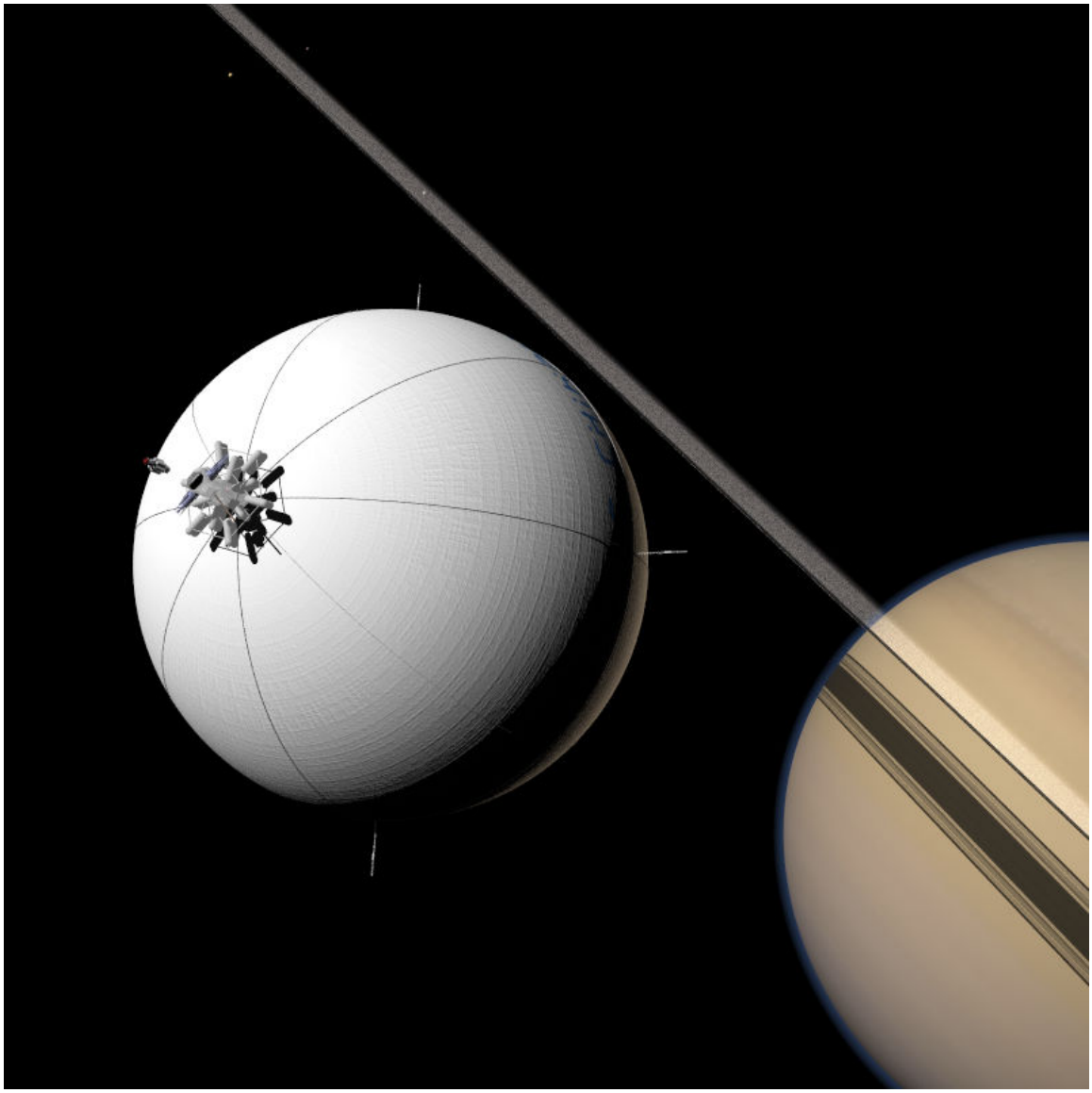
Mathias Chikawe Station

Mathias Chikawe Station, called 'MC' by its inhabitants, is an Argonaut Bernal sphere orbiting inside Saturn's rings.

