

Squatting in Space

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Everybody thinks they want to be an astronaut when they grow up. When people learn that space programs are controlled by governments which spend obscene amounts of money on them instead of feeding or educating their citizens, and only take the most privileged members of society, that dream melts, and people get down to the shitty business of survival.

Space travel sucks. Everything about it sucks: it's dangerous, it's expensive, it's unavailable to almost everyone while simultaneously being romanticized to the point where everyone wants to do it.

Not well publicized is the fact that there are defunct craft in space which are lying fallow, just waiting to be refurbished in space and re-inhabited. The reason this is not widely publicized is because space programs don't want the flack associated with throwing away multi-billion dollar hardware and burning it to vapor by letting it fall into the atmosphere at 7,000MPH.

Seemingly as a belated april fools day joke, on april 2nd this year the burnt remains of the space-station Tiangong-1 crashed into the pacific ocean.

That's like buying a Bugatti Veyron, and then instead of changing the oil at 1000 miles, just sending the thing over a guardrail. The sticker price on the Veyron is \$1.7 million. Comparatively, the cost of the Tiangong-1 clocks in at \$3.1 billion. So, really, letting that fall into the pacific ocean is like dumping 1,800 Veyrons over a guardrail before the oil change. And that's over triple the total that have ever been produced anyway.

Over 21,000 pieces of space trash larger than 10 centimeters and half a million bits of junk between 1 cm and 10 cm are estimated to circle the planet. This is a huge problem, because when things are zooming around at 7,000 miles per hour, and they hit each other, bad things happen to delicate scientific instruments, even the ones hardened for space.

The traditional methods are to track these, and or "de-orbit" them, meaning to crash them, so they are no longer in circulation. But better if they were instead used as parts to fix up the abandoned spacecraft to then be inhabited by brave space-steaders. What if we didn't wait for progressive space programs to give their unused tools to the public domain for the world to use, but instead just seized the damn things before the orbits decayed so much they started to catch on fire? One of the most beautiful tenets of the squatting philosophy is that functional infrastructure should not be allowed to sit fallow, if it could be used by others.

If one regards legality to be worth anything, space is technically international waters, and so is the right of every human being to explore as they wish. But much as peasants of old couldn't sail the ocean, because they couldn't afford a ship or crew, modern folks with a desire to travel in space are often barred from it de facto, as they can't afford a spaceworthy craft.

While legally you are a pirate, because space is covered under international maritime law, it's important to recall that there is nobody to come after you: for the same reason governments spend so much to send space vehicles up, they can't afford to send anyone after you to stop you. Flip them all the bird from 26,000 miles up.

Many people and organizations are already gunning to try to turn space into just another market for the extraction of resources and exchange. Let's get in there first, and keep it wild. In 2015 the so-called "Space Act" was signed into US law, violating the Outer Space Treaty of 1967, by allowing claims to be laid to extraterrestrial territories and resources. This was a result of caving to the asteroid-mining lobbyists, who are clearly only daunted by the fact that there aren't indigenous people on asteroids on whom they can commit a genocide like in the good ol' days of colonial resource extraction.

However, we should hardly be surprised: the first piece of space legislation the United States ever passed was in 1958, drafted moments after Sputnik-1 launched, to ensure that space would be treated as a capitalist market, and not a communist playground.

More space stations are going to be built, and they will similarly be abandoned. We need to be ready to pick up the garbage. Space will be the new Jakarta.

There is a point in the stratosphere where there is a peak temperature of about 0 °C just over 50km up. Manned high altitude balloons can reach 0 °C just over 50km up. Manned high altitude balloons can easily reach this spot, and have done so twice recently by the skydivers Felix Baumgartner and Alan Eustace, both setting records for freefall skydives. If they had prepared just a little differently, they might have stayed up there, instead of jumping back to earth.

