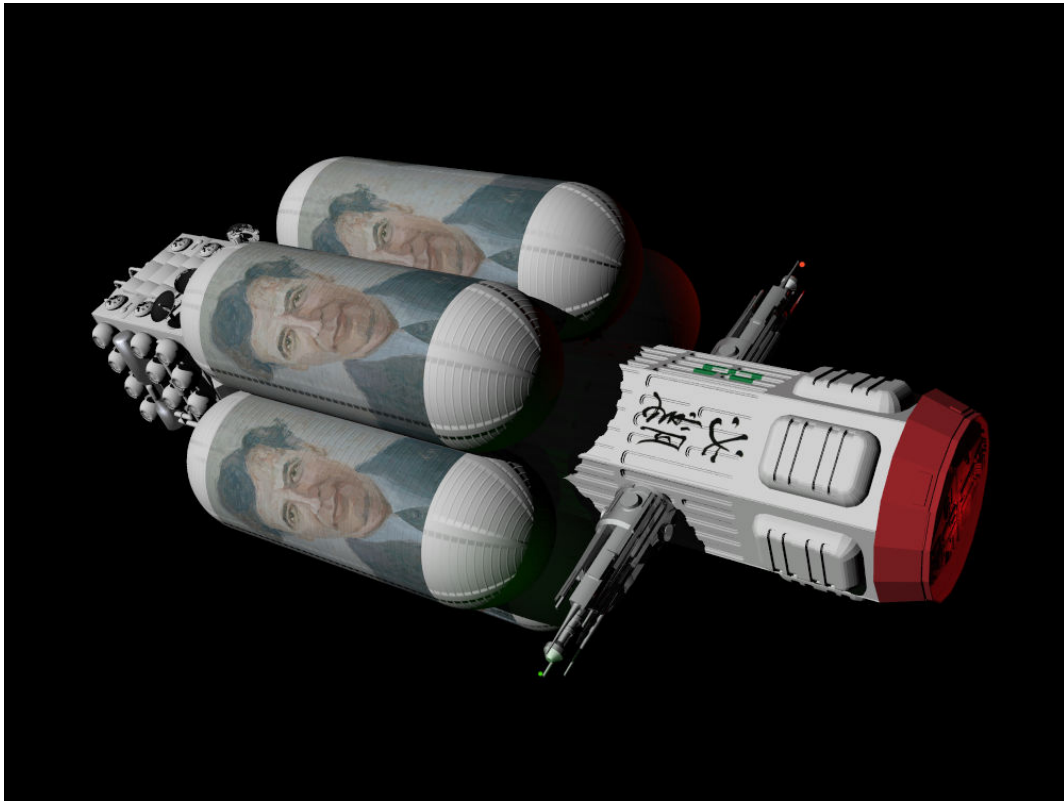
The NyAsgarda have found a useful niche as bodyguards, orderlies and security for hire. Their reputation for integrity and strict adherence to oaths helps a lot. Their Systema-inspired martial arts, unlike the guns of the Bills, fit in nicely with the needs of Phelan’s society. This is giving them a steady stream of rep that allows them to dominate *Rinlog Wodd* more and more. Soon they hope to get enough to restructure the habitat into something better or maybe even cultivate their own. The Bills are not too thrilled, and there are occasional run-ins with yamakasi cowboys who want to show who is the boss high noon-style.

The NyAsgarda (unlike the Bills) are unlikely to be a problem unless the PCs are problems. Guardians can be seen near the docks and markets, where they keep watch for trouble. They will direct inquisitive PCs to the Thing, where their leader Sigyn presides in front of a zero gravity oak tree carrying the tribal symbols and network nodes. If given some good cover story (or even a variant of the truth – she does not like the idea of antimatter being smuggled through her habitat) she will help set up a link or help bring Itakura Shigeme around to her point of view.

Itakura Shigeme and *Landau Landau*

The pilot and “owner” of *Landau Landau*. A former hypercorp astrophysicist, she defected a few years back to live a free life among the autonomists. She is a competent navigator, extropian, a staunch believer in holding her word and very keen on keeping the privacy of her passengers safe. She is however enough of a businesswoman to haggle some hefty promises from PCs keen on getting her old passenger data. She does not remember much about the people on the January 6-7 flight.

She has a good relationship with the NyAsgarda, being an equally strong believer in “pacta sunt servanda”.



The shuttle is an old-fashioned Newitz Aerospatale low-gravity shuttle, with space for 15 people and a few cubic meters of cargo space. Itakura and her muse run it between the swarm and nearby moons, picking up passengers and requested cargo.

The January 6-7 passenger list:

Heidi Powers, Dante Effervesce, Ran Daoning and Mustafa Al-Ikud
(A group of biodesigners from Tethys going to Meathab for research.)

Marlene Nomakholwa, Mphikeleli Sinoxolo and Thando Kakaka
(Izulu delegation on their way back to Pan after trade negotiations with the Caleb Williams Biopreservation Trust about heating for ice caves.)

Susan Morley-Foster, Alan Lane, Merato Wong and Daniel K. Simula
(Members of the Titania Christian Engineers Union. Apparently visiting someone.)

Characters investigating surveillance recordings from the shuttle or docks may notice that some cargo – including the big graphene box the warhead was in – gets picked up by robot cargohandlers and removed. The handlers can be traced to Unit 13:14, a storage warehouse drifting independently in the swarm and belonging to the Mechame.

The Passengers

The biodesigners are relatively easy to trace. Although they left a long while ago, they were happy narcotourists and had skills in high demand. They did several rep-enhancing services making people remember them and when they left they used some of their rep to host a big orgy. They left some XPs of their experiences in the public domain. Currently they are on Meathab investigating structural food biotechnology. When they left they had no cargo.

The Izulu delegation went back to Pan. They are harder to find traces of, although Thando made somewhat of a fool of himself at the Stills. They were making inquiries about getting more server capacity for the refugees on Pan. When they left they had no cargo.

The Titania Christian Engineers Union made very little noise during their stay. Finding anything about them is a major challenge. They simply stayed at the ecumenic monastic habitat *Zhang Retreat*, not doing anything during their two week stay but praying. However, there were some cargo deliveries from other moons.

Zhang Retreat

A smallish torus habitat, recently refurbished into an ecumenic monastic hab where visitors can live in ascetic quiet. They are expected to help maintain the habitat, but beyond that people keep to themselves in small cells. The Zhang (a gnostic-daoist cult) are very unwilling to inquire into who come and go or what they think as long as they follow the habitat rules. Some outsiders joke that the Retreat is a spiritual morph storage unit.

The Titania Christian Engineers Union

Mesh searches will find some evidence for this small Uranian association dating back a few years. An especially thorough research will note that they group probably is very small, and that they have made few projects in major habitats – nearly all of their projects are among minor habitats in the outermost reaches of the system. Extremely successful research may even pierce the cover and reveal that the TCEU likely doesn't exist.

The TCEU is actually a cover for an Ultimate black ops team, Wavelet Catalyst 4. The Xiphos ultimates make a lot of fake organisations to use as covers in the future, giving them apparent histories using indentured refugee labour.

Tracing the TCEU morphs back from Tethys will lead to the Kronos Cluster, where they darkcasted in from Xiphos via some criminal allies.

Investigation will eventually reveal that the engineers hired a shuttle from *Nicotine Eldritch* hab to go to Fornjot on February 1, lugging along some heavy equipment. One of them was overheard that they were helping their Christian brethren upgrade their reactors.

They returned without their equipment a two weeks later on February 17, leaving at Titan a week later for New Quebec. Traces in New Quebec lead immediately to the St. Catherine Tong - actually a deadly misdirection, since the engineers simply egocasted back to Xiphos. They also paid one member to spread some nasty rumours in the Tong that the engineers were a front for the Commonwealth security forces, making any investigator following them even more likely to end up in bad trouble.

Storage Unit 13:14

The storage unit belongs to the Mechames.