Habitat



MC is located within the 325 km Encke Gap, orbiting close to the inner edge. The "nearest" (in terms of delta-v and accessibility) habitat is Izulu (Pan). About every 340 days the habitats come close, and then visitors cross between them for a joint carnival. Since the habitat orbits almost exactly along the ring plane the rings are a bright line bisecting the universe rather than a surface; close to the inner edge of the gap the 30 meter width of the rings suddenly look like an infinite cliff of drifting ice.

The original settlement consisted of Research Outpost Encke 2 (an international, Argonaut-aligned research station), the smaller Priyt 4 (a prospecting outpost of Evraz Space, an international mining consortium) and a number of refugee ships fleeing from threatened habitats. As the scope of the Fall became apparent a joint decision was made to try to survive independently. The habitat was named after the heroic Tanzanian engineer who saved thousands of lives at the top of the Kimanjano beanstalk during the Fall. His friends within the Argonauts renamed Research Outpost Encke 2 after him as they set out to enlarge it to a real habitat. The first priority of the renamed station was to create living space; from AF 1 to 2 the basic Bernal sphere emerged and was seeded with a lush biosphere. The original space stations were largely dismantled and integrated into the habitat axis assembly. These days they mainly remain as a museum, storage space and docking structure.

The habitat is 1800 meters in diameter, with an internal equator gravity of 0.64g due to the 1.25 minute rotation period. Much of the settlements and work occur closer to the axis, enjoying lower gravity. Light is provided by fusion-powered sunlamps strung out along the axis, surrounded by the rain sprinkler system and main mesh nodes.

Surrounding the main habitat is a thick ice/water shield, protecting it from impacts and radiation but also providing plenty of reaction mass: when designed, the intention was always to make a potentially mobile habitat. From the outside the habitat appears as a featureless white sphere.

The interior is a tropical jungle. Local biotechs have gone wild with phosphorescent plants, networked insects and unusual fungi. Beetles with random words crawl over the vegetation; hummingbirds activate and deactivate shining flowers. Kapok trees dominate the emergent layer, reaching heights of 120 meters or more. Under them lies an extensive a canopy layer filled with epiphytes such as ferns, orchids, bromeliads and rattan palms. Enormous interlocked engineered banyans link the canopy and dominate the understory layer. These banyans can easily be engineered to form perfect foundations for treehouses, especially since many are automatically reinforced by nanomachines with fullerene struts and fibre optics: the trees house dispersed mesh nodes that both report on the ecological health of the surroundings and provide service to nearby equipment and organisms.

The habitat is currently lightly populated, with only 25,000 inhabitants. Partially this is by choice, but it is also due to the limited capability of building morphs within the habitat – most newcomers arrive by shuttle rather than egocast.

There are three "villages" where most people live, Mandera, Bungu and Yeondo. They are located 120 degrees apart, formed out of small arcologies and banyan treehouses. Between them and outlying settlements, villas and the poles are winding bike paths. Heavy transport usually is sent underground through a subsurface light railway system. Numerous rivers meander through the jungle to the equator, where the water is recycled underground. Punting along the rivers is a popular pastime.

At the "north" pole the university campus climbs. It starts as a series of terraced buildings in a vaguely Mediterranean Escher style, and continues all the way up to the rotation axis. As gravity becomes weaker the architecture becomes wilder. Buildings hang from each other or cables from the axis, and the "crow's nest" resleeving facility is just connected to the rest of the buildings by what looks like a precarious rope bridge. At the axis itself the university complex has engineering bays, large scale autofactories and equipment used in space research. This is where most work on developing new habitat construction methods is done. Many constructions are launched to the outside of the habitat where they are tried. Various escalators, elevators and ropes help movement.

Society

MC is an anarchy, but like in any anarchy some people are more equal than others. The setup consists of three poles of informal power: the Habitat Commune, the Safety Commune and the Research Commune.

- The HC is composed of representatives (either elected, holding high rep or self-selected with nobody complaining) who organise the running of the habitat, mainly by coordinating various workers councils involved in maintenance, traffic, ecology and energy.

- The SC handles the security by organising and supervising the habitat volunteer militias (there is a great deal of overlap between the physical, biological and informational militias). Most of the time security appears extremely light (the customs check at the docking hub is run on a honour system: "please tell station representatives about any dangerous goods and weapons"), but there are enough hobby-paranoids and hackers around to make the de facto security pretty effective when coordinated. Most of the time the SC just makes sure the hacker one-upmanship doesn't get out of hand.

