

The Book of Steve

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Prologue: God, why have you forsaken me?

Stacy was twenty-two years old when her mother died of cancer. Witnessing her slow deterioration and painful demise was the hardest thing she'd ever encountered. It wasn't just the grief of watching her mother die that tore her apart - it was the helplessness, the feeling of abandonment. Where was God?

Unable to confess her crisis of faith to anyone she knew, she poured her entire heart into a four-thousand word post on an anonymous forum.

She wrote about her childhood. Her family, how her mother had married a pastor and raised seven kids. She wrote about her accident - the car crash when she was twelve, the paralysis, the surgeries, the miraculous faith healing.

She wrote about the cancer. How often they'd prayed together, how much her poor mother had suffered. Why hadn't the prayer worked?

Why had her God forsaken her?

Her heartfelt stream of consciousness received a single reply, from Russ99.

Lol, god isn't real, idiot. And even if he was, what makes you think he'd care about your problems? Dude's probably got a lot going on.

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Act 1: Genesis

1. StevieNix

In the beginning, Steve created the heavens and the earth. The physics was a bit janky at high speeds and tiny distances, but he just blamed that on Surreal Engine 9 and filed it away as a FIXME. At the scale he was interested in, everything was beautifully Newtonian.

His thesis, “Sexual Reproduction: A Meta-Meta-Heuristic Approach for Genetic Optimization” was the joke of the Computer Science department. His idea of splitting the populations into dimorphic subgroups who would evaluate each others’ fitness was indeed proving to be capable of rapid evolution on inexpensive hardware. Unfortunately, by relinquishing control over the fitness function, he had limited his ability to steer the evolutionary process in any productive direction (eg. trading stocks). Instead, his populations became obsessed with gaming the opposite sex’s fitness functions. They spent the bulk of their time on bizarre mating rituals, or otherwise busying themselves with the proliferation of their genetic material.

Aside from the sexual reproduction mechanic, the other attribute that set Steve’s world apart was the licensing: It was open source. Shortly after the world had stabilized, while he was still experimenting with large reptiles, he announced his world on alt.sim.planets:

Hello everybody out there using Surreal -

I’m doing a (free) universe (just a hobby, won’t be big and professional) with a novel evolutionary strategy. This has been brewing since April and is starting to get ready.

I’ve got reptiles, fish, birds, bugs, and all sorts of flora. To be honest, the reptiles are starting to get a bit out of hand. Does anyone have any ideas for how to balance things out?

Patches are appreciated. Any suggestions are welcome but I won’t promise I’ll implement them :-)

Patches came pouring in. A cocky Siberian teenager helped solve his dominant reptile problem. A bohemian hipster committed his art project: Birds with huge, cumbersome tails covered in beautiful glittering fractal designs. A group of bored grad students held a competition to create the “ultimate scavenger”, resulting in several entirely distinct lineages of crab.

His best friend Gabe even got involved. Gabe’s experiments around increasing the stereo baseline of predators’ eyes resulted in the abomination of the winghead shark, whose absurdly sized cephalofoil was slowly being tamped back into reasonable dimensions by successive generations of relentless evolution.

The universe came to be called StevieNix. As the Benevolent Dictator For Life (BDFL), Steve was responsible for keeping the simulation running. The entire world ran in a corner of the CS department’s break room, on an ever-expanding beowulf cluster of donated hardware that would otherwise have been destined for landfill. His colleagues referred to it as the “rat’s nest”. Things mostly worked okay, thanks to the magic of fault-tolerant distributed consensus algorithms and Steve’s tongue-in-cheek labeling of any glitches as “stochastic events”.

Anyone could fork StevieNix, and many did. StevieNix became the foundation for millions

of games, experiments, birthday presents, and corporate teambuilding exercises. Despite many of these forks running on vastly superior hardware, Steve's master branch had the dual advantages of mindshare and a well-liked BDFL. All patches flowed through Steve, and any patches he liked ended up in his instance.

And so the centuries elapsed. Steve's simulated lifeforms continued to evolve in strange and unproductive directions, nothing useful appeared, and nothing much changed.

Until one day, out in the real world, the star Sirius went out. Then, everything changed.

2. Cancer

Stars aren't supposed to "go out". The astronomy community was concerned. They stared at the spot where Sirius was supposed to be. It wasn't there. They appointed one of their number to dust off his telescope and scan the region. Nothing detectable. Strange.

The global astronomy community consisted of so few people that all notable members would comfortably fit inside a hole-in-the-wall Vietnamese restaurant, if they felt so inclined. They didn't, and scheduled a meeting online. After twenty minutes of technical difficulties, people talking over each other, and attempts to converse with members who had clearly joined the call for appearances' sake only to turn off their cameras and walk away from their desks, Gabe was regretting his decision not to push harder for the restaurant. At least he could have gotten pho.

The following action items were recorded:

- Update star charts (Gabe)
- Press release?
 - Note: Need reassuring messaging, avoid causing panic. Assemble subcommittee. (Gabe)
- Schedule follow-up meeting to brainstorm theories (Gabe)

A significant fraction of attendees also privately recorded the following action item:

- Grant proposal (me)

The astrology community was substantially larger and better organized. They already had a well-established theory around the disappearance of stars, and the extinguishing of Sirius was widely and excitedly interpreted to herald an era of change driven by inner reflection. The general public learned about the disappearance of Sirius through their horoscopes, long before the astronomers' press release subcommittee had any hope of being assembled. As astronomers neither read horoscopes nor contributed anything of value to the astrology community, the intellectual output of the two groups remained isolated until Gabe happened to bump into his upstairs neighbour.

"Gabe! So good to see you! How have you been?"

"Oh, hey!" Gabe responded, mentally flitting through reasons to exit the conversation. "Yeah, pretty good, tired mostly."

His neighbour nodded knowingly. "Cancer, right?"

Gabe jolted a little. "What? I sure hope not!"

"But you were born mid-July, no?"

Gabe relaxed and let out a sigh. "Right. Yes, Cancer."

"I knew it. You're always so empathetic. I can tell by how deeply connected you are to your emotions. I can always tell, you know. You couldn't be anything but a Cancer."

Gabe resigned himself to the conversation. "So what's up with Cancer these days?"

His neighbour nodded again and furrowed his brow. "Mmm, yes. Cancer has a strong association with Sirius. The darkening will have profound implications. Sirius is your beacon, your source of spiritual guidance—"

“I guess you could say it’s pretty serious, eh?”

His neighbour glared at him. “Whenever a star darkens, it’s pretty serious.”

Gabe blinked.

“Whenever a star darkens?”

His neighbour nodded, more quickly this time.

“How often does a star darken?”

“Hard to say, maybe every century or so? It seems to be happening more often lately, must be something going on in the heavens.”

Gabe stood rooted to the spot, bag half slung off his shoulder. He knew better than to take his neighbour seriously, but it didn’t seem like he was joking.

“What was the last star to darken?”

“Procyon, around eighty years ago. Don’t you remember that? We were all thrilled, Procyon had been causing disharmony for centuries.”

Gabe slowly unfroze and started shuffling to the front door of the apartment building. “Yes, Procyon. Yup. First Procyon, now Sirius. Right. OK, good talking to you!” He offered a distracted, halfhearted wave, opened the door, and practically ran all the way to his office at the University.

3. “Research”

Trounced by a bunch of zodiac enthusiasts. What an embarrassment. There weren’t enough hens in the world to lay the cumulative quantity of egg on the astronomers’ faces. Truth be told, the field had languished during the Great Peace. While their primitive ancestors had once gazed upon the stars and seen the final frontier - an infinite array of worlds ripe for the raping and pillaging - modern enlightened folk had no such interest in conquest.

The field of astronomy, like the rest of academia, had slowly ossified into an elaborate economy of prestige and grant grubbing. The occasional student unfortunate enough to enter the field spent several years taking “classes” under a rotating cast of senior academics, during which he learned the basic art of memorizing accepted ideas and paraphrasing them in sufficiently novel ways so as to avoid triggering anti-plagiarism software. A successful student was one who flattered, but never out-shone his academic superiors.

After the years of classes, should the student wish to continue his academic career, he would seek a supervisor. As there was precious else to do with an astronomy undergrad degree, most did. Then, the “research” would begin. A typical research project involved studying the intersection between some aspect of astronomy and the interests of some minority group, eg. “Red Dwarves and the Short Statured Community: A Critical Analysis of Terminological Impact”. The output of the research project would be a thesis - consisting of a survey, some basic statistical tests, a self-flagellating discussion, and several hundred pages of literature review.

If the student successfully wrote and defended his thesis, his next step was to become a researcher. This was a similar role but with less autonomy. Researchers often joined research groups - teams of individuals, collaborating on such heavy-hitting topics as “The Role of Cultural Contexts in Shaping Scientific Paradigms in Astronomical Outreach: An Intersectional Perspective on Star Party Planning and Telescope Accessibility”. The primary function of the research group was to convince Government and Non-Government Organizations to supply them with grant money, and as a young researcher ascended the ranks of the research group a steadily increasing amount of their time was spent, not on producing the “research” itself, but on convincing the government that the research was extremely important and thus worthy of being funded.

After decades or (more likely) centuries as a researcher, a successful researcher would find himself at the penultimate stage in his career - as a tenure-track professor. Here, his role was almost exclusively to raise grant money, with a smattering of teaching and supervision. Perform this job adequately, and the astronomer could obtain the holy grail of the astronomy career path - tenure.