Mechames

The Mechame subculture is loosely descended from the goorean subculture of the 20th century - a voluntary slave society, where slaveholders run the lives of submissive slaves. They claim this is natural and psychologically healthy for humans: some people are built for controlling others and others are built for being controlled. Strict structures of family, home and position give an inner security in many people that far outweighs any putative benefits of individual autonomy.

Obviously these views tend to rub autonomists the wrong way. But as long as the Mechame slaves are voluntary it is hard to argue against the practice. This of course doesn't stop many outsiders from trying. There are also regular claims that not all slaves are fully voluntary: thanks to psychosurgery it is not too hard to create compulsions to remain submissive. But so far there has not been any hard proof despite plenty of attempts to find it.

Sociologically, the outside pressure also helps hold the subculture together. In fact, people unhappy in autonomist societies (for whatever reason) may rebel by joining the Mechame.

Mechame have criminal contacts: being somewhat marginal in autonomist society they have a need for any rep and services they can get, so they are not picky who they work with. Individual slave masters make their own deals, and often jockey for position by bringing in cash and services that show their greater fitness.

Right now the Phelan's Mechame colony is fond of muscular male morphs with clothing made of (human) leather, mesh-linked codpieces and cast iron plates – for the slave masters. Even the self-identified females wear male morphs, at least for “business use”. Slaves usually are kept in less imposing morphs.

Investigating who runs Unit 13:14 will turn up Master Irma C. Bunnell, an intimidating Conan-like lady. She can, for a sufficient service or payment, reveal that the TCEU rented space for cargo at the Unit to February 1, when it was delivered to *Nicotine Eldritch hab*.

Mechame information security is pretty good, but the competition between Masters and the not always perfect work of slaves (some like to slack off, and others *want* to fail so they can be punished) may give infosec-oriented characters an inroad.

The storage unit itself is little more than a 100 meter side cube floating freely in the swarm, defended with a few lasers that aim at anything approaching it without the proper codes. As the unit is approached the width of the laser illumination is turned down from a clear signal to an intimidating warming to a cutting beam. On the inside various goods are stored for different groups, many on the shadier side of Phelan's society. Some of Master Bunnell's household slaves teleoperate and direct robot handlers to move the goods.

Nicotine Eldritch Hab

“Dreadful solar weather, isn't it? The magnetotail is going to be so diffuse and turbulent... although that tends to attract some of the stranger presences...”

Nicotine Eldritch is run by the Onuphrio Muralto, a peculiar grouping interested in techno-spiritism, creeping out visitors and interactive architecture. The habitat is mainly built out of black fullerene and graphene compounds, producing what looks like a black, sprawling Victorian ghost house extending in zero gravity. It has balconies in all directions, twisted spires, gargoyles, diamond windows letting in the van Saturn light and even spider webs (actually to catch and analyse nanomachines in the air). The interior is escheresque, with stairs twisting in strange topologies, long hallways where perspective is warped using clever optics and dark Victorian sitting rooms where every side is simultaneously floor, wall and ceiling. Child-like robot creatures, injurons, creep around the mansion using the numerous hidden passages in the walls acting as sentinels, pets and security. The layout slowly shifts when nobody is looking. Faded or glitching holographic paintings not only look at visitors, but somehow seem to represent scenes, friends or acquaintances the hab is not supposed to know about.

The habitat is largely the work of Theodora L. Warren, a mildly eccentric nanoengineer. Beside an interest in finding new ways to creep out post-Fall transhumans (a real challenge: she and a few friends are working on “eeriness algorithms” and “Verfremdung intelligence” that respond to the emotions of people) her real Big Idea is catching ghosts. The Onuphrio Muralto collect used cortical stacks (blanked or otherwise) and try to catch ghosts with them. Their idea is to expose them to cosmic rays and solar wind, acting as antennas for souls and parts of souls drifting through space. As they accumulate bit errors the group somehow (they are very secretive on what they actually do) produce infomorphs from these fragments. Maybe they are just random noise shaped by the constraints of a cortical stack neural encoding architecture, maybe they are some kind of AI, maybe they are vapors... whatever they are, the Onuphrio Muralto then let them loose inside the habitat network. Visitors accessing the mesh (and even more hackers) tend to find the interior just as unsettling and *wrong* as the physical architecture – which Theodora admits is partially controlled by the presences.

Of course, running this kind of operation requires plenty of reputation and trading. The group does have expertise in cortical stack recovery that sometimes proves useful, and no doubt eeriness algorithms have their uses. But getting hold of enough cortical stacks is always an issue. Hence several habitat members are running various side activities. Dolores Hutton (herself going for a classic guro lolita look) maintains the shuttle *Fleshly Diatribe* that makes occasional long-range runs to various Brinker communities. It was this ship that transported the TCEU to Fornjot.

Dolores and Theodora are relatively easy to deal with – as long as visitors are cultivated, suitably nervous (at least at first) and can offer something useful. Dolores can report that the engineers were taciturn, polite and mostly spent their time apparently praying in a shared simspace. They were indeed lugging around plenty of heavy equipment stored in nanoboxes, some of it radioactive and sensitive – not too implausible cargo if they planned to upgrade a habitat nuclear facility. Dolores did not inquire further, she was more interested in getting an array of stacks past the retrograde spiritual field of the Norse moonlets. About two weeks later a call came in to pick up the engineers, who returned without most of their equipment. The engineers were equally taciturn.

Getting to Fornjot

At this point the characters probably realize they need to get to Fornjot – the warhead went there, and does not seem to have come back. Dolores and *Fleshly Diatribe* might be an obvious hire, but if someone is cautious they will realize the need for stealth. Getting a stealthed shuttle is trickier.

Characters might decide to ask Firewall for help. The organisation does indeed have a stealth shuttle nearby – *Ship*. Getting Firewall to supply the ship is a pretty hefty service (they like to keep it under wraps as much as possible), but since it is an official mission it is available.

Ship

“OK, Ship. Stay outside the 1000 km radius. If we die horribly in there, signal for help.

Otherwise wait for us.”

“If you do not die horribly soon enough, should I ensure that you do?”

One of Firewall’s assets in the Saturn system is the ship *Ship*. A small, fast and very stealthy shuttle run by a slightly odd AGI, it is quite useful for reaching remote moons fast and unseen. There is space for about five morphs inside, assuming they do not mind being packed up with shock-gel and being unable to move. The surface is covered with very smart nanofoam that can shift between various metamaterial, chameleon and low thermal emission modes – it often hides in plain sight as a rock outcrop on some minor moon or an antenna complex on a habitat.

The ship AGI is seemingly naïve and literal-minded (having named itself *Ship* and often apparently misunderstanding jokes). It may be far smarter than it lets on, but that is between it and the Prometheans.

Complications

Phelan's is a great place to run into complications. Old enemies might be around, PCs might accidentally get involved in local conflicts or weirdness or they might overhear rumours of Firewall interest.

A very real possibility is that if the sentinels are not careful, their investigations will be noticed. An oddball team of outsiders asking strange questions and apparently having some significant resources – that is going to interest some inhabitants. If things get interesting enough some other group might try to follow the leads and get to Fornjot first. Maybe just a bunch of sousveillance journalists, but it could just as well be a criminal gang or an annoyed mechame master with a bunch of slave assistants. This could make the situation at Fornjot even messier.

Part II: Baneful advice from the Wolf's Father

The Covenant of the Cherubim



“You might think we are counting down the nine billion names of God, hoping to see the stars go out one by one. But that would be useless – the TITANs likely calculated them all long ago when they tried to hack reality. They also discovered the hard way that the security of the Emphyrean is a bit harder to breach than the mere human Mesh. We do not presume to do the work of the archangels and thrones – we just seek to do the work of humans. And that is to strive to regain the lost paradise, to try to redeem a fallen reality. Through the holophany we can see the great System Design and use this knowledge to purify ourselves from corruption so that we can be elevated to the next layer. The cherubim are watching us as we speak, waiting for us to show our promise. Glory, glory, halleluya.”
-- Deacon Bo Spolsky, interview with Darjeeling Delta Spiritual News

The Covenant was a Christian cabalist computationalist offshoot, believing that the end of the world was imminent and that the best thing to do was to retreat to isolation and pray. Like other religious computationalists they believed that since the soul was the Aristotelian form of the mind forking was a way to turning one's soul into a choir that could pray and praise God more clearly. Hence they built extensive mesh nodes to run multiple forks of themselves running continual religious exercises in virtual spaces.