- The RC is running the "university" of researchers and engineering projects employing most people. Within these projects the Hamilton Cylinder project has by far the highest prestige and influence. It is run by the Wallbanger Council, an informal network handling the project open source style. The WC has significant power: if its members think something needs to be done they have a good chance of convincing the RC and likely the other main communes.

Subgroups

MC is inhabited by an international mixture with a noticeable slant towards engineers and scientists. The initial group attracted similarly minded people, producing a cluster effect. Today the habitat is a focal point among habitat engineering researchers in the Rings. This is where the problems of Hamilton cylinders are solved.

The three main "ethnic subgroups" that nevertheless exist are the Russians from Evraz Space (still often involved in prospecting activities across the rings, but now working for the autonomists), a sizeable group of Tanzanian engineers and the octopod uplifts.

The Tanzanian group started with the African Research Foundation crew on Encke 2. Rather than join Izulu on nearby Pan, they decided to remain on the station for a mixture of practical, political and ideological reasons. Akili Kezilahabi and Dr Sikudhani Rweyemamu, two of the key people of the group were recent converts to anarchism and wanted to ensure that MC would not become nationalist or bound to a lost Earth culture. Over time some people left, while other ex-Tanzanians interested in living a non-national life yet have culturally related people around joined the habitat.

The octopi are the most closely knit and least seen inhabitants. They live in the Subfusc, the water-filled mantle between the interior habitat and the outer ice shell. This is a dark, underwater habitat largely designed by themselves. The other inhabitants rarely think of it or its inhabitants, which suits them fine. In fact, they likely engage in some forms of memetic engineering to get their human "pets" not to think about what is underfoot. Certainly people know of it intellectually, but in everyday life most transhumans do not consider exactly how many octopi are living in MC or the power they wield.

The octopi started out a bit similar to the Tanzanians: a sizeable group involved in Ring prospecting and research on Encke 2 that later attracted other drifting octopi. The renowned engineer Black Volume realized that the Rings are in many ways more ideal for water habitat construction than anywhere else in the system: lots of freely floating material with carbon-rich tholins suitable for Hamilton cylinder construction, but even more water. The local cephalopod community began to quietly make plans for how to make truly suitable habitats for themselves.

The habitat construction project also attracted mercurial bioengineers and ecologists, including the very skilled Dr Triple Reflected Vortex. Beside the goal of making better underwater ecologies they have quietly investigated further uplifting projects. After all, humans uplifted animals based on their parochial views of what constituted a good existence. If cephalopods had done it, it would have produced very different results. Some researchers have looked into insect uplift, but it was abandoned as impractical. Currently most interest lies in improved cephalopod uplift methods that would allow "true" cephalopod consciousness (whatever that means).

Construction

The big issue in MC is Hamilton cylinder construction. The goal of most people of MC is to seed at least one new Hamilton cylinder. It is a way of extending the habitat, but also a fascinating engineering challenge.

Unfortunately it is far from easy. One reason people are not running away seeding Hamilton cylinders everywhere is that keeping the genetic algorithms working is nontrivial: what designers and construction engineers do not tell the impressed public is that there is a lot of active fixing and patching going on behind the scenes. It is far too easy to end up with a spherical blob, a cancerous conglomerate or broken habitat than a nice biosphere. The habitats that were seeded were the result of equal amounts of sheer luck and very hard work.

The Wallbanger Council is trying to find better ways of doing it. They are trying to refine existing open source protocols to be more stable, either by adding better microscopic control or "cheating" by constructing an ice scaffolding the habitat can initially grow on. Unfortunately the problem is very hard and different teams are pulling in different directions. To some degree this is desirable, since it prevents groupthink and premature design lock-in. But talk of making project forks is on the rise. Some members of the council think that is perfectly acceptable, even if it means seeding will be delayed even more. Others are concerned that many groups of the habitat, such as the ecosystem engineers, are currently underemployed and may drift to other projects or habitats. In fact, one reason for the over-engineered ecosystem is a large number of biotechnologists who play or invent new tricks while waiting for the next habitat.

People of Interest

Ioannes Axel: Network expert, working on habitat servers and whatever university projects need a new mesh installation. He has been in the habitat for three years. He is highly technosexual, preferring simspace encounters with infomorphs in high-dimensional complex manifolds. His muse is however more than it seems: it is a full AGI and actually working for some cephalopod hackers.