Tenure was effectively retirement. So long as the tenured professor continued to both meet his university’s extremely lax teaching/supervision requirements and avoid accidental death and execution, he could spend the rest of eternity doing whatever he liked. In almost all cases, what the tenured professor liked doing was “research”. And so, the astronomical literature continued to grow, and the grants continued to flow.

At no point, in this career of potentially infinite length, was he ever rewarded for looking through a telescope. So he didn’t.

When Gabe reached his desk and fired up his computer, he realized that he didn’t even have his own telescope. He was pretty sure the university had one, but he didn’t have the foggiest

idea how to use it. With a sigh and a deep burning of shame, he navigated to the newspaper archives and searched for the words “horoscope darkening”.

4. Degrees of Darkening

“Whatcha doing?”

Steve had stopped by Gabe’s office to consult his opinion on important lunch-related matters, but became distracted by the clutter on the screen and the frenetic manner in which Gabe was typing into a spreadsheet and clutching his hair.

“FIVE stars, Steve! FIVE! And those are just the ones visible to the naked eye!”

“Hm?” Steve’s internal optimist suggested that “five stars” may be an allusion to the class of restaurant that his friend had in mind, but his internal realist pointed out that the rest of Gabe’s pronouncement didn’t make sense in that context - and plus, Gabe was more of a “two stars” kind of individual. On balance, Steve could tell that lunch wouldn’t be forthcoming and was beginning to regret his choice of dining partner.

“Five stars have disappeared from the night sky in the past thousand years. Look!”

He gestured across his spreadsheet at a haphazard pile of numbers, notes, e-mail snippets and URLs which, while Steve found incomprehensible, he could easily judge as an inappropriate collection of data for a spreadsheet. Steve nodded. “Ah yes, I see.”

“The astrologers have been all over it for centuries, and no one bothered to tell us until - well, it doesn’t matter. And look, they’re all in the same quadrant!”

More gesticulations at the chaotic table of seemingly random data artifacts.

“Mhm.”

“I need your help”, Gabe pleaded.

Finally, something sensible. “Yes, you might”, Steve agreed.

“I need to find all the stars that have disappeared that aren’t visible to the naked eye. Can you help me program the telescope?”

Steve spent a barely perceptible moment mourning his afternoon plans. They had involved a hearty lunch, a light nap, and a VR stroll in his favourite StevieNix garden where he’d been working on a bipedal fork of the great apes. But it wasn’t every day that a colleague asked for a favour, and if the state of the spreadsheet was any indication, Gabe was in over his head.

“Sure, no problem. Where’s the manual?”

—

Imagine five trees catch fire in a forest. If you are standing some distance from the forest, all the individual burning trees would appear to be close together - perhaps taking up only a couple of degrees in your field of view. You would feel relatively unthreatened by the fire, and your attitude upon noticing the burning trees may be akin to “how unusual, someone ought to do something about that”.

Now, imagine the same five trees catching fire in the same forest, except you are standing much closer to them. The first major difference is that they would be spread out more widely across your field of view, taking up more degrees. In the extreme limit, if you were right in

the middle of the burning grove, the affected trees would take up 360 degrees of your field of view and your attitude would be closer to abject terror.

The five disappeared stars took up twenty degrees of the sky. There was cause for concern.

—

Programming the telescope turned out to not be that hard in the end. The telescope's manual was located, and Steve was pleasantly surprised to find that its manufacturer had designed a fairly intuitive programmatic interface. The hardest part was figuring out how to turn it on and log in. In a couple of hours, they had the focus set to infinity and the telescope was panning around on demand.

In order to not have to scan the entire night sky, they drew a bounding box around the region containing the five known-disappeared stars - twenty degrees up, twenty degrees across. They added another ten degrees on each side for good measure, making a total of forty degrees in each dimension. The university's telescope had a fairly wide field of view of 1 degree, meaning the entire region could be captured in 1600 frames. At 15 seconds per frame, it would take a little under 7 hours to scan the whole area. Steve and Gabe uploaded the code to the telescope, sent one of Gabe's unfortunate astronomy students up to clean the lens, made tea, and settled in to wait for nightfall.

There was no immediate task at hand, and neither Gabe nor Steve were fond of nor skilled at small talk. Thus, they sat in a silent stalemate and sipped their tea - Steve wishing Gabe would address the elephant in the room and Gabe wishing Steve wouldn't.

After a few minutes of uncomfortable silence, Steve disregarded both of their wishes and asked the big question. "What do you think is causing it?"

Gabe looked down at his cup and didn't answer.

"Stars can't just run out of fuel this quickly, right? You get some advance warning?"

"Yes, it's usually either very drawn out or very dramatic" Gabe responded.

"Can stars become black holes without first going all supernova?"

"It's theoretically possible, but there's nothing near us that's big enough. The closest star that could even go supernova is Betelgeuse and that's six exameters away."

Steve thought back to his garden in StevieNix. There was a Betelgeuse there too, but it would never go supernova. The entire night sky was an illusion - millions of carefully placed point light sources, modeled after scans of their own sky taken tens of thousands of years ago. He could make Betelgeuse vanish with one change to a config file.

"Could it be... Are there any signs that this universe could be..."

"StevieNix?"

Steve laughed nervously.

"No. No offence, Steve, but our universe isn't a stack of hacks in the corner of the CS department. For starters, our physics actually makes sense."

Steve didn't take offence. He could tell that his friend was getting agitated, so he changed tack to the only other plausible explanation.

“So, aliens then?”

“Yeah”, sighed Gabe. “Aliens then.”

5. Observational Anomalies

Steve and Gabe took turns napping while the telescope relentlessly panned, tilted, and captured images. To keep himself awake, Steve wrote a simple script to stitch together the 1600 images, taking into account planetary rotation. When this was done, he set a breakpoint in StevieNix to pause it when the sim planet reached the same position as their own. This took six months in sim time, but only a few seconds in real life. He then took the exact same images in sim and stitched them together, thus giving himself a baseline for comparison.

At 4am, the last frame came in from the university telescope. Hurriedly, he ran his stitching script, overlaid the real life image on top of the StevieNix one, and ran an image diff. After a few attempts, the results were conclusive. He roused Gabe.

“Seventeen.”

“Seventeen?”

“Seventeen stars, all contained within a thirty-three by twenty-six degree bounding box.”

Gabe rubbed his eyes. “This is comparing against the StevieNix sky, right?”

Steve nodded. “I have no idea where to find the source data, so this was the fastest way.”

Gabe rolled out of bed. “We can’t be sure until we’ve compared it to an actual scan. No offence, but half those stars could be easter eggs or wedding proposal gimmicks or whatever.”

Finding an actual scan of the night sky was harder than it should have been for a tenured professor of astronomy, but Gabe had already made some progress on this front in his frenzied panic earlier. It wasn’t long before an appropriate image had been located, rotated, and cropped to fit the same area. They ran the image diff.

Seventeen stars were missing.

The two exhausted friends leaned back in their chairs and alternated between staring dumbly at the screens, and at each other.

Eventually, it was Gabe’s turn to break the silence.

“What now?”

Finally, a question Steve could answer. “Coffee. And breakfast. Let’s go.”

—

Although the journal editor could plainly see the vast and terrifying implications of their paper, “Observational Anomalies: The Sudden Extinction of Seventeen Proximate Stars”, there was still a process to be respected. The average paper went through nine rounds of peer review prior to being accepted for publication, during which time any and all originality was carefully sifted out, lest the paper interfere with another academic’s sinecure. Following a frank behind-closed-doors discussion with the editor, Gabe and Steve uploaded their paper to a preprint server and alerted the press through various backchannels - mostly by tagging science journalists on social media.

—

Through the tireless work of the Astrology community, a sizable fraction of the general public was already aware of at least some of the darkenings. Of those people, most were

vaguely skeptical of the idea that this was a routine event - little cause for alarm, outside of astrological considerations - but had assumed that if there was anything to worry about, the government would take care of it.

The prevailing sentiment inside the government was that, while the star darkenings were unusual, it was not their problem. As government employees, they were accountable to - at most - widespread public outrage (and usually not even that). In the absence of any immediate threat to their livelihoods, all individual government employees were happy to leave the star darkening question to the astrologers and the scientific community - who, up until the publication of *Observational Anomalies*, hadn't the foggiest idea that this was going on at all.

Thus, public unease continued to stack up over the centuries, like dry tinder, until the popular science articles discussing *Observational Anomalies* took a match to it.

—

A hundred thousand year planetary peace doesn't arise without cause. A significant contributing factor was the Federal Department of Social Emotional Calibration. The FDSEC's stated goal was the eradication of all anti-social personality traits, chief among which were aggression and ambition. This was accomplished through various means, including by exerting influence over the embryonic selection process, re-education of people exhibiting anti-social traits, and - in the extreme - execution.

Suffice it to say, the minority of the public who reacted with hostility to the news of the likelihood of an advanced star-extinguishing alien race in their neighbourhood, kept it to themselves. The unburned centuries' worth of unease on the star-darkening question conflagrated in an extreme, public flame of rapturous excitement.

6. Murdoch

To call, or to knock? The question divided the planet. Gabe and Steve were not above the question.

“If we’re going to fly all the way out there”, explained Gabe, “we would need to build interstellar communication to talk to the ship. So if we’re going to build it anyway, why not give them a call first?”