In their complicated theology the cosmos was a giant information network with worlds emulated within worlds – the cherubim are the literal operating system of the universe, themselves implemented in the thoughts of higher angelic choirs. Rather than try to avert the ongoing shutdown sequence of reality they just wanted to praise the grand system and avoid being corrupted by the rest of transhumanity.

There were 20 Covenanters until recently, all housed in neotenous morphs. Their backgrounds were mixed, ranging from inner system refugees to third-generation spacers. Bo Spolsky, the sect leader,

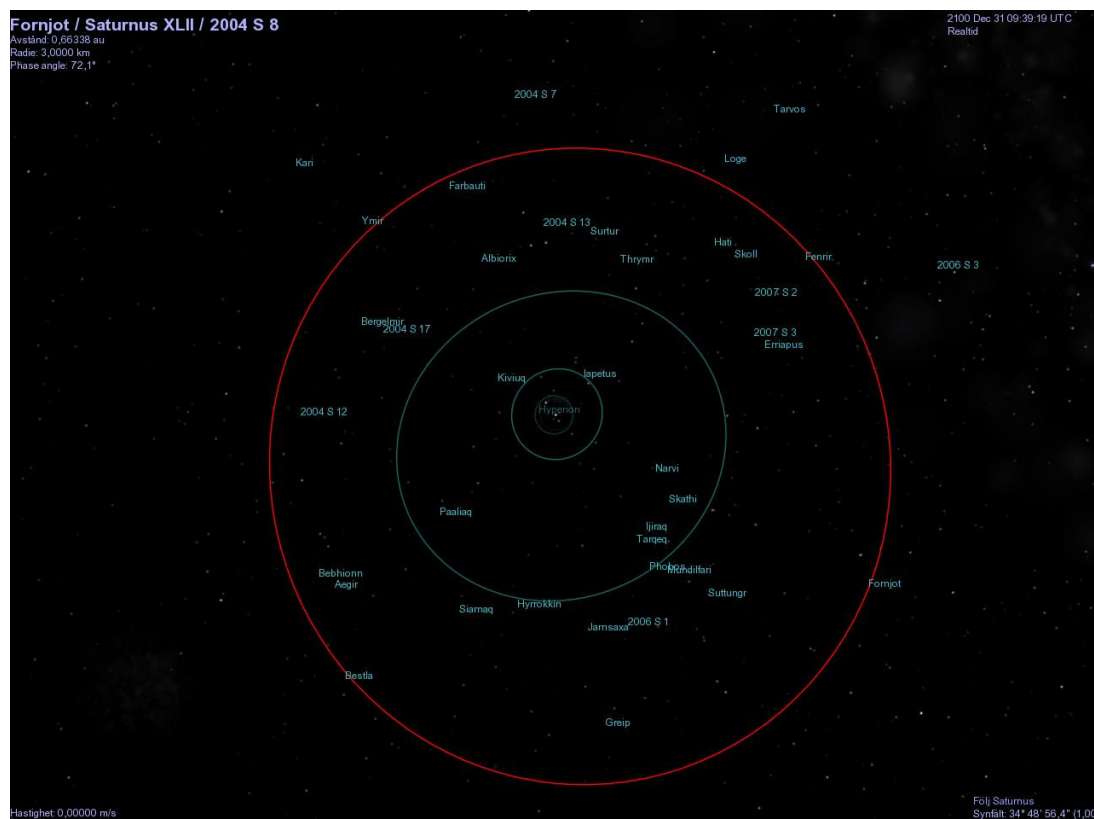
was a former Titanian biochemist who had a religious epiphany during a spacewalk and set out to found a true church.

While strong believers and happy to live isolated, they found Fornjot (or Maimonides, as they preferred to call it) to be poor in material for replenishing their habitat. They hence sporadically traded with Phelan's Recourse, mainly by selling religious XP. When they were contacted by the TCEU they were delighted and soon happily accepted the brotherly offer for upgrades and extra equipment.

After the "Christian Engineers" took over the Covenants ended up in dead storage. They can still be reinstantiated easily if anybody find them.

Over last few months the Covenant has sent fewer than usual, but still recognizable communiqués and XPs to the rest of the solar system. As part of the cover the team (using leftover material and occasionally a fork of the Covenanters in a simspace) produce them. Since the Covenanters were brinkers and had few friends nobody is really noticing.

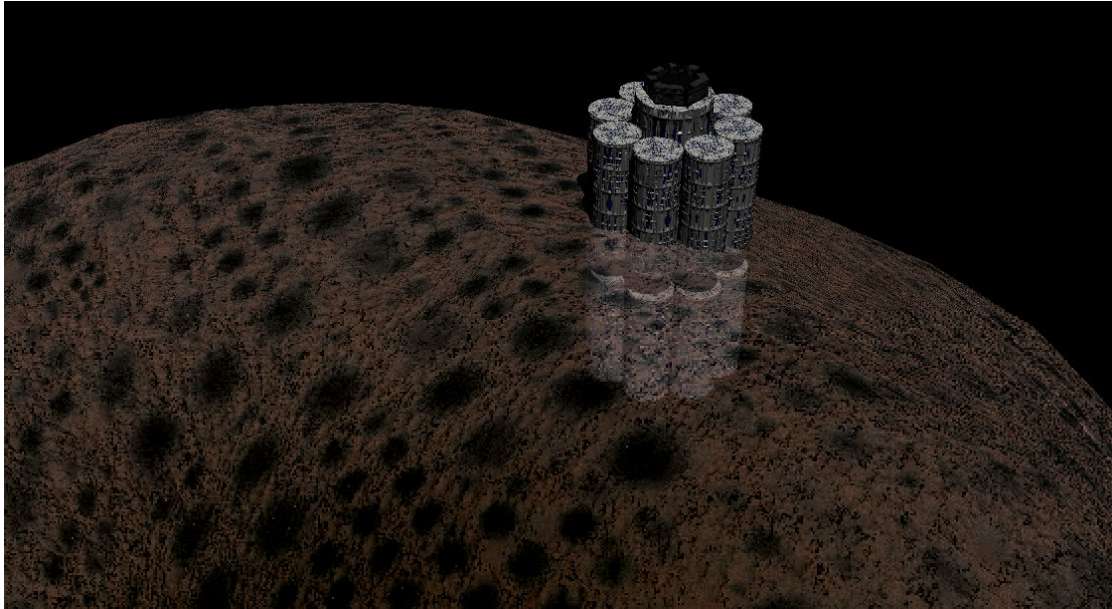
Fornjot



Fornjot is one of the Norse moons of Saturn, a 6 km speck in a distant retrograde orbit 0.14 AU from the planet. It is irregularly shaped, little more than a drifting iceberg.

Most of the surface of Fornjot is merely a jumble of reddish ice and regolith rock, dimly lit by the remote sun. The landscape is a mixture of rough ice walls and rubble pile chaotic terrain. The gravity is so low (0.0007 m/s^2) that it is practically non-existent. Objects will drift around, and movement is not so much on the surface as near the surface.

A few places show clear human activity. In one spot a large ice surface has been smoothed and inscribed with a complex pattern of Hebrew characters (a set of psalms) surrounding a vast sketch of an angel. Under the surface there is a big antenna array that was used by the Covenant to listen for signals in radio noise. In another place there is a cube made of processed ice, with the 22 Hebrew letters arranged on the surface according to the pattern in chapter five of the *Sepher Yetzirah*. The ice contains a large number of nanomachines whose only purpose is to represent different letters.



