

Aliens

The Velocissimi

The Velocissimi likely evolved naturally somewhere in the past, but choose to become digital organisms long ago. Aiming at the fastest, densest computational substrate possible they developed technology to convert neutron stars into computronium. They now run on strong force interaction timescales within the quark matter at the core of at least one redesigned neutron star.

Of course, any transhuman understanding of the Velocissimi civilization is impossible. Their sense of time is 21 orders of magnitude faster than biological brains, and even the fastest transhuman AI is a sluggish mountain to them (literally - a one millisecond question takes a billion years in their timeframe). They have no interests outside their world, and have by now evolved through endless eons of time. They might have sublimed into something else, ceased to exist, fallen prey to the exsurgent virus, joined the ETI or become locked into endless pleasure. Or all of the above, several times per second.

That doesn't mean the system around the neutron star is dead. They left behind countless systems used in creating and maintaining their world, themselves quite capable.

At the core lies the neutron star itself: a 17 km sphere shining brightly in X-rays. To a human eye it would appear as a blindingly white pinprick. It is patterned in a hexagonal pattern of magnetic flux vortices and magnetic whiskers connected to racing grid-like orbiting platforms gathering power from its magnetic field, beaming it as lasers to necessary destinations. The star itself is separated into complex layers with different functions. Perhaps most importantly it can transmit massively powerful beams of neutrinos for cooling or communications - they can easily jam or disrupt transhuman neutrino transmissions. Anything that is not of the Velocissimi that approaches the central volume will be removed using enormous energies and/or unknown technology.

Surrounding the star and its installations a disk of industry remains. This was the leftover of the construction process - planet-sized neutrino cooling plates, femtotech cornucopia machines, antimatter factories, systems for transporting mass and momentum - all the tools needed to remodel a solar system. They would make a tremendous (if largely incomprehensible) find for transhuman explorers. However, the disk is also inhabited. The inhabitants are the remote descendants of the AI systems the Velocissimi used, locked in a complex evolutionary game between hardcoded commands, competition for useful resources like cornucopia machine access, and their own considerable smarts. Imagine a predatory ecosystem where almost everything is intelligent, fast (since it is running on infomorph timescales and upwards) yet constrained by ancient and by now incomprehensible "magical" rules. A transhuman visitor will be amazed by the nanotech growths, the complex societies of helical robots gathering UV-radiation, living spaceships and welcoming information networks... before they get hacked, eaten, absorbed and disintegrated.

Outside the disk there are a few planets. They are massive terrestrials, the remnants of the original planetary system and material that coalesced after the star originally went supernova.

They are all cold and dark. Yet the artificial ecosystem has spread here too. Much of the surfaces are covered with energy-gathering "leaves", and various nanorobotic "animals" prey on the "plants" (or, more commonly, perform extremely complex cryptographically secure economic transactions to gain access to energy and material in exchange for protection, transport or sensory information).

However, there are a few high-level entities in the system. These might be the counterpart to Velocissimi street people trying to find a way into the warmth of the star, or perhaps just a few lost muses performing pointless tasks pursued with relentless tenacity. They actually reside within the outermost layers of the star but maintain communication using qubit links. The qubits are manufactured in the orbital stations and then transported by small, stealthy probes to different locations. Where a probe lands, it takes over the local technology and forms various bodies. Most look like abstract art: complex lines and shapes with no discernable meaning, but typically fast and capable of amazing feats - think TITAN fractals on steroids. These bodies are linked to the original probe through secondary qubit links.

These entities mainly do incomprehensible or pointless things. One might force the local technosystem to grow into an expanding 3D labyrinth, patterned by exquisite fractal patterns. Another might randomly walk around the frozen wastes of an outer planet, stopping for months before continuing, and then suddenly fall apart. They are not interested in slow carbon-water life... but they *are* interested in complex, unknown information. That likely has some value in whatever goes for the crustal ecosystem/economy, and they will gather it as fast as they can. That is, they really like taking cortical stacks and AGI processors. And those taken end up analysed, run, dissected and modified billions of times over by the incomprehensible entities in the star.

The Cunei



(Image by John Tann)

Cunei evolved from planthopper-like animals, equipped with a solid wedge-shaped exoskeleton. Besides the protective function the shape allowed them to catch sunlight: the back ridges contained symbiotic algae. In fact, a major part of their biochemistry was "outsourced" to symbiotic bacteria like in terrestrial roaches. On their homeworld many animals were little more than platforms for symbiotic microorganisms. Reproduction involved not just mixing genes but mixing microbial ecosystems. They had a habit of rosetting during the night: the members of a rosette would arrange themselves into a tight circle wedge-by wedge, in order to maintain heat and moisture, and exchange microbiota and genes.

As the cunei evolved into intelligent beings (largely due to climate changes forcing them to manage shared water resources) rosetting became a way of transmitting information. Knowledge learned during the day would be transferred via the microbial exchange: symbiotic memory storage organisms spread between members, giving them collective learning abilities. This provided a significant ecological advantage. While members might perish, rosettes tended to retain key knowledge and skills, and could build on them over time. Individuals were subordinate to their rosette, and often willing to sacrifice for its survival. While social within rosettes and occasionally trading mating-partners between rosettes, the key breakthrough came when they developed a language and social norms allowing several rosettes to work together. This allowed specialization, large scale cooperation and

technological development: before the language breakthroughs most rosettes knew one or two technologies but could not maintain knowledge of more, but now they could share tools or the results of tools.