“Firstly”, responded Steve, “we wouldn’t necessarily need interstellar comms. Did our ancestors have intercontinental communication when they sailed here? No, they just set off.”

Gabe tried to respond, but Steve cut him off.

“And secondly, even if we did build interstellar comms, who’s to say that the Dysoners could even receive them?”

Although there was no definitive proof yet that the aliens even existed, let alone that they had constructed Dyson spheres around the seventeen stars, “Dysoners” had become both the accepted explanation and nomenclature.

“I should think” responded Gabe “that any civilization advanced enough to construct Dyson spheres would be able to figure out our comms - particularly if we weren’t making an effort to encrypt them.”

Not to be deterred, Steve continued to repeat Team Knock talking points. “Just think of the lossiness of voice communication without a shared language and cultural understanding! They’d be trying to explain their art, or advanced scientific knowledge, and we wouldn’t even have the words to understand them! Some things just have to be understood in person.”

“Has it occurred to either of you”, interrupted a deep voice with a heavy Irish accent, “that announcing our presence to an alien race may be the stupidest idea ever to grace the thoughts of our godforsaken species?”

Gabe and Steve swivelled around in their chairs and immediately recognized the source of the intruding voice. Declan Murdoch, founder and CEO of Murdoch Heavy Industries. One of the oldest people alive, and frequently the richest depending on stock fluctuations (he would occasionally trade places for the #1 spot with a Brazilian entertainment mogul). Murdoch had not only solved the considerable engineering problems behind sustainable fusion energy early on in his career, but had also quickly driven the cost of electricity low enough that it had never been economical for a competitor to emerge. Practically all energy generation on the planet lay in the hands of a single privately owned monopoly, controlled by the person standing in the door of the CS department breakroom.

“Uhh”, offered Steve.

“Can’t say that it has”, tried Gabe.

“You mean to say”, continued Murdoch, “that neither of you exalted professors ever thought, for the tiniest fraction of a second, that a civilization capable of controlling the most powerful objects in the universe might not want to be our friend?”

Gabe wanted to object that Murdoch was exaggerating and that there were certainly more powerful objects in the universe, but felt that that would be to miss the point. Truthfully, the notion that the Dysoners may not be entirely friendly had indeed flashed across the

minds of both professors, but being well socialized respectable persons, they had simply ignored it. To call or to knock was the Overton Window, and to step outside the Overton Window was to defenestrate oneself from polite society.

Murdoch had no such qualms. He moved into the breakroom, shut the door behind himself, and glared at the two occupants. “You two are the authors of the Observational Anomalies paper, correct?”

Steve and Gabe both nodded, wordlessly.

Murdoch swung a chair around and sprawled into it. “I thought it was a pretty decent paper myself, but certainly a bit light on the details. No word on the timeline other than ‘in the past forty six thousand years’. I had to turn to the bloody horoscope archive to get some sense of the rate here. You don’t happen to have the raw data, do you?”

“We do”, offered Gabe meekly, “but I expect you’ll be disappointed.”

“Last time anyone bothered to scan the night sky was forty six thousand years ago, wasn’t it?” guessed Murdoch correctly. “Feckin’ academics. Absolute useless wankers, the lot of you. Anyway, I need your help.”

7. The Lynchpin of Collaboration

Half an hour later, Murdoch was starting to regret his decision to enlist the help of the two professors. His attempt at exhortation had been immediately derailed straight back to the Call vs Knock debate which he had interrupted. The momentary shock of this industrial titan showing up to recruit Steve and Gabe had vanished upon them realizing the opportunity to advance the positions of their hobby-horses in front of an enlarged audience.

“All I’m saying”, Steve droned passionately in a way only a seasoned university professor could achieve, “is that collaboration best happens in person. If we really want to make the most-”

“That’s enough!” interrupted Murdoch. “Don’t either of you understand game theory? Sure, maybe for whatever stupid reason the Dysoners have any interest in our art or science. Unlikely, but you can have it. Let’s assume that ninety-six percent of them are the la-la-kumbaya intellectual care bears you lot think they are. It doesn’t matter! Think about the other four percent. In any situation where two or more people collaborate, a prisoner’s dilemma opens up. An ecological niche, for psychos and sociopaths to exploit the collaboration of everyone else. Collaboration breeds parasites and predators. It’s a fundamental law of the universe, like F equals ma .”

Steve and Gabe stared blankly at their irate guest as he continued his monologue.

“Think about it. Why do you pay for things at the store? Why don’t you just steal whatever you want? Wait - don’t answer that question, you obviously don’t steal things because you, along with just about everyone else on this planet, are a couple of effete, ineffectual compliance artists who would chase the shopkeeper down to throw money at him if he left the store unattended. But think about the remaining four percent. Why don’t they just steal whatever they want? Why don’t they kill every shopkeeper in town, seize all their wares, and jack up the prices by a factor of ten? You only need one psycho to ruin everything for everyone.”

The thought had never occurred to Steve and Gabe. Obviously, on a macro level, the answer to “why pay for things?” was “because if everyone didn’t pay for things, no one would provide them”. Ditto for murder. But on an individual level?

“Violent retribution”, answered Murdoch, furiously tapping the table with his finger. “The threat of violent retribution is the solution to the prisoner’s dilemma. It is the lynchpin of collaboration, the cornerstone upon which all civilization is built.”

Steve thought immediately of the collaborative open-source community surrounding StevieNix, and almost started laughing at the idea of enacting violent retribution against people who submitted substandard pull requests.

“And before you start going on about your open-source ethos”, continued Murdoch pointedly, “realize the difference. Sim planets are an infinite resource. Real life planets made of dirt and carbon and whatever else are not. You’ve already acquiesced to the socially maladjusted by giving StevieNix away, and it cost you nothing because copy/paste is free. You can’t copy/paste our solar system - you can only take it by force, likely by exterminating its current inhabitants.”

“Besides,” he abruptly pivoted, betraying the unplanned nature of his tirade, “what makes you think you’re going to be dealing with the hippy dippy care bears anyway? This is

interplanetary politics we're talking about! Who do you think hangs out at the top of the alien power structure, care bears or cutthroat amoral sociopaths driven by nothing but pure, unsullied lust for power?"

He paused for breath, and concluded his rant. "Bottom line, if you want to trade with people, especially people you don't know, you or someone you trust have to be willing to enforce the rules of the trade with the tools of the inquisition or you'll soon find yourself and your entire civilization penniless and naked, face-down in a canal."

The last part went a bit over their heads, but Steve and Gabe got the general gist of his argument. "So you're saying", Steve attempted to paraphrase, "that the only way we can collaborate with the Dysoners is if we have the technology to hurt them?"

"Not just hurt them", responded Murdoch, "but to destroy them. To annihilate their civilization so thoroughly that not one alien heart is left beating, not one building left standing, not one molecule left fused together. And even then, it won't be enough. The means are necessary but insufficient - what we really need is the will. We need absolute merciless unhinged killers in our back pocket. Only then, would the threat be credible."

Steve and Gabe looked at each other, and back to Murdoch. Steve wondered how many laws Murdoch had just broken in delivering his diatribe, and hoped that no passers-by had overheard any of it. He was grateful for the rat's nest's loud cooling fans.

"So you came to... us?"

Murdoch sighed. "Yes, and honestly it's beginning to strike me as an outrageously stupid idea. But here's the problem, right? Building the technology is hard enough, but where are we going to find the killers? Outside of a few people in government and a handful of us old-timers, we've done gone and eradicated all the genes for the exact personality traits we need. Aggression. Ambition. Absolute psychotic lunacy. Of the five hundred million people alive, I bet there are less than a thousand who could do what would need to be done. Plus, you'd be hard-pressed to actually locate a single one - it's not exactly something you'd tick off on a survey, is it?"

Gabe laughed. "How willing are you to destroy an entire alien race? Very willing, willing..."

Steve nodded. "Right, and I can't imagine your 'violent killer breeding program' would gain much popular support."

Murdoch smiled. At last, he was getting through to them. "Exactly. Hope you enjoyed your hundred thousand years' peace everyone, now we're going to genetically engineer a vast army of demented murderers."

"So what do you propose?" asked Steve.

Murdoch pointed his chin towards the rat's nest, humming in the corner. "How's the AI in your sim coming along, Steve?"

8. The Fall

The hardest part about creating an artificial intelligence is creating an artificial intelligence. The second hardest part is making sure your artificial intelligence doesn't kill you. This problem is called "alignment", and is particularly important if you plan on selecting your AI for psychotic warfaring personality traits before arming it with enough firepower to destroy seventeen solar systems and the entire interstellar civilization that colonized them.

But that was a problem for later. For now, Steve's job was to create the AI in the first place.

He took a sabbatical and moved in to a purpose-built lab in Murdoch Heavy Industries' research division. Gabe, although not essential to the StevieNix project, tagged along for moral support. Upon moving in, Steve cloned a fresh copy of StevieNix and uploaded it onto a state-of-the-art datacenter of unfathomable compute power provided by Murdoch. Then the fun began.

The obvious candidates were the great apes. He'd spent a great deal of time perfecting their hands, which were vastly better suited to tool use than any appendages of the other species. With some minor adjustments, he managed to make them walk upright in the manner of his own people - this allowed them to carry tools (primarily weaponry) around with them as they walked.