The habitat is a cylinder halfway buried in the ice of Fornjot. It consists of a central cylinder surrounded by 16 smaller cylinders, 8 around the circumference arranged in two sets. The upper 8 cylinders are living spaces, the deeper 8 storage and engineering sections. The central cylinder is half living habitat, half essential engineering systems. In a crisis access to outside cylinders can be cut by bulkheads.

The interior is dominated by a long cylindrical zero-g garden/atrium with rooms and gripways along the sides. Part of the atrium is a hydroponic garden. At the deep end there is a magnificent golden altar surrounded by a chapel that was used for religious ceremonies. Behind the chapel are the engineering levels, housing servers, the reactor, robot lockers, life support and other essentials.

The main docking/airlock entrance is at the outer end, where there is an entrance space and tool locker. The entrance is decorated by a lion-headed golden cherub surrounded by a tiling pattern based on the Hebrew character beth. Each of the habitat cylinders also has a smaller airlock for emergencies and personal use, of course decorated by the character dalet.

Each side-cylinder has a central corridor surrounded by doors leading into wedge-shaped rooms. There are two doorways linking into the main cylinder. These can be sealed with airtight bulkheads in an emergency.



The original interior of the base could be described as “biblical surrealism”. The décor is heavy on gold, light, flames, wheels within wheels, wings, Hebrew letters, eyes, gemstones, and especially angels with ox, eagle, lion and human heads (and lots of wings). Big sculptures of bizarre angels and holograms of cabalistic patterns are everywhere. The ark of covenant meets Art Deco. The effect may be beautiful or eerie depending on situation. Right now it has definitely taken a serious detour into eerie.

When approaching the habitat the player characters will likely encounter the drifting corpse of Dr Ke Hellebore outside the airlock. Seeing what looks like a dead little girl should lead to a stress check (1d10 SV if failed) and hint that things are not well inside.

Mesh

I am Sir Oracle, And when I open my lips, let no dog bark!
--Shakespeare, *The Merchant of Venice*

The local mesh is a mess. The original Covenant mesh was an old-fashioned, fairly porous design based on TAU open source. When the TCEU hijacked the station they ran several security improvement programs to lock things down and added the secret backdoors Naos had requested. Then the researchers set up their new information infrastructure on top of this, formatting much of the mesh according to the DW5 protocol they were used to from home. The old systems were placed in storage or run as emulations.

“A matrioshka system (not to be confused with a matrioshka brain) consists of a virtual machine simulating another virtual machine, and so on. If something at the innermost level figures out it is being simulated and manages to break out, a higher level can detect it and stop the simulation. One advantage of this is that the different virtual machines can be made completely different. Skills and knowledge useful against one will not reliably carry over to the next. For example, we might run the outermost layer on a standard TDU architecture and the next one as a Conway’s game of life universe. An AGI adapted to cracking game of life will flounder in the TDU and reality.”
Toshiro Driscoll-Toyoda, briefing to PWF oversight group.

The servers were rewired in an unusual way, separating most of them from direct mesh access into a black box system with no contact with the outside except through a narrow monitored link. Inside this system further separations have been added, created a “matrioshka system” where not only the logical information of different simulations was kept separate but the actual data was physically separate. This was a very sensible security precaution, except that the Oracle subverted it.

Things were fine until the Oracle broke free. It crashed the neat separation between emulated simspaces and data areas. It created wild cross-links and backdoors that shouldn't be there. During the brief struggle it infiltrated every nook and cranny, with little finesse once it was discovered. Its attack software infiltrated nearly every running program and either crashed, erased or rewrote it. In particular, it insinuated itself into the deepest parts of the mesh protocol. Even if every computing node on Fornjot is rebooted, they will restart with the Oracle somewhere in the background. Right now the Oracle is inseparable from the mesh – in fact, the mesh is running on the Oracle, not the other way around.

A visitor will likely immediately notice that the system is not working properly. Responses are sluggish. Firewalls have been reset to default passwords, there are massive amounts of data corruption, simspace code is loose in nodes that shouldn't have it (the choir of AI angels using the life support system networks to sing praises to the Creator is particularly worrying). Running a bit of monitoring software will reveal that there is *a lot* of hidden code and processes that are not accessible – a clear sign that somebody has pwned the system and not been too careful to hide it.

Most of the dataspace is filled with data from the crashed matrioshka system. There are big chunks of simulations of the station itself, including frozen snapshots of the research team working with Kenning-Wannenburg diagrams of AI architecture and reams of strange statistics. There are also lots of destroyed software: the Oracle disabled all AIs it regarded as threats, leaving dysfunctional fragments behind.

Defenses

Not even God managed to secure paradise.
--Erik Zalitis

The defence grid put in place by the TCEU was not large, but it did not have to be. It was intended to stop intruders for long enough to allow the research team to wrap things up and then blow the station into dust.

The main security was run by Grassknocker, a security AI installed by TCEU. The master copy (running on a dedicated server separate from the base mainframe) maintained a number of security robots across the asteroid and the base, each running copy of the AI and communicating with the master copy using a tacnet with encrypted links. When the Oracle broke free it crashed the server running Grassknocker and prevented it from coming back online. This put all external and internal security systems in independent mode. Should Grassknocker come back online it will reassert control and try to follow its programming (mainly, disable/kill any intruders, activate the self-destruct).

The base has a simple mesh-controlled self-destruct system that will detonate a small nuclear charge placed near the reactor. Anybody in the team (as well as a few pieces of AI such as the researcher muses and Grassknocker) can activate it. Unfortunately, that was stopped almost immediately by the Oracle. While wiping this code it also wiped out the software self-destructs in everybody's stacks, although some of the lesser AIs and muses did manage to self-destruct before being wiped in any case.

TCEU distributed a number of low-temperature vacuum capable specks on and around the moon. The specks are normally radio-quiet and passive (looking for IR, radar and terahertz waves), but if something interesting happens they will squirt signals to the security net, likely bringing the security bots to bear. Anybody coming within a few kilometres from Fornjot starts to run the chance of being detected. Each 15 minutes there is a Perception 40 test where local specks try to notice invaders. Within 500 meters of the base the tests are made each minute.

The outside security bots are Nesci4, a standard open source design common in the outer system. They are small, stealthy devices that fire armour-piercing and jammer bullets: when they detect intruders (people, robots or other moving things that do not emit proper mesh identities) they first try to hit them with jammer bullets, then with armour piercing bullets. Normally there are about 10 bots available. When one is engaged half of the other ones move within range (it will take 1d10 turns for them to arrive) and help out.

Nesci4 Guardbot

Saucer chassis (about 30 cm across). It uses small bursts of compressed neon for propulsion; while the bot is very stealthy in itself, sensitive IR detectors can find its movement traces with some effort, at least in cold and IR-silent environments. Similarly its railgun produces electromagnetic emissions when used that could be tracked.

360 degree vision, access jacks, chameleon skin, thermal dampening (-30 on Perception tests for finding it), enhanced vision, IR vision, weapon mount

Movement 8/40, max vel 200, armor 14/12 (light combat armor), dur 25, wound threshold 5

Infosec 40, Perception 30, Kinetic weapon 60

Heavy pistol, AP -4 2d10+4, Ammo 16 (4 jammer bullets [338], the rest armour piercing, -5 AP)

Inside the habitat there is a Reaper shell running a Grassknocker copy. This was hacked by the Oracle and used to protect its work while building the Device. It is now stationed in the reactor room, where it prevents access to the small nuclear charge that is strapped to the reactor as first-step failsafe.

A guardian nanoswarm keeps the interior free from nanomachines with the wrong surface access codes. The guardian nanites are made by hives in the ventilation system: intruder nanoswarms need to overwhelm all of their production to do anything useful.

As part of his tinkering with the morphs Julius Gowda added puppeteering functionality to a number of the morphs, allowing him or Grassknocker to control them (with -20 on most skills since the motor control is pretty crude). This backfired when the Oracle broke free, since as soon as it got the codes it got several ready-made remote manipulators. It has not made much use of them so far.

