The environments inside of a processor hab vary a great deal. Some offer simulspaces that are relatively comfortable for transhuman-born infomorphs, where humanoid or animal-like avatars can interact in a world that provides an illusion of physicality. Others are surreal and disorienting, with simple simulspaces consisting entirely of interactions between geometric shapes ranging in complexity from basic polyhedrons to wild fractal clouds. In a habitat called the Flea Circus, one of the processor modules actually contains a miniature city in a cavity only a few meters wide, yet appearing as a vast metropolis relative to the nanoscale robotic avatars used by the populace for social interaction.

Processor habitats fall outside the realm of operatives in our line of business. Security and infiltration concerns are almost exclusively relevant to electronic intrusion experts.

THE SPACE LIFE SURVIVAL GUIDE

Posted by: Coots, Firewall Proxy <Info Msg Rep>

This guide is for those of you just re-instantiated and still acclimating to offworld living. It represents the accumulated knowledge of each of us that's fucked something up or seen things get fucked up and added their experience to the collective. It's been sanitized for op-sec so we can share it without burning anyone, of course, but everything you learn here could be useful to you someday—maybe even today. If you take anything away from this, it's to always check your assumptions. Even the basic things can trip you up big time if you neglect them.

FINDING UP

Phrases like "things are looking up" and "look at the upside" once meant something like "consider the good in the situation," but they went through an ironic shift in the solar system's early space-colonial culture, mutating in the microgravity of early tin-can stations to mean a variety of practically sarcastic sentiments, typically something like "be careful" or "let's be realistic." The joke (that is, that there is no "upside") wore off in a hurry, but use it with some original space colonists or old-school veteran habtechs and you might break some ice. Try it sarcastically as a harmless bit of jargon ("look up, at least we'll die quickly") or transform it a little ("that bastard's always looking up") to fold yourself into a habtech conversation.

Directionality depends entirely on your frame of reference. In microgravity, everything is pretty much arbitrary, especially in interplanetary space. The first space stations in orbit around Earth used a coordinate system based on the nadir-zenith axis. Nadir pointed to the Earth, while Zenith pointed out into space. The plane perpendicular to this axis was used to define "port," "starboard," "forward," and "aft." Internally, up and down were called "overhead" and "deck" and corresponded to zenith and nadir, respectively.

Current cluster and beehive colonies are much more complicated in geometry than those early tin cans, so most adopt a local x-y-z coordinate axis at the volumetric center and indicate location on a three-dimensional frame. For example, it is common to define a series of levels (the z axis) and a two-dimensional coordinate grid (the x and y axes) on each level. Within an enclosed volume, "overhead" is in the direction of

the "top" level and "deck" is in the direction of the "bottom" level.

Spin-generated artificial gravity can add an entirely new dimension of complexity to this problem, as points on the internal volume rotate with respect to a fixed observer on the outside. To simplify matters, most stations adopt a locally fixed two-dimensional coordinate system akin to latitude and longitude within the rotating volume. Large habitats, like O'Neill cylinders and Bernal spheres, typically assign an arbitrary North and South aligned with the axis of rotation, with East and West divided up accordingly. "Sub-surface" levels within the rotating structure are treated as if they were on Earth. Some are better organized than others.

Torus stations commonly lay out the volume as if it were "unwrapped" on a planetary surface, with "overhead" pointed towards the rotation axis and "deck" away from the rotation axis. Internally, torus stations function not unlike submarines or subterranean bunkers, depending on how the internal volume is utilized.

For external observers, such as repair crews, a grid coordinate system fixed to the non-rotating structural frame is typically used. For operations involving the exterior of the rotating volume, the direction of rotation is referred to as "spinward" and "anti-spinward" is the opposite. Some torus stations also use the terms "spinward" and "anti-spinward" because they are convenient for their layout.

If any of this is confusing to your flatlander sensibilities, don't worry, you'll pick it up quickly. Your muse can handle your direction-finding and coordinate-mapping anyway, and most stations provide helpful e-tags and AR guides for visitors.

Gravity Transition Zones

The closer you get to the rotation axis, the less simulated gravity there is. Once you get to the very center of the volume, you're back in micro-g. It's as simple as that. This can screw with your head, though, if you're not adapted or properly trained for it. The important thing is to understand what kind of situation you've got, prepare yourself for it mentally, and—pardon the pun—roll with it.

Most large volume habitats have trams or moving rails that control your rate of "descent" into artificial gravity and help keep you from getting motion sickness. If you're coming from a counter-spun section that is fixed in microgravity, the "hub" is close to the axis of rotation, so it's just a matter of floating to the exchange station and grabbing a handhold or rail when it passes by. The rate of rotation is slow enough that most individuals shouldn't have a problem. If the entire structure rotates with the habitat, the hard work is done for you.

No matter what, be careful about pushing off the walls and getting stuck floating in the internal atmosphere with no easy way back. Well-managed stations will have someone to come help you, or the natural air flow may eventually push you within reach of something, but there's not always a guarantee. Rumor has it that a drunk spacer only managed to rescue himself from such a predicament by using his own piss as a propellant.

A centrifuge on a spaceship or a small torus habitat, on the other hand, will require that you traverse a ladder or ride an elevator in the radial direction. The whole structure is moving, so you don't really have any other options. Unless it's an emergency, move at your own pace. Go too fast and you'll make yourself sick as the gravity gradient increases (or vice versa).

Moving in Microgravity

The baseline human body is derived from millions of years of evolution in Earth gravity. Bipedal locomotion gave us the balance of speed, agility, and the ability to look over obstacles that allowed our species to rise to dominance. In microgravity, those advantages are essentially negated. Moving about requires you to change the way you think and train your body to react accordingly. At least we still have that advantage—the adaptability of the transhuman mind.

Newton's Law reigns supreme up here. For every action, there is an equal and opposite reaction. In terms of physics, motion in microgravity is fairly simple. You decide where you want to go, determine the optimal route, and apply the necessary forces in the correct vectors to arrive at your location. Learning to do all that in your head without thinking about it is the hard part.

If you want to get somewhere fast, push off the opposite wall as hard as you can with your arms or legs. Be careful, though, because you'll have to cancel out that energy at your destination, either through absorbing the impact without rebouncing or a capture device like a rail, handhold, or grapple. You could always make it easy for yourself and obtain personal cold gas jets for reaction control, but true veterans think those are for children, the infirm, or the hopelessly eccentric.

Assuming time is not an issue, the best advice is to take it steady and take it slow. Most habitats in microgravity are adorned on their interiors with rails, handholds, grapple fixtures, and fabric fasteners (like velcro or grip pads). You can use these to traverse the interior with a measure of stability and control while you get your bearings. It is not uncommon for habitats to color code these items as a matter of traffic control and to help maintain orientation. Morphs in a hurry can fly through the center of the volume and are assumed to be capable of navigating themselves.

Use your legs for power and your arms for control and course correction to get the best efficiency out of your body. If you happen to be in a bouncer morph or have prehensile feet mods, you get the best of both. And if you think bouncers and neo-hominids are wiz for micrograv, try out an octomorph sometime.