Industrious folk will use high-altitude balloons to get high enough, close to the mesosphere, and will use booster rockets or use a skyhook momentum exchange tether systems to catapult themselves up by crashing their balloons, and jump the gap to the thermosphere where the abandoned space stations are, and attach home made add-ons with aquaculture farming units, and new models of zero waste permaculture will be developed in real-time adaptive trial runs.

The new shantytowns will be zero-G raft cities in orbit. There will be a new group of people who transcend race and class, and become the space-squatters on jerry-rigged space garbage that has been upcycled. The Uru-nuevo, Xin-Tanka, or Makoko-akotun.

Exploring space has a genuine possibility of testing new economic and social models. You have to truly start from scratch, because there is literally nothing up there. Can you maintain? It is a question of will, technology, and luck. Let's see.

As the development of technology for space travel progresses, the detritus will be filtered through Shenzhen just like all technologies, and we'll have access to last year's technology, which still works just as well.

Better than the state funded space programs, or the commercially funded space programs, the discoveries that will happen by space explorers beholden to overlords will be of a scope heretofore never imagined. We will learn about psychology when people who were not screened spend indefinite periods of time in confined spaces with a small group of people. We will learn about astrobiology when we see how the microbiome of an unsanitized space station develops.

We will learn about nutrition, as people eat in a closed-loop system for long periods of time. New experiments will be run on particle physics, using the vacuum of space, instead of the ultra-high vacuum systems which are so expensive on earth. Art of new media will come to be, and we will be in awe. Most importantly, ideas and discoveries will be made which are so divergent from our present thinking that they will spawn new fields of inquiry. So much will come from what so many will call reckless, and what the truly free will call a testament to the human spirit.

Maybe, the first people to settle on Mars, or Enceladus, or Europa, or on little chips in the Oort Cloud, won't be the agents of a state or of a megalomaniacal billionaire, but just people who decided they wanted to go. They will develop custom genetically modified organisms artificially adapted to live on those places once thought to be too hostile to support life. We will see entire artificial ecosystems of synthetic astrobiology, which will develop both organically, and artificially, but will have started entirely artificially.

Creative solutions borne out of necessity, way beyond the risk profile set by investors or oversight politicians will create new techniques of space exploration and travel. Will things fail? Undoubtedly, but we will learn from that too.

Burt Monroe set records that will never be broken because he didn't have safety gear. This is why people who are sufficiently brave can get to space if they really want.

Let's not forget the flow chart model of science:

Flow chart model of science: Blow Things Up -> Analyze Results: If Yes, Science; If No, Entertainment; If Pretend, Mythbusters

Comandeering From Afar

Now, the number of actually inhabitable spacecraft which have been disused over the years is small, but the number of functional items in space itself is quite high.

There are 98 derelict satellites currently orbiting earth. Most of these still have power from their nuclear radioisotope thermoelectric generators, so they still could be running. Their owners just got bored, and decided to waste taxpayer dollars on something new. If you hacked in, you could get them running again, and do more science. This is the essence of hacking: do more with less.

Satellites are so often abandoned, there is a technical term for it: passivization. Isn't that awful, on like, every level?

The glory of hacking is that we can occupy places/spaces/objects without being physically present. Let's use the unused satellites which could be giving free cell phone service to everyone, and give it. Let's give satellite radio to everyone. Not just to listen, but to broadcast. Let's hijack the working satellites and bring free internet to everyone. Outernet [before it was called Othernet] originally was a company trying to bring free open-source internet to rural areas. You could build a receiver with a raspberry π and a minidish, and be able to download a curated block of the most popular data on the internet every day. But now it is just another cog in the nonprofit industrial complex trying to make people buy their proprietary hardware, and subscription services, while pretending to be altruistic. Let's do better.

The possibilities for this are endless: data havens sending huge volumes of IP down, monitoring drone activity from space, open-source space surveillance of government black sites, pirate radio from space, maybe even a new internet.