Evo the bartender: Bartender at Skookum House, one of the pubs on the university campus. Evo is the local extropian demagogue, as well nas a popular bookmaker. He runs various betting pools, from serious information markets on research questions to spontaneous bets on who will collapse first in a drinking competition. He makes sure there are always an interesting political quarrel at his bar every night.

Bo the Cook: A gentle character sleeved in a worker pod, working in the kitchen of one of the habitat guesthouses. He actually has a slightly shady past as a smuggler in the Belt, but has "retired" here. His slightly insecure morph is used as a router and honeypot by some of the habitat hackers, possibly with his quiet support.

Big Hammer: the anti-debris laser array and the AGI running it. Big Hammer spends all its time monitoring for potential impacts from ring material. It is plodding and unimaginative, just what everybody wants from something that can shine a gigawatt on you. One of the key members of the militia.

Paul and Karen Ishman: Coleoptrists of renown. They are responsible for designing many unusual beetles, including the ecosystem of word-adorned beetles in MC. Across the solar system the Ishman's are highly regarded when it comes to insect design, but they also keep to

themselves. The fact that they live on MC is not widely known, and they prefer it that way. They have a house composed of "utility wood" (actually wood-covered swarmanoid bots) in the jungle where they quietly fashion new and unusual insects. Although they are sleeved in human morphs they are actually octopi, not quite fitting into either species' society.

Professor Gil Kee-ryo: The de facto leader of the university. An accomplished biotechnologist, he left for the outer system a few years ago when he felt the Planetary Consortium was beginning to limit his research and dissemination too much. A staunch Argonaut and technoprogressive, he has attracted several other defectors from the inner system.

Akili Kezilahabi: Ex-tanzanian habitat engineer, now a key member of the Habitat Commune. Akili is the fierce politician who fights to keep everything working properly, no matter how many heads he has to bang together. He is widely respected but usually regarded as more than a little doctrinaire when it comes to anarchism.

Min Ung Kim: Astrophysicist and long-time Argonaut coordinator. Already the senior researcher when the Fall occurred, he switched to habitat politics in order to ensure Encke station would survive. In the HC Min is the laid-back diplomat who makes sure everybody gets what they want.

Medhaier: University administration AGI, responsible for keeping track of who does what and helping coordinate the work. A total gossip, but very devoted to anybody who tries to build a better world after their own lights.

Dr Federated Opaque: Dr Opaque runs the MC Biocomplex/Amdark Vats, the resleeving facility in the crow's nest. Even other octopi find him brusque or Aspergerish – this is a creature that does not suffer fools and timewasters gladly (and humans will mainly get to interact with his muse anyway). He has enhanced himself to multitask rapidly to an absurd degree as he works in the central lab space. He is aware that Dr Powers is not what he seems, but regards it as merely another human annoyance.

Dr Nicolai Powers: The nice human interfacer to the resleeving facility. Sleeved in a menton body tailored to look like everybody's favorite family doctor (with a short beard exuding kind authority and confidence), he plays the part perfectly. He is great at taking time and listening to problems, giving commonsense advice and making sure people don't have to deal with Dr Opaque. He is also heavily neurally edited: whoever he was before has been nearly completely removed by his new and nice personality. He remembers defecting from Cognite in the early years after the Fall and eventually taking up his current position, but even this could be false.

Dr Sikudhani Rweyemamu: Ex-Tanzanian astrophysicist, expert on ring dynamics. After helping found the habitat and solve many of the practical problems she has returned to research. While nominally based on MC she frequently visits Pandora as a consultant. Together with the local research staff she is investigating the evidence for whether the gate is recent or existed before the Fall.

Black Volume: Cephalopod nanoengineer, one of the stars of the Wallbanger Council. Prefers to discuss real engineering problems rather than fanciful theories, but has a keen strategic mind for project management and space colonization. She is very important for the strong position of the

octopi in MC, being one of the original heroic engineers who helped the originating habitats survive the fall and build the Bernal Sphere.

Dr Triple Reflected Vortex: Bioengineer, expert on species design but also good at managing mercurial project teams. A fierce mercurial, it (it prefers hermaphrodite morphs) avoids human contact as much as possible in order to invent "uncontaminated" truly mercurial social patterns. Arrived at MC from Ceres, where it was involved in constructing asteroid-based underwater habitats for cephalopod customers.