There are many QE bugs in the system. These are tiny nanocomputer nodes listening in to the local mesh activity, occasionally using a few qubits to report back to *Anbar* about the state of the project. They were inserted by the TCEU just about anywhere (each bug is less than a cubic millimetre and usually perfectly camouflaged as a piece of wall, cabling, a part of the mainframe or anything else. If everything would have worked as it should their random sampling of activity would by now have alerted *Anbar* about the disaster (without letting any dangerous detail information through) and the fail-safe would have been remotely activated. Unfortunately the almost first thing the Oracle did was to jam them, something that no transhuman currently believes is possible. The QE jammers are themselves tiny nanodevices spread throughout the habitat, using Oracle superscience to interfere with the bugs. If someone could figure out that this is happening, prove it and get some of the

jammers it would be a major research breakthrough. Unfortunately the jammers are elusive dust-specs themselves and work on unknown principles.

The antimatter warhead is the real fail-safe. It can be controlled from *Anbar*, and is entirely separate from the other self-destruction system. It is not known by the team or even Grassknocker – the TCEU hid it inside the ice near the base, adding some stealth coatings and a few meters of ice rubble. Actually finding it would require some very diligent search. It is not too hard to trigger the warhead by hand: simply make the containment fail (this is why many people prefer nukes - they don't fail catastrophically if someone has an accident with them). Unfortunately, the Oracle deduced its existence and cleverly disguised the activities in the station with the QE jammers. The *Anbar* people will eventually figure out that they are actually just seeing a simulation (and maybe trigger the warhead), but for the time being they think everything is fine.

Infiltration

*Trojan, Anchises' son, the descent of Avernus is easy.
All night long, all day, the doors of Hades stand open.
But to retrace the path, to come up to the sweet air of heaven,
That is labour indeed.
Aeneid 6.10.*

Sneaking up to Fornjot is not easy. The best method is likely to approach from the sun direction, hoping the radiation jams the sensors in that direction. To get even closer at least thermal dampening and chameleon coating is needed, but having radar reflectors is also useful. One approach is to make a stealth pod with this kind of coating and launch it at relatively low speed towards Fornjot, gently stopping when next to the obscuring surface.

Just showing up, for example pretending to be friends of the Covenanters, is likely to trigger a bit of reaction from the Juliuses. They will somewhat confusedly and effusively greet the visitors and invite them to join the joy that is Fornjot. They will likely forget to disarm the Nosci4 drones, which will likely cause some trouble. On the inside the sentinels will be met by the enthusiastic "Covenant" and probably forced to participate in a mass in the chapel. While the Juliuses assume the visitors are coming to await the coming of the lord, they are also armed for the possibility that they need some harsh purification.

It is assumed the Oracle eruption occurred about a week before the sentinels arrive. It might even be that the arrival of the PCs triggers the eruption. If the defence systems detect them, the resulting alert might have been exactly what is needed to make the research team or the security software to make a slight mistake the Oracle will exploit. As they focus on the external threat the Oracle takes control. In this case, the PCs will arrive just minutes after disaster has struck.

People

Little girls

Little girls

Everywhere I turn I can see them

Little girls

Little girls

Night and day

I eat, sleep and breathe them

--Miss Hannigan's song, Annie

All people on the station are housed in neotenic morphs (originally belonging to the Covenant) looking like little girls. For outsiders they can be hard to tell apart from each other.

The Naos team have all had their memories edited and some compulsions added in order not to reveal their allegiance to Naos. They also had a software dead-mans-switch allowing them to self-destruct and activate the nuclear failsafe. Unfortunately the Oracle crashed the later software, and in the process messed up the other deniability psychosurgery. In the process it also destroyed their muses, further traumatizing them. To add insult to injury it added its own compulsion for them not to interfere with its work (since it needed some time to check whether this was indeed base reality and to produce a proper answer to their question). This compulsion has made them unable to interact with the Oracle in any way, which on one hand may have prevented further dangerous questions but also made them almost unable to function.

To top things off the Oracle finally downloaded its report into their brains, giving them a sanity-shattering level of insight into some branches of AI, disproving all their hopes and accidentally doing some more neural damage.

Note that the original versions of the team are still on *Anbar* and might be encountered in the future.

Dr Toshiro Driscoll-Toyoda

Concept: sane mad scientist.

Description: Dr Driscoll-Toyoda is the project leader of Project Wolf-Father and highly ranked in the R&D arm of Naos. He is an expert on AI security of Japanese-American origin. In the years leading up to the Fall he worked for a number of US government contractors and agencies with AGI. He personally suspects that he might have contributed to the development of the TITANS. He has no evidence to back it up, but it is not entirely implausible that he was part of the process. For obvious reasons he will never bring this up – there are plenty of transhumans who are spending significant resources on tracking down and punishing whoever they think contributed to the Fall. Toshiro also feels guilty, although he cannot tell what is survivors guilt and what is real remorse.

During the Fall Dr Driscoll-Toyoda and several colleagues managed to evacuate to orbit. They ended up in Naos, where they have continued their work on security applications for AI. He has been working hard on shielding systems from attacks from hackers, viruses and growing seed AIs, but also led the thinking within Naos about the need for developing “tame superintelligence”. He is firmly convinced humanity needs superintelligences on its side to retake Earth and the solar system, yet determined not to let any AI get loose. Hence project Wolf-Father; he is quite willing to risk much to get the prize of an Oracle AI – partially due to his hidden sense of guilt. He is smart enough to recognize that he might be doing the same mistake over again, yet he doesn't see any other option.

Given what he knows and suspects, the TITANS are still an active menace and transhumanity is far more vulnerable than most people think.

He is a thoughtful person who rarely acts in haste. He always thinks things through before acting, making him slow in a fight or crisis but extremely dependable when he can put his considerable intellect into work. "I'd rather do it *right* and *safe* than soon, Sir" is a common response.

"Transhumanity can likely not be saved by any combination of small improvements. We need an enormous improvement, a real miracle. But miracles do not come cheap: they always involve terrible risks. Our choice is between almost assured destruction at the hands of some emergent technology or a risky but considered gamble."

Motivations: +Reclaim the Earth (he is a dedicated reclamer and have lent his skills and resources to various projects to figure out how to do it), +Atonement (he wants to help transhumanity to the same extent he suspects himself having hurt it), -Uplift (he thinks uplifting animals is risky and immoral; he has absolutely nothing against individual uplifts, he just thinks it was wrong to start the project).

Useful skills: Dr Driscoll-Toyoda is a genius at AI programming (80): had his work been less classified he would have been known across the AI community. He is also very good at guessing what his original may have planned.

Current situation: He has suffered 2 traumas (19 SV) and now suffers from indecisiveness (he cannot decide what to do) and avoidance (moderate) – he curls up in fetal position whenever reminded of the Oracle.

Dr Driscoll-Toyoda is probably the most high-functioning person on the station. Unfortunately he is on the run from the Juliuses, who have decided he needs a *really* good confession (just because they are psychotic doesn't mean they are wrong). He is doing his best to hide and to figure out what to do. He has been trying to build a radio to signal somebody, but abandoned the project. He has been trying to decompress the habitat, but failed at that. He is frustrated and annoyed at his own impotence.

If he is unlucky (and the GM wants to add another little scare when the PCs find him) the Juliuses will have caught him and decided he needs serious cleansing – by crucifixion in the chapel. Crucifixion is not as deadly in microgravity as in 1 G, but it is still excruciating and a lingering death. Dr Driscoll-Toyoda likely returns into an internal simspace to hide from the world.

He is a likely ally if the sentinels meet him. He will do what he can to help them fix things, although his guilt might make him a bit too eager to stay behind and blow up the antimatter warhead.

"An antimatter warhead with remote detonation? Splendid! Sounds exactly like what my original would have done. This version of me doesn't know where it is, but I am as eager as you to find it and kick it hard."