Individual Cunei are by human standards ultra-specialized. They know a small topic, but understand it extremely deeply: they have literally generations of experience to draw on. Specialized coordinators, rosetteers, communicators, administrators, comptrollers and many other professions act to keep the practical experts working on the right problems. It is not so much a caste society as a natural bureaucracy: without the coordinating rosettes practical cunei are unable to figure out what to do, while the coordinating rosettes cannot understand how the practicals do what they do. However, information leakage from contact does add some understanding: coordinators sometimes rosette with their practicals and vice versa, exchanging understanding. In cunei thinking there is no difference between sex, sleep, understanding and community, the "hard" emotions. However, this is seen as separate from the "soft" mysteries of society, language and complex technology: most cunei cultures had various ideas of "rosettes of rosettes" representing the soft world.

As cunei developed into a spacefaring society they further refined their biology. While rosetting is still central, memory and skills can be transferred using injections or via laser projections onto photosensitive symbiotes. Optimized symbiotes give them extended powers - strength, survival in different environments, chemical production or specialized intelligence. Modified animals can take instructions via rosetting that transfers symbiotes, acting as living robots that not just understand their commands but transfer their experiences back to their owner.

The Steganoi

Steganoi evolved as a jungle-dwelling species on a low-gravity world. The local ecosystem was dominated by large animals, similar in ecological niches and diversity to Earth dinosaurs, although based on a body plan based on an armoured central body housing brain and digestive organs, and a variable number of appendages on the outside. Some species were giants, while others were nimble gibbon/octopus-like climbers or birdlike flyers. The Steganoi were greenish spheres, about one meter in diameter, with six short but dextrous limbs well suited for climbing, carrying or digging. Their language was entirely visual: a complex sign language, with no need for any sound (which could attract the dreaded predators).

The Steganoi original ecological niche was a herbivorous gatherer, tending fungal colonies hidden underground or in hollows of the tree-analogues. They found vegetable matter that was chopped into a wet mass for the colonies to digest, producing edible jelly-like fruiting bodies and a suitable environment for their seed-like eggs. Typically each nest would have a few nearby gardens, tended by extended families. They were preyed upon by nocturnal hunters, making them evolve ever more elaborate nests that could be protected from intrusion. As they evolved they began culturing more varieties of fungus: they actually developed selective breeding long before fire. This led to increased demands for special nutrients, sometimes harvested at great risk from large animals - the start of technology and increased intelligence.

Steganoi technology and culture were inseparable from an intimate understanding of biology and ecology. They tend to see the universe as a biological process: complex networks of predator-prey, selection, evolution, digestion and agriculture.

Steganoi assume everything is "alive" in some sense. A human might think other things or impersonal forces are agents (hence religions), but steganoi think they are creatures with their own nature and ecology. Instead of religions they tend to think there exist all sorts of natural orders, or rather a natural ecosystem of things. However, most steganoi do not experience this as anything sacred or immutable: rather, the question is how to rearrange it into a neat form - could it be used, could interesting variations be bred, should something be removed or added?

They never saw any fundamental difference between themselves and other species - they could observe related species doing similar if more primitive gardening. Hence they were quite willing to perform selective breeding experiments on themselves too, resulting in an extremely diverse set of "races". Soon all biomes of their homeworld were colonized by a wild plethora of Steganoi. Ecosystems were redesigned to suit them... sometimes with disastrous result. Just because they understood ecology better than humans did not mean they could predict the consequences. In fact, they nearly wrecked their homeworld with wildly invasive species and bioweapons.

The conditions in the aftermath of this ecocalypse were the impetus for developing more "hard" technology. Partially a practical solution to the many problems of living in the badlands left after the grand jungle-arcologies had rotted, partially a form of repentance. They had a natural knack for chemistry and medicine, although their perspective was always close to human alchemy. As they advanced they invented increasingly sophisticated prosthetics and biotechnology (often in the form of special symbiotes). Complex caste societies were invented based on various alchemical/medical ideas.

Compared to humans they took a long time to achieve spaceflight, but as soon as they reached space their previously splintered species experienced a massive evolutionary radiation. They redesigned themselves in all sorts of ways, colonizing every available niche in their solar system. Competition was fierce: several warlike society-families sought to subjugate others, in order to take their resources, genetic or memetic diversity, or to redesign them into a more "proper form". Others changed themselves into parasites or hyperparasites, bionic hive minds, non-sentient but highly useful tools others would use, or into what could only be described as biological artworks.

As a logical result of their biotechnology they developed nanotechnology. The complexity of the vast steganoi ecosystem increased further: nested society-hives inside larger host organisms, biological computer networks, werewolf encryption algorithms, nuclear-powered plants and sentient terraforming diseases were just a few results. It was not so much a singularity as a Cambrian explosion.

Followed by a mass extinction. Because at some point the exsurgent virus appeared. Unlike humanity the steganoi were extremely good at managing infections - often by unsentimental burning, but equally often thanks to their military immune systems. The process during which the virus slowly defeated the steganoi was slow and agonizing, stretching over decades. They fought back against subverted phyla using all available means, devastating countless habitats and ecosystems. More and more resources were spent on fighting infection, eventually reducing the last remnants of the steganoi to little more nodes in a failing planetary immune/weapon system.

The only survivors were those steganoi that had followed their ancient habit of hiding from predators. They had quietly built habitats in the fringes of their Oort cloud, and now cautiously drifted away. They very deliberately developed a cautious strategy of technology and expansion - or maybe those who didn't were wiped out. Current steganoi tend to live in what looks like ordinary cometary cores but contain elaborate warrens and chambers with exotic weightless ecologies. They gather resources and information using secondary habitats slowly drifting through solar systems, always willing to cut their losses and run - or to self-destruct.

A visitor might have a hard time recognizing who their hosts are: thanks to their bioengineering and history steganoi can look like almost anything. However, most retain at least some semblance to their original species: a central body surrounded by six limbs, moving very quietly. They are still cautious and prefer to remain in the background, maybe sending a bio-controlled interface organism to do the actual dealing with the aliens.