Zizelevak: Nanoengineer, mainly employed in programming habitat-construction nanites. However, since major engineering work is continually being postponed he enjoys inventing prank nanotechnology. His latest creation is the Language Grenade: a splash grenade that releases nanite ink, covering everything hit with text.

Other things

The slavemasters: nickname for the AGIs running the engineering robots used in low-gravity sections. Some of them resent the nickname, others find it mildly amusing (and retaliate by calling the transhumans for "house monkeys").

Word beetles: Everywhere in the jungle there are beetles with random words on their carapaces. These are a subtle masterpiece of Paul and Karen: they did not modify the genome of any of the beetles, they have just released nanodust that interacts with beetle pupas to link them to large linguistic database. The real art (according to Paul and Karen) lies in making the species and local conditions select a "suitable" word and typeface; exactly how this is done is their secret. They also have released tracking swarms to monitor the ecosystem, and possess a database of the lives of all beetles in the habitat for several years. Other biohackers have created their own additions, ranging from prank beetles that show up and form rude messages to a species that Lochnload added puppet nano to: if needed, they can get these beetles to act as a biological nanoswarm doing their errands.

Bipedals: Tiny robots infesting the offices of the university. They look like crude humanoid clay figures, walk around apparently randomly in the ceilings but can be ordered to fetch things. Apparently the result of some student project gone awry but not very dangerous. Actually a form of discreet security system that swallows suspect nanomachines, bugs and gremlings, disassembles them and hunts down harmful infestations.

The random walk club: Informal group of inhabitants who like EVAs across the nearby Rings. They are slowly morphing into an environmentalist group, as they worry about how transhuman activity might disrupt the large but fragile ring system.

Lochnload: Handle for a collective of cephalopod hackers. Mainly interested in infiltrating rather than touching anything, they will probe interesting visitors' defences and lure inquisitive people into elaborate honeypots. Just like normal octopi are amazing at opening and getting into things, these hackers simply cannot resist anything hidden.

Anonymusius: Handle for a team of transhuman hackers at the campus, engaged in a game of virtual one-upmanship with Lochnload. Also affiliated with the informational militia if needed.

Adventure possibilities

On the surface MC looks like a sleepy, slightly out of the way habitat… which might be entirely true, and make it a useful setting for something completely unrelated to the local issues.

However, there are some things going on that might be of relevance to Firewall and others:

The concentration of nanomanufacturing, computer power and engineers tinkering with better megascale construction in a society with relatively weak security is slightly risky. If somebody were to get the wrong idea there is plenty of equipment here that would be of great use to a seed AGI, exsurgents or dangerous maniacs.

The habitat construction project might attract industrial spies and saboteurs. The inner system powers are not at all happy about the development of Hamilton cylinders. They would give the outer system better growth potential and they encourage large scale uncontrolled nanofacturing. Agents of various groups would be interested in interfering with MC and the work there. Another reason for agents to show up is the presence of several fairly high-profile defectors. They might know too much, or should be made an example off. But the habitat might not be quite as vulnerable as it looks either…

The cephalopods of the subfusc are a private lot. What are they really up to? Not sharing many transhuman foibles they might be doing truly radical research on uplifting super-octopi in secret collaboration with exhuman clades. The Followers of the Tentacled Buddha, a cephalopod offshoot of neo-buddhism, might be involved. Somatek might be worried that there is some dangerous (to them) reverse-engineering going on.

One way of solving the control problem of Hamilton cylinders is to have an enormous amount of manpower to monitor every little piece during the initial growth phase. This would either require massive arrays of AIs (a solution investigated by some of the MC researchers), or very large numbers of infomorphs working to guide the nanomachines "by hand". This might have been how the Ultimates built Xiphos. Most of the MC researchers do not find this a viable solution, since the cost of such manpower is prohibitive. But some engineers think they have a solution: find a sufficiently large store of infugees and convince them (or ideally, whoever controls the store) to hire them to do the job. The payment would be part or the whole of a new Hamilton cylinder, a pretty tempting offer. It would also bring up all sorts of ethical issues and conflicts among the MC anarchists – including the inability of stopping people from forking off open source projects. Less moral engineers may approach the ID Crew or Nine Lives for cheap copied workers…