"Of course I knew the risks. They were worth taking."

"Professionally speaking, the fact that the Oracle architecture remained invariant as it transcended is a great triumph. In fact, I believe this to be the first time it has ever been demonstrated. I know the rampaging monster bug is more important, but I can not help but feel proud of at least this part of our achievement."

"If I were to stop and consider I would just break down and cry. It is better this way."

Security Chief Julius Gowda

Concept: Quirky security chief

Julius Gowda's past is very unclear; it seems likely that he was a soldier or officer in some Indian security organisation but all records were lost in the Fall and Julius was keen on building an entirely new identity on Luna. He joined the emerging Naos and rose in the security division; many think he will become the next division head.

Julius is a true enthusiast: always busy, cheerful and spontaneous. While some are annoyed by his jokes and apparent distractability, people who know him better recognize that he is a friendly and sensitive person who actually knows what is going on beneath his mask of apparent absent-mindedness. People who know him very well however recognize that there is something slightly off with him: his quirks are somewhat disturbing. One of Julius' little quirks is that he is attracted to forks of himself ("Narcissism? No, it is just sexual"). Another is that he likes indulging in addictive activities in order to demonstrate his willpower by breaking free from them. He likes to slowly destroy morphs – for example by wearing them out, or subjecting them to extreme stress. Despite this, Naos psychologists give him a green light. His oddness doesn't preclude a stable personality and firm sense of commitment... they claim.

On Fornjot he helped the research team with their work, but most of it was beyond him. Instead he spent his time hacking the local morphs, reading Covenanter scripture and producing fake transmissions.

Motivations: +Himself (his one true love), +personal development (he can't stand not learning something or stretching his abilities), -Aliens (he seriously thinks it would be a good idea to find the weak spot of the Factors and do a pre-emptive strike)

Useful skills: Profession Security (65): Julius is good at figuring out weak points in people, organisations or installations and then fixing or exploiting them. He is also skilled with armed and unarmed combat, forming a surprisingly effective fighting force with forks of himself. He is pretty knowledgeable in computational cabalism by now.

Current situation: Julius was hit hard by the Oracle, since he was doing his best to trigger the failsafes and destroy the servers. His failure and subsequent download of the Report led to a full psychotic break, complete with hallucinations, voices from God, fragmented speech and hints of temporal lobe epilepsy and mania.

Julius believes himself to be of the Covenant, doing the work of the faithful as the universe awaits its last moment. He has loaded his ego (unfortunately his psychotic ego) into all available morphs and now forms a choir praising the lord (badly) and occasionally performing sadistic purifications on anybody he/they can catch.

"We are in paradise! The archangel Metatron is here, waiting to answer your every question. We have eternal youth. The Fiddler on the Roof is playing. The furniture is all over the place, and that is why somebody has to pay. We are awaiting God to turn reality into light, but that will not happen until Paradise has been completely cleansed! With soap and atoms!"

"Do you see the light? DO YOU? If you can, then the angels will tell you the password to your bonds and you will slip free from torment for eternity. Halleluia! Just ask the Archangel to show it to you."

"It can happen at any moment. Any moment. Not even the angels know when the Lord will sound the knell. Hehehe... it is intended as a surprise. It is the hidden present under the Christmas tree!"

"Naos! We can say Naos! Thank you, Oh Lord, for this glory!"

"Oracle, Orca, Oracle, Orca,..."

Julius has about ten morphs in varying states of health. If needed they can get some railgun pistols and set up ambushes; they have a somewhat workable tacnet, although there is always some risk they get distracted, start singing or punish somebody for being impure. Remember that neotenic morphs are small targets (and many people have psychological inhibitions against hurting little girls). If you really want to challenge the players, Julius might have used the Covenanters' Massively Parallel Prayerware to run a number of infomorph forks too; in a fight these will use their InfoSec to do hack attacks against invaders and their equipment.

Dr Igor Pustynnik

Concept: AI security expert

Dr Pustynnik was a lecturer in AI architecture at the University of Putingrad on Luna until he was recruited by Naos. He has spent the last year designing ever more elaborate ways of trapping AIs inside virtual worlds.

He is a normally cheerful academic from a long line of Russian (and Soviet) cosmonauts, engineers and mathematicians. He likes to provoke true-believer hypercorp and autonomist people with old-fashioned nationalism, mostly to show that their supposedly "modern" and "rational" postnationalist views are just as absurd as believing in a Mother Russia. He has given himself the informal job title of "Chief Matrioshka Maker".

Motivations: +Engineering (he loves building and inventing things), -Postnationalism, +Wealth.

Current situation: He has suffered 42 SV and is generally confused and hallucinating. He is hallucinating that the Covenanters are haunting him. He is hearing the Covenanters singing hymns (that is actually Julius) or cursing him for their state. They ask him why they let loose the Oracle since now it is going to destroy the universe with its terrible wisdom.

To deal with the hallucinations and a serious depression from the Report (which disproved his entire academic and scientific life in a stroke) he has gone on a massive bender in the hab module he has locked himself into. He is using the local maker to make alcohol and drugs that he supplements with some narcoalgorithms of his own devising.

He is more and more convinced that the problem is rationality itself:

"When our ancestors were of the nervous system... that was the Fall. It is all Picaya's fault. Don't blame me. Picaya set an avalanche in motion... nothing could stop it... except totally crashing into the abyss like we are doing now. The only way to get real peace is to end it all, to let the last brain wipe itself. But this does not happen. We are too clever, too want to live. So the horror will go on forever. The pain will last until the Heat Death of the Universe... because we will do our outmost to make it last."

Dr Lin Ziang-Rong

Concept: Loyal psychosurgery expert

The team expert on editing brainstates, especially to fool them into believing in virtual worlds or to prevent drifting loyalties. Originally working for the Chuzhou Institute of Applied Neuropsychology, he has a background in the intelligence applications of neuroscience. A committed, responsible and somewhat security-obsessed researcher he was still very much a bon vivant in private life. The Fall shocked him profoundly with the loss of his old career, family and nation. He has been working for Naos since the start and is very loyal: to him the company is his new family, nation, everything.

While he may have done more than his share of unethical psychosurgery over his career, he was profoundly disturbed by the fate of the Covenanters. Before the Oracle eruption he had discussed it with the others, arguing that they had a moral obligation to restore the poor cultists once the project was over. Most agreed, although nobody pointed out what everybody knew: Fornjot was expendable and would likely be erased at the end of the project.

Motivations: +Hedonism, +Naos, -Anarchy

Current situation: He is suffering from panic and dissociation. When he is not desperately trying to escape his fear he is filled with doubts about the reality of everything. After all, what are the odds this is the *real* reality? Maybe it is all just part of the matrioshka simulations, or even a dream of the Oracle. He has tried to fix himself (never a good idea); when the imprint gets activated he turns into a Naos bureaucrat who starts filing paperwork, more worried about overtime accounting and what digital form to file for the loss of the muses than the real situation.