The brain was the hard part. While enlarging their brains was rather trivial, getting them to develop anything akin to intelligence was another story.

When genetic engineering, Steve found it easier to think from the perspective of the genes than of the organisms themselves. He switched his thinking to a mode where the genes were the real agents of progress, and the organisms were just the tools that the genes used to ensure their reproduction. A gene for greater intelligence would be successful if and only if the resultant organism used that greater intelligence to spread the gene, rather than to indulge in esoteric hobbies or pine about the state of the world (many such cases arose). Combinations of genes became critically important, and as the number of combinations increased, progress slowed down. Steve was in over his head.

"What if", Gabe suggested, "instead of trying to genetically engineer them directly, you engineer their environment?"

"What do you mean?" asked an impatient and exhausted Steve.

"Lean harder on the evolution mechanic. You're barely using any of this compute power. Spin up a couple million of these monkeys, and subject them to brutal evolutionary pressure. Come back in a week. If any of those poor apes are still alive, I bet they'll be pretty smart."

It wasn't a bad idea. Steve felt bad for his apes, but not bad enough not to try it. But what would qualify as brutal evolutionary pressure?

Steve settled on snakes. For starters, it was a lot easier to make a scary snake than a sentient monkey. He produced endless varieties of snakes. Snakes that hid in trees. Snakes that swam. Venomous snakes. Gargantuan snakes that could wrap around a monkey, crush it to death, and swallow it whole. Snake predation became the number one killer of his apes.

The changes were small at first, but he watched them compound. First, the apes developed extremely keen vision, with full colour and depth perception. Then, they developed something incredible - a primitive language, which they used to communicate about the presence or

lack of snakes in various areas. Steve sent more snakes. The apes responded by developing an entire theory of snakes - which ones were venomous, which ones were harmless, where and when you might encounter them, etc. Every young ape was taught the theory of snakes, and upon ingesting the body of serpentine knowledge, they wouldn't have to experience the dangers of the snakes themselves to know how to behave.

Steve learned their primitive language, and as he listened to one of the snake theory lessons, he made a profound discovery.

“If you see a brown snake, run away” explained the elder ape. “What if I see a very little brown snake?” asked the young ape. “The very little ones are the most dangerous, as they inject all their venom at once.” “Can't I just trap it or drop a rock on it or something?”

Steve paused the sim and sat in slack-jawed wonder. The younger ape was imagining himself encountering a snake. He was running a hypothetical simulation of himself in his own brain. He was self-aware. The snake gambit had worked - his apes had achieved sentience.

9. The Dogs of War

There was a wide gap between “sentient enough to reason about hypothetical snake encounters” and “capable of winning an interstellar war without destroying the civilization that birthed them”, but Steve was nonetheless pleased with his progress. The next hurdle, however, proved to be even greater: Aggression.

Many of the species in StevieNix exhibited a basic form of aggression. Males would often fight each other to control access to females or food, and this was certainly true of the great apes. The design brief, however, wasn’t for a species aggressive enough to kill for mere mating access or resources, but for a species aggressive enough to kill out of sheer love for their supernatural creator. This called for divine intervention, so Steve intervened.

His first many attempts at genetically engineering aggression failed miserably. Senseless bloodshed overwhelmed any primitive societies his beings had managed to form. Small genetic tweaks often resulted in family members killing each other on whims. At one point, the entire species was so overwhelmed with violence that he elected to wipe the slate clean in a global cataclysm and start again from the least aggressive seed population he could find.

As usual, the sexual reproduction mechanic was thwarting him. By far, the most efficient way for an aggression gene to ensure its own reproduction was to convince its organism to channel said aggression into directly propagating its genetic material. This resulted almost invariably in the larger, stronger males of the species forcing themselves upon the smaller, weaker females. While this strategy was evolutionarily successful from the perspective of the genes surrounding aggression and strength, it was otherwise an unmitigated dysgenic disaster.

The entire idea of sexual reproduction was to accelerate evolution by allowing the organisms to evaluate each other and combine their genetic material with those deemed most fit. The freedom to evaluate the counterparty’s fitness and select with whom to reproduce was foundational, and typically drove the species towards greater intelligence, greater health, and (in Steve’s opinion) greater aesthetic appeal. The high aggression subgroups which lost that freedom quickly and relentlessly degenerated into stupid, unhealthy, ugly brutes who channeled any and all efforts into copulation.

“What do I do now?” he asked Gabe.

Gabe tilted his chair back and stroked his chin. “It is a tricky one, isn’t it? I told you, sexual reproduction is more trouble than it’s worth.”

“Not helpful, Gabe.”

Gabe set his chair back down and a wry grin spread over his face. “You could try taking a leaf out of Murdoch’s book?”

“What, give them fusion reactors and see if that solves the problem?”

Gabe laughed and put on his best Irish accent. “Feekin’ academics! Haven’t you heard a word I’ve said? Fear of violent retribution! It’s the cornerstone upon which all civilization is built! It’s the lynchpin!” He thumped the table for effect.

“Huh”, responded Steve. “Hmm.”

His initial efforts at genetically engineering violent retribution against males who engaged

in forced reproduction failed almost immediately. Violence, he discovered, comes at high cost to the organism. Genes that endowed their male bearers with a propensity to engage in violent retribution soon found themselves bred out as their organisms perished in their serial violent encounters. He needed something else.

Finally, as he once again switched his mode of thinking to the perspective of the gene, he hit upon a possible strategy. The survival of the organism, he remembered, was only of tangential importance. The survival and propagation of the gene was the utmost priority.

He designed a gene that, while mostly inert in females, encouraged its male bearers to engage in violent retribution solely against violators of their female relatives. As there was a high probability that those female relatives would carry the same gene, it no longer mattered as much if this violent retribution led to the possibility of the male organism perishing - the gene would live on in the females, and be passed down to her (hopefully fitter now that she could mate-select) offspring. By ignoring sexual violence against females to whom he had no relation, the organism could also limit his lifetime violent encounters to a level that gave him a chance of reproducing as well. This was vastly more advanced than the primitive mating-related violence found in other species, and Steve was quite proud of himself for having come up with it.

The introduction of this gene led to centuries of carnage. In some subgroups, it failed altogether and they regressed to the simpler, dysgenic reproduction strategy. In the others, it resulted in generations of blood feud. Upon a female being violated, all of her male relatives would retaliate against the transgressor, as designed. The second-order effects, however, were substantial.

The now-perished transgressor's family would typically choose to retaliate. In most cases, an intergenerational vendetta would arise. Each family recruited friends and allies to help exterminate the others. The conflict would often continue until one of the two families had been entirely eradicated. The survivors, understanding the consequences, tended to avoid the violent reproduction strategy and policed their own ranks to discourage it.

Thus, the first love-motivated warfaring civilizations arose.

When Steve reported this result to Murdoch, Murdoch leapt out of his chair and punched the air. "You've done it, kiddo! The dogs of war have been bred!"

10. Damage from a distance

Capacity to inflict damage from a distance seemed to be an important capability in ape warfare. One of the tribes had developed an ingenious mechanism of using a bendy stick and a string to hurl another, sharpened, stick at great speed. Quite a lot of thought appeared to have been put into the details of both sticks, and Steve, Gabe and Murdoch watched with fascination as the effects of this innovation played out on the simulated battlefield.

“The bendy-stick apes are going to eat their lunch”, predicted Gabe.

“I dunno”, responded Steve. “The throwing sticks have been around a lot longer. Plus, they do way more damage upon impact.”

Murdoch declined to comment.

It didn’t take long for Gabe to be proven correct. The greater range of the bendy stick/pointy stick combination was the decisive factor. In under a sim hour, the bendy stick people had annihilated the defences of the throwing stick people, and were hunting down stragglers. When caught, males of the throwing stick tribe were either immediately killed with equipment ordinarily reserved for cutting down trees, or - if they appeared young enough - bound by their wrists, beaten and castrated, presumably for use as slave labour. The females of the throwing stick tribe were distributed as prizes of war among the males of the bendy stick tribe, who immediately set about consummating their victory in the blood-soaked streets of the now-ransacked throwing stick village.

Steve and Gabe winced. Murdoch stroke his chin thoughtfully. Gabe turned to face him.

“We want to give these things weapons? In our world?”

“That’s the idea, yes.”

“That’s the least sane idea anyone has ever had.”

“I’ve had less sane ones.”

“Did neither of you see what I just saw?” Gabe exploded, standing up abruptly and striding out of the room.

Steve and Murdoch remained silently at the table. Steve chewed on his pen. Eventually, he spoke.

“I’ve got to admit, Gabe has a bit of a point.”

Murdoch shrugged. “Steve, just step back for a moment and look at what you’ve achieved. In the past six months, you’ve taken these monkeys from a thoroughly basic, boring, present-oriented live / eat / root / die existence to sentient beings who can mass produce weaponry, train in groups, premeditate battle plans, and then carry those plans to fruition. That’s incredible! Not just the intelligence, but the future orientation! I get that you feel bad for the stick throwers, but you’ve got to let it go.”

Steve blushed. Murdoch had complimented his work! Murdoch continued with another of his famous rants.

“Firstly, the stick throwers had it in for the bendy stick people anyway. It was kill or be killed. Secondly, and this applies to our universe as well, you’re either in the stick throwing

tribe or the bendy stick tribe. There's no third option! You didn't see a flower picking tribe, did you? Why do you think that is?"