Right now, the old iridium satellites are being decommissioned. They are being replaced with new ones, but the old ones still work really well. Some of them are so-called "hot spares" which have never even been used! They were low-orbit non-geosynchronous communication satellites, and what is super cool is that they were a mesh network. You communicate directly to your local satellite, and it bounced the signal amongst neighbor satellites until it gets to the one closest to your intended recipient. Imagine if instead of letting these billion dollar spacecraft just fall out of orbit and burn up in the atmosphere, or crash into the ocean, a group of dedicated hackers used the information that Stefan "Sec" Zehl and Schneider, and their group managed to get by reverse-engineering the system in order to hack it, broke in, and kept them aloft in order to build an open global satellite data network that everyone can use with cheap open source hardware, like the r0ket and rad10 badges.

Of course this brings up the romantic notion of the freedom of radiowhich once existed: anyone who can grab the signal can listen, and anyone who can send a signal can be heard. This was the freedom that radio amateurs of the 20s 30s and 40s felt, before the FCC decided that electromagnetic waves were the domain of the government. Also similar to the freedom of the early days of the internet, and more recently of the various darknets out there. The problem with the

darknets is that they still sit on top of the infrastructure of the internet as it exists, and despite the magic of various subterfuges to disguise traffic, it's becoming harder and harder to maintain open channels online.

I dream of industrious hackers finding whitespace in the broadcast spectrum, and setting up independent uplink/downlink systems with upcycled tv dishes and tinfoil coated umbrellas.

We could stop fighting for "net neutrality" if we just built one of our own.

Take the Data and Run

So let's say that you don't have the stomach for space travel, and you don't quite have the chops to hack into a defunct satellite and get it running again. There is still more occupation which can be done.

The objects in space are still spewing out information, and you can reach out and take it, even the disused ones. NOAA-9 went up in 1984, and you can still hear its transmissions, which have been likened to a drunkard whistling. All you need to do is build yourself a little YAGI antenna out of coathangers and coax cable, or chicken wire and refrigerator tubing, and you can listen. Check the timetable for when it is due to fly over your location and listen to 136.770. If you jack some VHF stuff into the system, you can transmit as well. That's illegal without a license, but let's not let the law stand in the way of good extraplanetary communications.

There is so much out there to be caught. Once you start listening, it's hard to stop. This is why amateur radio enthusiasts are so insufferable in their endless enthusiasm. In the 1995 film *Heat* the character Kelso is pitching a job to Neil, and they have the following exchange:

KELSO: Like I was saying that's not really an estimate, these are exact figures. I have a printout here of the cashflow of the bank for the past few months.

NEIL: How do you get this information?

KELSO: It just comes to you. This stuff just flies through the air. They send this information out, I mean it's just beamed all over the fucking place; all you have to know is how to grab it. See, I know how to grab it.

The elements to doing so are fairly straightforward: you need an antenna, a filter so you are just getting the part you want, and then a computer to interpret the data stream. A linux box with a DVB-S card is sufficient, and there are plenty of tools which will let you tune to get the specifics you are looking for, and dump the contents from a stream into audio, video, and data decoders.

Free-to-air, and Wildfeeds are constantly coming down off of satellites with an incredible amount of content, which you can just grab. Are you still paying for your dish TV subscription? No need. You can grab NASA's feed off of the Horizons-1 satellite at 127°W, You can grab the DoD news off AMC-1 at 103°W, and Al Jazeera english is on Galaxy-19 97°W. The list goes on.

The Meek Shall Inherit the Stars

With all but a dozen or so locations on the surface of the earth claimed and ruled by one government or another, space is one of the next logical options for autonomous zones. Like

everything which is sufficiently different from the status-quo to allow for new paradigms, access to space is being cloistered away from those without influence. However, like everything which has come before, real people will find ways to subvert the systems for the benefit of the people, instead of the rulership.

Don't wait for the gatekeepers to let you play in space. Go when you like.

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