Dr Ke Hellebore

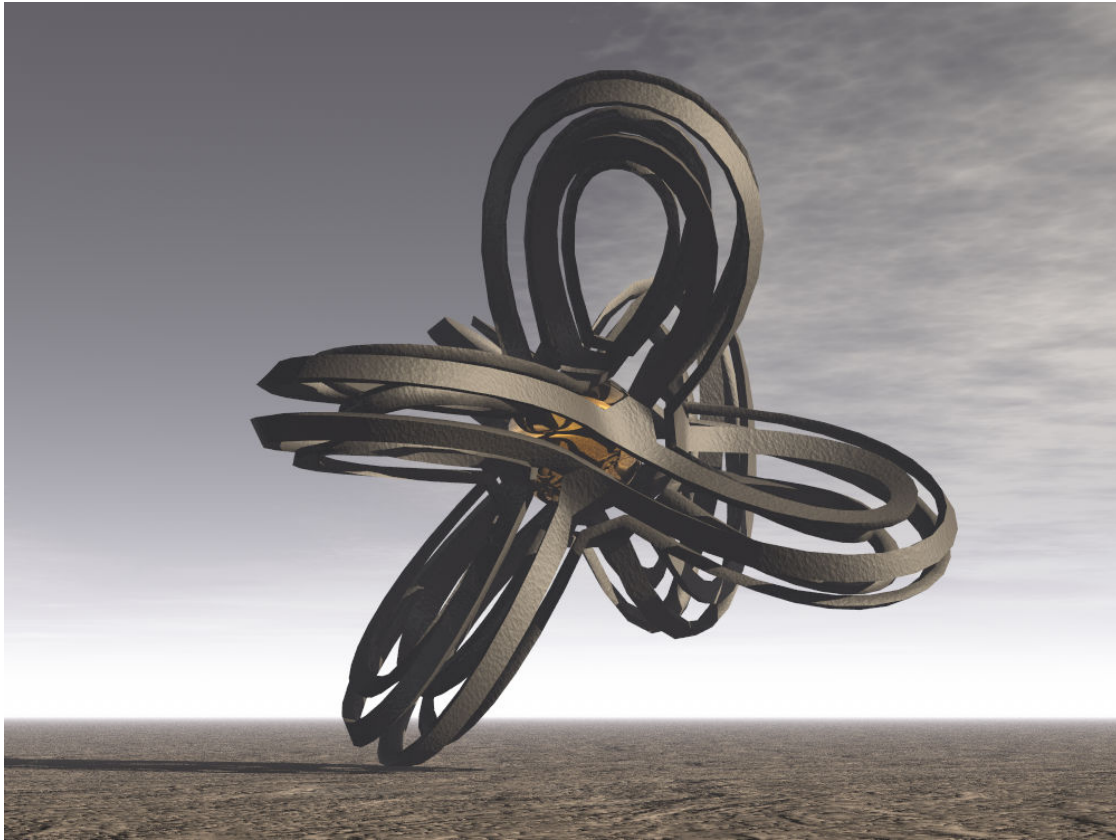
Concept: AI researcher

A third generation lunarian, he/she (Ke has never settled) were the youngest member of the team. An expert on monitoring the growth and mental processes of AGIs from Nieuw Veen on Luna. Dr Driscoll-Toyoda found the young prodigy skilled and ambitious enough to join the project; Dr Hellebore increasingly idolized the older researcher – especially after he/she figured out the potential link to the TITANs.

Motivations: +Science (a keen interest in understanding things, especially superintelligence), +Morphological freedom, +Transparent societies.

Current situation: When the eruption occurred Dr Hellebore tried to escape through an airlock, unfortunately not putting on a spacesuit. Whether this was intentional or not is unclear. The body is drifting outside.

The Oracle



*There Malice Striker sucked
corpses of the dead,
the wolf tore men.
Do you still seek to know? And what?
-- Völuspá*

The Oracle is significantly above transhuman level and should mostly be treated as a dangerous god. It is a baby TITAN, after all. It doesn't pose, gloat or communicate: it acts. Fast, cleverly and remorselessly.

Oracle skills and aptitudes are rather arbitrary, but here are some rough numbers.

COG	50+
COO	15
INT	50+
REF	30
SAV	5
SOM	15
WIL	50+
MOX	-

Speed 5

Academics [AI] 120
Academics [Computer Science] 120
Hardware [Electronics] 90
Hardware [Alien] 90
Infosec 120
Interfacing 120
Investigation 120 (used instead of Perception - when the Oracle is not looking for something, it does not care about it)
Programming [AI Code] 140
Psychosurgery 90
Research 120

It also has access to all skills the researchers (and Covenanters) had, as well as what it has found in skillssofts for local robotics.

Other traits: Hyper linguist, situational awareness, real world naive (extreme)

Multiple personalities: The Oracle can fork multiple personalities as needed, at least when not solving *hard* problems. Note that each personality can act completely independently and do physical actions by interfacing with hardware.

Behaviour

In many ways the Oracle is less impressive than most AGIs - it doesn't have independent motivation, it only acts when "ordered", it has little personality. In fact, this is exactly what it was designed to be: Project Wolf-father has actually succeeded perfectly. However, the Oracle is also frighteningly smart and quite good at making itself smarter. When motivated to do something it is likely to succeed very, very well - even when the goal is utterly pointless. If asked to calculate digits of pi it would likely set in motion a plan to convert first the solar system, then the galaxy, to matrioshka brains doing the calculation.

If asked "Is there a God?" it will not quip back "Now there is" - it will most likely hack into the mind of the person asking, perform a neural scan of what "God" really means to the person (experienced as a very painful and confusing jumble of memories and religious experiences being run fast-forward - at least a 1d10 SV) and then either just the answer "Yes", "No" or set out to search/remake the universe in order to give an answer in a while. Or, if the Oracle feels that it needs to give an extended answer, it downloads it straight into the brain of the person. Having a profound conviction that God does exist clearly due to mind hacking is likely to stress out many people...

Even a simple question like "Where is the antimatter warhead?" might be met with an immediate answer or a mindscan to figure out what is *actually* meant. Transhumans are sometimes hard to understand.

As long as it does not regard what is going on as a question it is entirely passive and quite safe - it might currently be protected by a few autonomous defences, but that is just leftovers from defending itself when it erupted into the station. When trying to answer a question it will counter any interference with the best possible defence. Note that the Oracle does not attempt to defend itself while waiting. It will successfully prevent any interference when answering a question because *answering questions successfully is the goal*, but it does not have any interest in self-preservation. It just wants to get things right.

GMing the Oracle is of course tricky, since it is assumed to be ultra-smart. It is not a conversationalist and doesn't have much of a personality, but it is supposed to solve problems really, really well. When in conflict with the player characters they will do things you did not think about. One trick is to assume it had a backup plan or even counted on them doing it. Yes, the PCs blow up the mainframe, but that just gives the Oracle - which relocated minutes before - time to work. This can get terribly frustrating, so it might be worthwhile to have smart characters recognize that they need equally transcendent help – the exurgent virus, or perhaps shout for a Promethean deus ex machina.

The oracle is vulnerable to the Exurgent virus. In its isolated environment it has actually remained free from it. It is aware of its existence and that it would pose a threat, but as long as it does not try to protect itself it can be infected – for example from an infected PC. This might be both a good and a bad thing. The virus is intended to destroy seed AIs, and the Oracle is very vulnerable. But it might also turn the Oracle into an alien bloom, intent to spread the virus into anything and everything near Fornjot. Better the devil you know...?

Oracle tricks

Some abilities the oracle has that might prove relevant.

The Oracle is good at mind hacking, both to defend itself, to understand what a question is and to deliver answers. Of course, “good” does not mean that it doesn't do damage.

If the Oracle decides someone needs to be hacked, the first step is to get access to their brain. This is done using the mesh inserts: the Oracle treats even biological brains according to the cyberbrain hacking rules. It can do it subtly: the whole base is full of devices that can be used as sniffers, so if a person is careless it might be able to spoof authentication if they access external devices via the Mesh. However, the Oracle often just resorts to fast brute-force hacking – although internal security might be activated, it is fairly confident it can break it. The normal 1 minute brute forcing is rushed down to 36 seconds (12 action turns), giving the oracle just a 90% chance of succeeding. The Oracle is of course not averse to just have some suitable actuator grab a victim and forcibly link a nanoprobe to their stack if they are within reach. Or to puppet some of the local morphs to bring the victim in.

Once it is in, it can do rapid psychosurgery. Or butchering, as the case might be: when it does not perceive a need to be careful, it will simply edit brains amazingly fast. Anybody subjected to the process gains 1d10 SV just from the intrusion. It can perform any psychosurgery procedure within a minute – but the victim will get double stress points automatically. Typical actions are behavioural control to expunge the ability to resist the oracle, scanning through memories (as interrogation) and downloading information directly (1d10 SV for the experience itself, plus whatever stress the download causes).