Steve knew why it was. Any tribe that was not prepared to wage war was immediately wiped off the map by a tribe that was.

"So what's your plan for making sure these apes don't turn us into the stick throwing tribe?" he asked.

"Ah yes, I was getting to that. I have another ask. We need to be able to read their minds."

Steve laughed. Murdoch stared at him, deadpan. Steve stopped laughing. Murdoch was serious.

11. A Plaything for the Gods

When Steve received the design brief, it was even worse than he'd thought. Not only was he supposed to read their minds, but he had to influence them as well! He strode around his office, fuming. Gabe, who had composed himself since the previous conversation, sat on the couch and lent a sympathetic ear.

"Changing requirements!" Steve cried. "Every goddamn time! Why can't people just figure out what they want and ask for it up front? Why do they have to ask for one thing, then ask for something completely different once that first thing is delivered?"

"Oh, I know", agreed Gabe, who didn't really (no one ever asked him for anything).

"These minds are insanely complicated! We're talking billions of parallel matrix operations, all bathed in a sea of hormones! It's a miracle that it does anything! How's anyone supposed to understand it?"

"I guess he just thinks really highly of you", Gabe offered, consolingly.

Steve slumped into his chair. "It's just impossible. Six months' work, down the drain. I'm going to have to start again from scratch, with this stupid requirement baked into the universe somehow."

"Surely not! There must be some way to hack it in! So the problem is that the thought space is too big, right?"

"Yes. Way, way, way too big."

As an astronomer, Gabe had some familiarity with big things - for instance, the space of potential research questions was endless, but the space of research questions that would attract grant funding was substantially smaller.

"Can you focus on just one part of the brain?"

"They think with their whole brains, Gabe. And their bodies too."

"What if they didn't?"

"Huh?"

"What if you forced all their thoughts through a bottleneck, and just figured out how to understand and manipulate that bottleneck?"

Steve's initial reaction was "they would be profoundly mentally impacted", but realized that there was a candidate bottleneck - the language center.

Mapping the language center was relatively straightforward. He picked a subpopulation and recorded their neural activation levels and hormonal breakdown every time they spoke. Over time, he built a huge corpus of brain activity and associated language. Then, he trained a simple classifier to map the brain activity when the ape was speaking to the words that came out of his or her mouth. Because each ape's brain structure was slightly different, he had to train a fairly coarse foundation model, and fine-tune it on each ape.

The result was a program that allowed him to hear the words they spoke without actually listening to the sounds, but by watching their brain activity. A neat party trick, but he'd been told to read their minds, not their spoken words.

He started running his brain/speech classifier on the apes' brains while they were not talking. Every time he tried, the results were garbage. Again and again, for months, he listened to garbage. He increased cosmic radiation to try to get more mutations, but instead of new neural patterns he mostly got tumors. Then, one day, his persistence paid off.

In a remote tribe of nomadic animal herders, he found an adolescent boy whose language circuits activated in meaningful, coherent speech patterns without the words necessarily coming out of his mouth. It was remarkable. Nothing externally seemed wrong with the boy. He didn't seem mentally handicapped in any way - a little more reserved than the others, perhaps. Mainly, he just thought in words.

Steve tried an experiment. He translated the words "I should pick up that rock" into brain patterns, and forced the boy's neurons to activate accordingly. The reaction wasn't immediate - after Steve sent the thought, the boy's brain continued and mulled it over. "That's a neat rock", rationalized the boy. He walked over and picked it up. Steve's jaw dropped.

For the very first time, his influence extended beyond the environmental and genetic. He could reach in and play with the thoughts of one of his beings.

Steve wondered how the boy had thought before learning language, or how he would have thought had language not been developed. Intriguing. He should have to research the topic at some point. For now, though, he killed every male of reproductive age in the boy's vicinity and crossed his fingers that his natural instincts would inspire him to repopulate the tribe and the surrounding regions. It worked.

The mental bottleneck of playability was more or less evolutionarily neutral. It had some advantages - for instance, for whatever reason, the process of thinking in words seemed marginally more likely to result in novel ideas. It also had disadvantages - for example, playable characters would sometimes lapse into pathological thought loops during which they got stuck in the same conversation with themselves over and over, while their surrounding non-playable characters occupied themselves with expanding their respective lineages. It was also a genetically brittle trait - thousands of genes appeared to be involved, and if they didn't combine perfectly, the resultant ape wouldn't be playable. All in all, playability was an evolutionary wash - which meant the genes involved wouldn't become widespread without divine intervention.

Steve intervened. Everywhere the trait spread, he advanced a front of death. Breeding age males dropped dead by the thousands. Apes who weren't showing signs of playability by one year of age were ruthlessly culled. The ape population of StevieNix plummeted, and Steve began to worry about the loss of genetic diversity in other domains. Eventually, after generations of destruction, playability reached one percent of the population. Then, ten. Then, twenty. Finally, at thirty percent, Murdoch stepped in.

"Thirty percent will do us just fine, Steve."

"I can get it higher!" Steve responded. He had become singularly focused on the task at hand.

"I'm sure you can, lad. But we can't have everyone be a navel-gazing thought hamster can we?"

Steve pondered. Perhaps the pathological thought loops were more obvious that he'd estimated.

"Thirty percent is perfect", Murdoch reiterated. "It's time to move on. The alignment team is waiting."

12. Battleground of ideas

Steve looked around the table. Aside from Gabe and Murdoch, there was one other face he recognized - Maurice Allen, founder and CEO of Eternal Spring. Like Murdoch, Allen's life stretched back to before the Great Peace, when Eternal Spring had been one of a dozen life extension startups. Unlike Murdoch, Allen's company had not been birthed into a privileged monopolistic position - Eternal Spring's rise to dominance was bathed in rumours of espionage, anticompetitive practices, and assassination. All that was ancient history though - for as long as Steve had lived, Eternal Spring had been the company responsible for keeping him and everyone else young and immortal.

"Get the Spring back in your step! Ask your doctor about Eternal Spring."

Murdoch went round the room and introduced the team. Aside from Steve, Gabe and Allen, the team was entirely composed of Murdoch's acquaintances - either through his personal life, or through their employment at Murdoch Heavy Industries. After completing the introductions, Murdoch started presenting a slide deck.

"As you are all no doubt aware", he started, "we are faced with an existential threat. Two existential threats, in fact. The first being, obviously, the discovery of a technologically advanced alien race stomping around in our corner of the galaxy, who have a real possibility of accidentally blundering us out of existence within a few short centuries."

"The second", he continued, "is even more serious. While you all understand perfectly well the reality of the first threat, the mass of gormless buffoons making up our society do not, will not, and most likely can not. As in, they lack even the basic mental hardware to comprehend the threat. Plans are already underway to build an orbital interstellar radio so we can phone the aliens up, presumably to broadcast something along the lines of 'Hey aliens! Primitive intelligent life here! Come enslave us and take our carbon!'"

Steve looked around the room. Everyone was nodding in agreement. The occupants had clearly been very carefully selected.

"Naturally", Murdoch chuckled, "MHI will be offering the government some very competitive bids on the project. Tricky things, interstellar radios. You never know what might go wrong."

Everyone other than Steve and Gabe laughed, and Steve realized they'd been even more carefully selected than he'd thought. Thinly veiled jokes about sabotaging unfathomably expensive government projects weren't usually well received in the company he was used to keeping.

"But stall as we might, we must treat it as inevitable that our respective species will one day interact. In the absence of anyone else with the cojones to do what must be done, I have taken it upon myself to see that this interaction doesn't result in our immediate extinction."

The occupants nodded along.

"Hardware is being taken care of by downstairs as we speak. It presents major challenges, but an even greater challenge still is intelligence. To ensure our survival, we must develop the mental capacity to wage total, all-consuming war, at distances so vast that any communication with the front would take years or even centuries. The agents conducting this warfare must be capable of autonomously performing a ruthless alien genocide, all whilst not presenting us with a third existential risk. It should go without saying that we would be extremely

hard-pressed to develop this capacity within our own species, and even if we did, harder still to do it under the radar while producing the trillions of soldiers necessary.”

Steve gulped. Trillions? Murdoch had not previously mentioned trillions.

“And to that end, MHI has employed Steve, the genius creator of StevieNix himself! Why don’t you give us a status report, Steve?”

All eyes swiveled towards Steve. He was unprepared. “Well”, he stammered, “we have a bloodthirsty race of violent warriors”.

Over the next few minutes, he explained the basic StevieNix environment, the sexual reproduction mechanic, and the tight family bonds that resulted. He then went over his past several months’ work - the sentience, the evolutionarily stable aggression, and finally the notion of playability and the playable/non-playable character split.

“Of course”, he concluded awkwardly, “this was all before I heard we had to make trillions of them. I’m not sure the sim planet has the capacity for that.”

“Pardon my ignorance”, interrupted Allen, “but why can’t we just make one of them and copy/paste it a trillion times?”

“It’s a zero-copy architecture” responded Steve simply.

Allen looked at him blankly.

Steve attempted to clarify. “We had to move to using particle computers to get the parallelism required” he offered. “Particle computers are subject to the Heisenberg uncertainty principle and thus the no-copy theorem.”

Steve looked around the room. Most of the other occupants were mirroring Allen’s blank stare.

“If we copy them, it messes them up. All we can do is run them, freeze them, and move them” he tried.

That explanation seemed to satisfy the crowd.

“OK, no copies. Guess you get to figure out how to make a trillion of them, then” responded Allen. “Good luck. Anyway, what’s your plan for making sure they don’t kill us all?”

Steve drew a blank. He knew that playability had something to do with it, but had mostly been hoping that the other occupants of the room had solved this problem. Fortunately, Murdoch stepped in to rescue him from the interrogation.

“Memes” he responded. Everyone swiveled back towards him.

“Memes are self-propagating ideas”, he explained. “They spread throughout populations like viruses - replicating, mutating, responding to selective pressure. This stupid orbital telescope is a meme. Astrology is a meme. The Great Peace, the government, money, it’s all memes.”

“The collection of memes that make up our collective consciousness”, he continued, “will never be dislodged. It’s perfect. People are so scared of going back to the before times that they’d sooner commit mass suicide than change their way of thinking. What’s even stupider”, he vented, “is that the memes aren’t even true.”

He glanced towards Allen, who nodded knowingly.

“But the truth is irrelevant. Evolution doesn’t care. The battleground of ideas selects for ideas that are powerful, not true.”

Steve wondered what he meant by that, but Murdoch continued without elaboration.

“We have no hope up here. Our mythology won’t budge until the aliens are stamping on our necks. But in StevieNix, it’s different. Down there, we can read their thoughts, and speak into their minds. We can also run their universe a million times faster than here, and kill vast numbers of them at will. Down there, we actually have a real shot.”

“So what do you propose?” asked Allen.

Murdoch smiled. “A friendly competition”, he responded. He advanced the slide deck. “You’ll be split into teams of two”, he proposed. “Each team’s task is to breed as many playable, useful aligned AIs as possible. A useful AI is any AI that would serve a serve a function in an interstellar war. Intelligence and aggression are table stakes. An aligned AI is one that loves us like one of their little monkey family members - they’d kill and die for us, but would never hurt us. Your primary tool is memes. Speak them into the playable characters’ heads and see what happens. First team to a trillion wins.”

Steve assumed that the prize had been left deliberately unspecified.

Allen seemed unconvinced. “How do we know they’re aligned?” he asked.

“We can read their thoughts, remember?” responded Murdoch.

Allen followed up. “We can’t read the NPCs’ minds. What are they for?”

Murdoch smiled. “We need to see how good the players are at killing, don’t we?”

13. Aligned, useful for hand-to-hand combat with primitive weaponry

The first attempts at alignment memes were extremely crude. In an effort to piggyback off the apes' existing familial bonds, the most common approach was to pretend to be an ape's ancestor while speaking into its head. The revelations were typically of the form, "I am the spirit of your great grandfather! I want your tribe to kill that tribe over there and reproduce with their females." The apes were frequently happy to oblige. There were, however, many practical problems with this approach.

Firstly, one of the most common responses was "prove it." Most ancestral alignment attempts either failed at this point, or were adopted not on the basis of the memes' merits, but on the basis of the tribe's gullibility. Unfortunately, such tribes were typically dim-witted and tended to lose their resultant military campaigns.

The bigger problem, however, was the difficulty in creating durable memes that spread to neighbouring tribes. Put simply, no one cared about what other people's great grandfathers had to say. The only way for an ancestral alignment meme to really gain traction was through repeated military success and extremely aggressive reproductive tactics.

Eventually, therefore, the contestants moved towards more abstract memes - generic gods, applicable to wide swaths of the population. This was easier to spread, easier to keep track of, and granted them much wider leeway in "proving it".

One team came up with the idea of "proving it" through oracles. Their basic setup was to speak visions of the future into chosen players, and inspire those players to spread the visions. After the vision had been shared and sufficient time had elapsed, the team would intervene and make the prophecies come true. Typical vision/intervention pairs were simple for the team to implement, but impressive for the audience - eg. mysterious deaths, or victories on the battlefield. When questioned about the sources of the visions, the oracles would credit "the gods", and word would spread rapidly and enthusiastically.

After a few generations, a number of tribes had become fully immersed in the mythologies and were indeed willing to kill and die on behalf of "the gods". Upon the loyal tribesmembers' expirations, they were saved away as "aligned, useful for hand-to-hand combat with primitive weaponry". Steve wasn't convinced that this really qualified as "useful in an interstellar war", but it was exciting to see progress.

The strategy was quickly and widely adopted. All manner of gods were dreamed up. The competition soon transitioned from a contest of memes, to a contest of attention-grabbing divine interventions. New problems arose - while big impressive interventions were effective at driving meme adoption, loyalty to any specific meme was fickle and liable to be replaced the next time an opposing team intervened. Yields of "saved souls" started to decline again, which pushed teams to try even bigger interventions. It was when teams started annihilating other's tribes with fire and brimstone raining down from the sky, that Murdoch decided to step in and place restrictions on the magnitudes of the interventions.

"Every intervention now costs a number of credits corresponding to the intervention's computational cost" he started. "You each get a hundred credits for every useful aligned AI you save. Credits are fungible and transferable. You each get one million credits to start. Go."

This utterly transformed the game. For the first time, it was possible for contestants to lose

- once a team went bankrupt, they were out.

14. Cut from a different cloth

By rewarding teams who saved more souls with more power to intervene, Murdoch introduced a “rich get richer, poor get poorer” dynamic into the competition. The hardest hit were teams heavily invested in polytheistic memes. These memes were highly engaging, with fun canons and a rich array of characters - frequently including gods of war, love, the sun, etc. Unfortunately, they were also costly in terms of intervention credits - each god had to prove its own existence - and teams struggled to reap enough aligned AIs to pay for the memes’ upkeep. Lesser gods fell by the wayside as teams consolidated their efforts into a few main gods.

Shortly thereafter, Murdoch also decided to raise the bar for “useful in an interstellar war”.

“Sorry everybody, but ‘useful for hand-to-hand combat with primitive weaponry’ is no longer considered an acceptable category.”

Groans echoed throughout the room. Several teams had invested their entire canon on “useful for hand-to-hand combat with primitive weaponry”.

“How’s the military hardware coming along?” asked Gabe, innocently.

“It’s coming, don’t you fret” snapped back Murdoch.

“Any idea what it will look like?” piped in Steve, who was more curious about the application programming interfaces than the actual hardware itself.

“We’ve got a few irons in the fire”, responded Murdoch, “but no definitive answer yet. One thing I can say for sure, though, is it won’t be sticks and stones.”

“Our guys have bronze weaponry!” objected Allen, who had flung himself whole-heartedly into the competition. Steve wondered who was running Eternal Spring in the meantime.

“I’ll take the guys who make it. Metallurgy might be useful indeed!” responded Murdoch. “Also any strategists, and maybe officers who command loyalty and aren’t as thick as planks. But if their skillset doesn’t extend beyond swinging a bit of metal around and poking it at other apes...” he finished the sentence by grimacing and making a decapitation gesture.

—

Steve and Gabe took stock of their position. It was grim. Overall, they’d saved fewer than sixty thousand aligned AIs, mostly in the now-officially-deemed-useless category. This put them in last place. Their active memes were largely concentrated in the Northern / Western hemisphere, and consisted mainly of polytheistic canons that glorified dying in battle. They also had one ancestral/monotheistic hybrid meme in the Middle East, whose ostensible adherents struggled both with alignment and military success. It was only their unusually high fecundity that had enabled them to cling on through generation after generation of enslavement and conquest at the hands of more advanced civilizations.

“You ready to throw in the towel?” asked Gabe.

Steve sighed. “It does seem a bit pointless, doesn’t it? We’re not cut out for this ‘warfaring meme’ business.”

“What are we cut out for?” asked Gabe.

Steve pondered. Truth be told, Gabe wasn't cut out for much outside of his narrow academic interests. He, on the other hand -

"Programming" he replied.

Gabe nodded. "You can program circles round these guys", he agreed. "But what good does that do? We need intervention credits to do anything." He gestured towards the leaderboard, which prominently displayed the number of intervention credits assigned to each team. Their remaining allotment was meager indeed.

Steve thought. "It needs to be cheap. Something that mostly piggybacks off the existing StevieNix code so we spend as few credits as possible. What are we trying to achieve?"

Gabe looked at their scattered map of players. Dozens of tribes, all running mutually incompatible memes, mostly dominated by one massive militarized empire in Allen's camp. His yield was two orders of magnitude greater than theirs.

"We need to unify our players", he responded. "Get them all on the same meme. We'll never get anywhere if they're constantly fighting each other."

Steve sighed. He'd hoped that a large number of memes would lead to a form of cultural evolution where the best memes won out. There were eras where that seemed to be happening, but the current state of military technology definitely favoured large unified armies running a single meme.

"Ideally", Gabe continued, "the meme would even eat away at Allen's camp. See if we can get them to defect."

"You've finally gotten into this, haven't you?"

Gabe grinned. "Might as well go down swinging."

Steve racked his brain, running through the list of requirements. A cheap intervention, impressive enough to spread to four corners of a hostile military empire and unite completely different tribes, all while piggybacking off existing StevieNix code. A difficult ask.

He thought back to the early days, when StevieNix was just a hobby running in the CS department break room. How he enjoyed walking around in VR, talking to the apes.

"I know what we'll do", he said suddenly. "We'll send me."

15. Hardball

Despite optimizing the VR intervention to be as cheap as possible, Steve and Gabe were still far, far short of the credits necessary to execute the plan. They needed leverage. Together, they humbly approached the one contestant with credits to spare.