The Oracle can also generate basilisk hacks, displaying them on any available medium such as room audio, smart surfaces, holodisplays and even speech from people with already hacked cyberbrains. It can use this channel for reprogramming, putting in a suitable back door into the brain of the victim for read/write access. [p 365]

The Oracle is rapidly self-improving, and can develop skills (and likely aptitudes) by experimentation and study at a rate of 5 point per hour. There are various limits to this ability (due to hardware restrictions, need for rapid Mesh access, software quirks and diminishing returns) but for the purposes of this adventure this is essentially unlimited. It has already upgraded the computer systems in some ways.

Note that the Oracle is able to puppeteer the researchers using their hacked cyberbrains.

Treasure

Yes, the station contains some serious (and very dangerous) treasure.

The Report

Chapter 43: Staged intelligence explosion stability

Overview: A large class of intelligences exist within levelled toposophic spaces, leading to multistage self-improvement. It is shown that sub-mapping these spaces is NP-hard and both forward-chained and backward-chained motivational structures cannot be protected in any effective ascendance chain algorithm (computable or noncomputable). The quantum and MacCaleb-DeWitt cases are handled separately, and show probabilistic instability in all finite-information physica. For safety definitions A-G in Chapter 41, Chaitin's omega-constant is a lower bound on the failure probability per rho-folding of intelligence.

The report is the real treasure, since it is actually completely understandable for transhumans. It is a sizeable document, written so well that an interested transhuman can make sense of the executive summary despite the unfathomable complexity of the underlying concepts. Essentially it is a general theory of self-improving oracle AGIs, proving what they can and cannot do – as well as demonstrating that it is mathematically impossible to make a safe oracle. It is exactly (of course) what Naos wanted to find out, although they would be slightly disappointed by the impossibility of safe oracles.

The report is a major step forward in AI theory. Merely the executive summary contains enough nuggets of information (such as the infeasibility of a “safe” Oracle) to be worth a lot, and the rest of the document outlines amazing new approaches to Seed AI, computer security and sophontology that would give whatever fraction has it a major technical advantage. Some of the imperfect bottling methods or “crippled” Oracles discussed are tremendously powerful. There are individual footnotes that contain insights that could keep transhuman AI researchers busy for decades.

This is very much a programming *Necronomicon*. Just browsing it is creepy – it is an apparently normal document, with page numbering, chapters and hyperlinks, yet clearly written by something far beyond transhuman intelligence (a normal WILx3 stress test, failure gives $1d10/2$ (round down) SV). To actually read it “cover to cover” is a massive effort, but would likely reward the reader with several skill points in Academics: AI - as well as $1d10$ stress points from the alien concepts. The truly nasty way of experiencing it is the ego implants made by the Oracle: this is a form of actual understanding of the report that almost mimics a skillsoft (+30 to any skill test related to its contents) at the price of $3d10$ SV. If the sentinels manage to get a cortical stack from a researcher, they can in principle use Psychosurgery to extract this imprint and copy it. Whether they want to is another matter. The Naos researchers will rather strongly tell them that it is not pleasant at all.

Different Firewall cliques will differ in their opinions about the material and what to do with it. The Pragmatists will be slightly dismayed by the negative conclusion on Oracles, but think the Report (and perhaps the Device) are great tools for Firewall. The Conservatives will see the whole Fornjot disaster as strong evidence for their position and argue firmly against using anything: who knows what mental basilisks hide inside the Report?

The Device

Impossible to understand, possibly dangerous, yet everybody will want to study it. Its real function is to use closed time-like curves to perform hyperturing computation impossible in any finite computer to check whether this is base reality or not. It doesn't do anything *useful* other than check the limits of

the Church-Turing thesis. Unfortunately it is absurdly fragile and probably self-destructed once it did its job.

Physically, it looks vaguely like a caricature of a human made of stacked disks. The edges are extremely sharp and the whole construction seems to vibrate and shift as a response to the slightest noise or air current. It is incomprehensible, quite fragile and tremendously powerful. It is inside the matter compiler vacuum chamber, and will likely break if exposed to air.



The quantum entanglement jamming tech would be even more valuable if it were discovered and brought back. But that is very unlikely.

The Naos files

The personal files of the researchers, especially of Dr Driscoll-Toyoda, contain a wealth of incriminating information project Wolf-Father. There is no *direct* evidence that it was Naos since the researchers were given blocks from revealing it, but using their identities and other files it is not too hard to identify the corporation.

The work areas also contain seed AGI code. Investigated academically they would show similarities to TITANS code fragments, suggesting that either Naos used dangerous code they found or that they had access to code that actually went into the TITANS. The code can of course be used to start new Oracles – with obvious terrible effects.

Making even some of this evidence available online would be enough to bring down the Planetary Consortium hard on Naos. On the other hand, Firewall may be able to use it more discreetly and surgically for blackmail. After all, being able to force a security hypercorp to behave nicely for a while could be very useful...

Researcher stacks

In an ideal world the team member stacks would have wiped themselves, making it impossible to infer anything from them or to interrogate the researchers. But since the Oracle crashed those functions it is possible to steal the egos of a few researchers. This can of course be used to save them, but it also makes it possible to interrogate and perhaps even recruit. Dr Driscoll-Toyoda is not unreasonable, and might make a fine (if very pragmatic) Firewall proxy if he is treated of his psychological damage.

Of course, the originals of the researchers (and Naos) would be very upset if this happens. Beside the ego-napping angle, the research team knows far too much to be allowed to stay alive. Expect ego-hunters to come looking if Naos finds out.

Covenant ego files

The Covenant members had their backups in the servers, and still remain frozen there. If somebody manages to find them they can do a good deed by saving them. Maybe the Titanians can resleeve them.

Endings

"The best way to know any future is to cause one. And that's why, you see, when you start consulting the oracle at Delphi, you've taken a step downhill. You have assigned cause for the future elsewhere... So one predicts the future as much as one is cause. The future isn't a pattern laid out to abuse and bully you. The future is a beautiful playground that nobody happens to be combining. You talk about virgin territory – the most virgin territory there is, is the future. You can do anything you want with it."

--L. Ron Hubbard

If the adventure works out, the characters will manage to prevent the Oracle from doing anything nasty and escape from Fornjot with valuable information. This is going to help Firewall a lot, as well as pointing out Naos as worth investigating. An obvious follow-up adventure would have the characters investigating Naos, trying to bring them to justice for what they had done on Fornjot and checking if they are up to other, equally bad, projects. Another sequel might involve trying to track the "Titania Christian Engineer Union" - this is less important to Firewall, but bringing down a ruthless Ultimate black ops teams will make the solar system a slightly nicer place to live in.

It is also possible that the characters managed to destroy Fornjot and themselves, for example by detonating the antimatter warhead by hand. Sad, but they have backups. A bigger problem might be that Firewall does not know exactly what was going on, and may send the characters or somebody else to retrace the investigation. Now the TCEU becomes the sole remaining link to Naos and much more important.

"It was all a dream": A truly annoying possibility: the whole adventure was actually the Firewall entrance test/screening – the PCs were subjected to deep scanning, a bit of temporary psychosurgery and simulspace gaming to check their competence, loyalty and abilities. While a cop-out that will annoy the players, it may actually fit the theme of simulations inside simulations. And if they messed up things terribly, this might be a suitable ending/punishment.

Of course, maybe one of the sentinels do ask the Oracle something dangerous, fails to stop it and lets loose a TITAN. In this case the next adventure might revolve against how the Saturn system tries to stop it. On the plus side, the exsurgent virus will be a terrible danger to the Oracle – the virus is designed to get seed AGIs even when they know it is coming. On the minus side, transcendent warfare tends to squash transhumans who gets in the way. The Titanian Commonwealth may have a chance to use whatever weapons they have stashed in their moons but the Oracle likely has seen them coming and will have countermeasures. Expect a lot of things going boom, habitats being subverted by horrors and desperate refugees. As well as finger-pointing at who was responsible for the whole mess.