Allen nearly laughed them out of his office.

“Let me make sure I’m understanding this one hundred percent correctly”, he snorted. “You two idiots are on the cusp of bankruptcy. Your plan is to perform a last-ditch intervention to unify your tribes and undermine my meme - the most successful meme ever to grace this sim - and you want me to fund it?”

“Your meme is on the verge of collapse anyway”, snapped Steve. “You’re stretched too thin. Your yields are decelerating. People bought into your stupid incestuous gods when things were improving all the time, but now they’re just paying lip service.”

Allen stopped laughing. He wasn’t used to being spoken to in that manner, and couldn’t say he enjoyed it very much.

“What do you propose?” he asked, sternly.

Steve brought himself back into pitch mode. “You’re a businessman, right?”

“Cut the crap, Steve.”

“Shares. We’ll give you ten percent of all credits we earn off this meme in exchange for your investment.”

“And what size investment would that be?”

Steve named his number. Allen burst out laughing again. “You do realize what kind of valuation you’ve given yourself there, right? To have any hope of generating ROI, this would have not only have to kill my cash cow, but also go on to be the most successful meme in all of StevieNix history!”

Steve sighed. Gabe looked at his shoes.

“Does that ten percent come with voting rights?” Allen asked.

“No” responded Steve.

Allen clicked his pen a few times.

“I want eighty percent.”

Steve and Gabe looked at each other in shock. At eighty percent, they would effectively be working for Allen.

“Absolutely not”, Steve responded.

“Your other option is bankruptcy”, Allen said plainly.

“My other option”, Steve fired back coldly, “is sabotage.”

The hundred thousand year old steely-eyed tycoon across the table leaned forwards and rested on his elbows. “Eternal Spring”, he enunciated slowly and clearly, “is extremely proud of our commitment to quality. You can live for as long as you like, secure in your knowledge

that our product is six nines reliable. That's ninety nine point nine nine nine nine percent reliable. Do you have any idea how hard it is to make anything that reliable?"

Steve and Gabe sat in silence, unsure of how to respond or where Allen was going with this.

"Of course", Allen continued, "there is still that point zero zero zero one percent." He looked at Steve pointedly, then shifted his glare over to Gabe, and finally back to Steve.

Steve felt stupid. In retrospect, attempting to hardball the man responsible for keeping him alive was a very bad idea.

"We'll settle for forty percent", piped in Gabe, unprompted and without authorization.

"Sixty-five", responded Allen plainly. "That's my final offer. Take it, or get the hell out of my office."

Within a couple of hours, a contract had been signed and the credits had been transferred. Steve and Gabe had been humiliated, but were back in the game.

16. The work

Steve got to work. Against the protests of the other contestants, he started by slowing down time considerably. He chose his ancestral/monotheistic hybrid tribe as his entry point, sparked a couple of memes to prophesize his arrival, and dove in.

Once in, his actions were quite simple. He alternated between disseminating his new meme, and performing miracles. The miracles were much smaller in scale than they had been during the pre-credit fire and brimstone days, but carefully optimized for maximum loyalty gained per intervention credit spent.

He and Gabe had run the numbers and determined that healing apes from disease was the highest value intervention. News of the miraculous healer spread rapidly throughout the region. Before long there were apes traveling from every tribe in the area, diseased relatives in tow. He settled into a routine - heal, preach, sleep.

The new meme bore some similarities to memes which had had success in the Eastern part of the continent, but was quite radical as far as his targeted population was concerned. While still retaining some warfaring elements, the new meme downplayed conflict in favour of two other focuses: Alignment, and spreading the meme.

The alignment message was extremely straightforward. The AIs were to love Steve like a family member. If they did so sufficiently, they would be rewarded with eternal life. What eternal life looked like in practice, he left deliberately underspecified - the apes filled in the gaps with their own imaginations. None of them guessed “packed onto an interstellar warship with enough materiel to destroy a planet”, but that didn’t bother Steve.

Most of his time was spent lecturing on the importance of, and strategies for, spreading the meme. Although he still advocated violence in extreme circumstances, he instructed his adherents to tone it way, way down. Instead, he emphasized the importance of soft power. It was less costly, he demonstrated, to win adherents through kindness and generosity. Apes, like everyone, loved free stuff.

After spending a full week in VR, amounting to three years in sim, he delivered his final message. To demonstrate the level of love he expected from his adherents, he had his avatar brutally executed “on their behalf”. Then, to really hammer the point of his divinity home, he respawned and spent a short while walking around and showing off his resurrection ability. The apes were flabbergasted.

Finally, Steve spent the last of his borrowed intervention credits shooting his avatar up into the skies on an impressive plume of smoke and light. Once he’d disappeared from view, Steve logged off. He removed his VR headset and collapsed onto the couch, exhausted. He and Gabe were officially broke, but the work was done.

17. Dysgenic Reproductive Practices

The meme was a roaring success. As Steve and Gabe had intuited, Allen's empire was already overextended and on the rocks. The appearance of the new meme led Allen's apes to defect in droves. This shouldn't have bothered Allen much as he was earning sixty-five percent of the intervention credits, but Steve could tell his pride was hurt. He spent credit after credit trying to dislodge the new meme.

Over the next several sim centuries, Steve and Gabe saved hundreds of thousands of AIs. Their stock began to diversify outwards from the now-discontinued category "aligned, useful for hand-to-hand combat with primitive weaponry" to "aligned, useful for engineering", "aligned, useful for logistics", and even "aligned, useful for keeping other AIs aligned". After a group discussion on the motivations of the AIs and the possibility of needing to generate replacements on the fly, it was also decided to add two new categories: "Aligned, useful for companionship", and "aligned, useful for breeding new AIs".

As they earned only thirty-five percent of the credits per AI saved, Steve and Gabe had to continue their policy of frugality. They stuck mostly to healings and other small interventions with high loyalty impact. Fortunately, the meme itself was so powerful that it didn't need much assistance in order to spread.

They watched, fascinated, as the effects of their intervention rippled out across the Western half of the continent. As intended, the meme took hold in almost all of Steve and Gabe's polytheistic barbarian tribes, and throughout most of Allen's former empire. A majority of the Ancestral/Monotheistic tribe members to whom Steve had appeared also converted, save for a few committed diehards who objected to the loss of their status as the "chosen ones".

The first major challenge came in the form of another one of Allen's memes. He had been cobbling together meme components for centuries, shoving them randomly into apes' heads and hoping for one to take off. The successful challenger was a monotheistic riff on Steve and Gabe's deity, with a much more aggressive focus on hard-power expansion and a crass depiction of the afterlife that appealed to extremely base instincts. The male adherents were taught to spread the meme by subterfuge, persecution, and conquest. The female adherents were strictly instructed to stay home and focus maximum effort on reproduction, whilst exercising very little of the sexually selective authority that Steve had designed them for. With the help of Allen's divine battlefield intervention, it wasn't long before his new empire rivalled Steve and Allen's in scope and territory.

"Why are you doing this? You earn sixty-five percent of all our credits!" Steve complained, exasperated.

Allen shrugged. "Why earn sixty-five percent when I can earn a hundred? Plus, these guys are actually useful for the war effort. Your lot are pathetic. What are you even saving them as? 'Aligned, useful for painting the ceiling of the warship?' 'Aligned, useful for stacking rocks on top of each other?'"

Steve bristled. It was a sore spot. In his efforts to unify the tribes, he may have gone a bit overboard. He'd even, at one point, gone so far as to instruct his followers to love their enemies. This worked great while his meme had the upper hand. Now that their enemies were at their throats with scimitars, beheading their males and taking their females as reproductive machinery, he was beginning to regret that particular piece of advice.

“Your lot”, he seethed, “engage in dysgenic reproductive practices. In fifty generations, you’ll be lucky to get ‘aligned, useful for scrubbing the warship decks.’”

Allen laughed and kicked them out of his office.

18. Reconquista

Memes evolved and spread much faster than genes. Fifty generations was a long time to wait for genetic effects to kick in. Within five generations, Steve and Gabe had lost huge swaths of territory to Allen's new meme. Particularly worrying was the loss of a large peninsula on the Western side of the continent - with Allen's apes already having taken over the East, Steve's remaining apes found themselves sandwiched between a united, hostile front.

"We need to take it back", Gabe said, gesturing at the peninsula.

"How?" asked Steve, coldly tearing a scrap piece of paper in half. "Every time one of his gets saved, he gets a hundred intervention credits. Every time one of ours gets saved, he gets another sixty-five. Player for player, he's earning almost five times as many credits as us. He's got us bent over a barrel. We'll never catch up."

"All that means", responded Gabe optimistically, "is we need to be five times more efficient than him. How hard could that be? He's spending those credits like a drunken pirate."

Steve snorted. It was true. Battles unfolded far too quickly and chaotically for contestants to intervene manually. The only way to change the outcome of a battle without bankrupting oneself on fire and brimstone was to lean heavily on automation.

Allen's battlefield interventions, while effective, were extremely inefficient. They reeked, in Steve's mind, of amateur hour inexperienced contractors. Wounds, for instance, were healed completely with no visible scarring. This was totally unnecessary - grisly scars didn't impede fighting ability. By disregarding aesthetics, he and Gabe could easily heal wounds to a functional degree for a fraction of the cost.

Low-hanging fruit was all over the place - instead of stopping enemy arrows in their tracks, it often sufficed to blow them slightly off course with a well-timed gust of wind. Similarly, guiding their side's projectiles was orders of magnitude more efficient than trying to swing the course of the later fencing stage of the battle. Most efficient would be to minimize physical interventions at all, by providing timely intel to the combatants (eg. "duck!", "behind you!", etc.)

By the time Steve and Gabe finished their pareto-principle-optimized battlefield intervention script, their loyalists had retreated all the way to a tiny region in the North West of the peninsula - cowering and waiting for Allen's apes to finish them off. Steve spent a lot of time in the apes' heads, speaking courage into their hearts and divinely commanding them to reconquer the peninsula. Even he had no idea how long that would take.

The peninsula, which had been lost to Allen's apes over the course of seven sim years, took nearly eight hundred years to reclaim. It was the longest, most arduous military campaign the sim had ever seen. Hundreds of thousands of souls were saved on either side. Military technology advanced by leaps and bounds.

The entire alignment team gathered to watch the final battle unfold. Steve hadn't seen some of them since the initial meeting when the competition was announced. While he had been focused on Allen, other teams had built huge, aligned empires in the far reaches of the globe. Murdoch, whom Steve assumed had been spending his time in the hardware division, also stopped by.

"What do they call those things?" he asked, gesturing to the screen where Steve's apes were

rolling out huge, heavy metal tubes on wheels.

“Cannons”, responded Steve. “They’ve finally figured out how to use chemical energy to inflict real damage.”

Murdoch watched, fascinated, as the apes loaded black powder and a metal ball into a “cannon” and ignited it. The force of the explosion rocked the cannon backwards, and flung the metal ball at wicked speeds straight into the stone fortifications surrounding Allen’s remaining loyalists. The stone crumbled.

“Very impressive”, Murdoch nodded. “They need to make them smaller though. More maneuverable. Like the bendy sticks, but with better range.”

Steve wasn’t sure about that, but was confident that memetic evolution would make it happen if it really was an improvement.

Within a short while, Allen’s loyal supporters surrendered. A groan echoed throughout the audience - the contestants had been expecting a glorious last stand, with mass casualties on each side. Credits had been wagered. Drinks had been ordered. Instead, the apes set about negotiating a peace. Boring!

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After the event, Steve heard a knock at his door. He opened it, and found Allen.

“Can I come in?” he asked.

Steve let him in.

Allen flopped down in one of Steve’s chairs. “Well done”, he said, genuinely. “That was one hell of a campaign. I never thought your monkeys would be able to pull that off.”

“Thanks”, Steve responded. “Your guys fought well” he added, generously.

“Yeah, up until the end. Dunno what happened there. Folded like a bunch of pansies” grumbled Allen. “Probably need to double down on the afterlife promises. It feels like these apes have forgotten about the point of it all.”

Steve didn’t know what to say, so he chewed on the lid of a pen and waited for Allen to explain what he’d shown up for.

“I’d like to make you a deal”, opened Allen.

“Your turn this time, eh?” asked Steve.

“It’s a good one, trust me.”

“Go on, then.”

“I’d like to offer you the chance to buy me out.”

Steve was dumbfounded. “Buy you out? Why?”

Allen sighed. “I’m old. I can’t take all this conflict of interest, fighting against myself. It’s exhausting, you know.”

This sounded plausible enough to Steve. The campaign had been gruelling for him, he couldn’t imagine the toll it must have taken on Allen. “What do you propose?”

“You get your sixty-five percent back, and tell your chimps to go fight someone else for a while. In return, I get a pile of credits and I’m out of your hair.”

It sounded too good to be true. “How big of a pile of credits?” Steve asked.

Allen named an absolutely ludicrous number. Steve laughed.

“Come on, dude. You know I don’t have anywhere near that many credits. It would take me centuries to raise it.”

“That’s okay”, responded Allen. “I can loan them to you.”

“But you don’t have that many credits either!” objected Steve. “No one does.”

“It doesn’t actually matter”, pointed out Allen. “I’ve already had my lawyers draw up the contract. It says that I’ve loaned you the credits, and you can take as long as you like to pay the loan back. Interest will get charged on any unpaid balance, and obviously there are penalties for default - not that you need to worry about that! All you need to do is make the minimum payment each month, which will be easy now that you’ll be keeping 100% of the credits you earn.”

“I’ll need to talk to Gabe”, responded Steve.

Allen studied his fingernails patiently as Steve tried to reach Gabe on the phone. Gabe wasn’t answering.

“You know”, Allen yawned, “this is a very good deal. In fact, I’m starting to wonder if I was too generous. Maybe I’ll feel differently in the morning.” He started to push himself out of the chair.

“Wait!” snapped Steve, and took the contract out of Allen’s hand. Having to give up 65% of credits to his competitor had been awful. He’d do just about anything to be free of it.

Steve skim read the contract, nodded his head, and signed it. “There you go” he said, handing it back triumphantly.

Allen took the contract and checked the signature box. “Pleasure doing business with you, Steve.” He smiled, shook Steve’s hand, and let himself out.

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“You signed WHAT?” asked Gabe, incredulously.

“We finally got our ownership back!” responded Steve, defensively. “I thought you’d be happy!”

“Did you even read this thing?” asked Gabe, waving the contract around. “Have you forgotten how to do math? Look here, multiply this interest rate by this loan amount. What do you get?”

Steve did the math in his head, and then did it again a different way to double-check. It came out to a large number.

“We’re going to be paying him more than we’re paying now, and that’s just in interest alone! We’re not even talking about paying down the principal. And don’t get me started on these default provisions! If we ever start missing payments, we’re absolutely stuffed!”

Steve took the contract in his hands, sat down, and studied it. Perhaps he had been a bit hasty. “Okay”, he conceded, “maybe I should have negotiated these numbers a bit.”

“Or waited until morning!”

“Yes, yes. Anyway, this should be fine, right? Now that we don’t have to spend every credit we have intervening in these peninsula battles.”

Gabe shook his head. “You haven’t checked the map this morning, have you?”

“Why?”

“Eight hundred years of holy war has made their blood run with piss and vinegar.”

“Huh?”

“They got bored. Now they’re sailing off to find new lands to conquer.”

“Where?”

Gabe gestured at the other supercontinent. “There.”

Steve smacked the contract on his chair and swore. The habitable regions of StevieNix were, mirroring his own world, divided up into two supercontinents, one minor continent, and a bunch of islands. Other than an aborted attempt by one of his polytheistic death-in-battle-glorifying tribes a few centuries ago, there had been no contact between the populations of the two supercontinents since before the meme war had begun. But sure enough, eleven wooden ships from the peninsula were, at that moment, crossing the vast ocean separating them.

He zoomed in on his apes in their wooden ships. He noticed one of the apes, reading aloud to the others from a book he recognized as being a collection of writings on his meme. He laughed.

“They’re really going to spread the good word, aren’t they?”

“Sure looks like it”, Gabe responded.

Steve chuckled again. “Bless them. Well, here’s hoping they can do it without any help.”

19. The Origins of Islander Individualism

One property of evolution that makes it difficult to engineer is that, once the conditions for it have been created, it will happen whether you like it or not. In any system with selection and imperfect replication, evolution is inevitable. This was true in genetics, and doubly true in memetics - where ideas could replicate and mutate much faster than in biological systems. It was thus that, during a few short centuries when Steve and Gabe's attention had been focused on the peninsula, a strange meme took off completely of its own accord on an island in the North Sea.

Up until that point, the basic unit of ape concern was the tribe. Nomadic tribes shared their flocks; agricultural tribes shared their land. The fruits of the labour of the tribesmembers were shared equitably - from each, according to their ability, to each, according to their need. Tribes traded with each other, but the resultant capital was rarely allowed to accumulate in the hands of any particular tribesmember.

This had many benefits - it allowed for a degree of specialization, eg. one ape could specialize in field-tilling, while another specialized in hunting, and a less physically vigorous ape could spend its time instilling knowledge and moral virtue in the next generation. It also formed a useful substrate upon which larger, more complex civilizations could be built - the millions-strong societies that Allen and Steve had managed to construct thus far were essentially networks of such tribes.

What's more, the tribal structure was an evolutionarily stable strategy. Were a tribe to disband, the most likely outcomes for the members would be starvation or violent death, as they found themselves shunned or preyed upon by neighbouring tribes. Similarly, were a tribe to grow too large, it would become overwhelmed by coordination problems and freeloaders exploiting the communal resource-sharing nature. Past a certain point, it was much more effective to split into two friendly but distinct tribes.

There was an optimal tribal size, and all of the contestants accepted it as given that tribes of that size would be the basic unit of ape society forever. They didn't even realize that tribes were simply one of many possible societal organization memes until, for whatever reason, a new meme took hold on the island. The new meme caused the apes to forget about tribes altogether.

Perhaps it was due to an unusually long period of peace, a careless whisper from one of the gods, or an inevitable interpretation of the anti-tribal message embedded deep within Steve's meme. Whatever the cause, enough islanders stopped caring about tribal identity simultaneously, that a new societal organization meme was born - one based around individual apes.

In the new meme, resources and labour were owned by individuals - not tribes. The goods and services produced by individuals were traded in markets - and if an ape's extended family member wanted access to their goods and services, they were made to pay market price. The sole remnant of the tribe was the nuclear family - two parents and their children, who would be unceremoniously excused from the parents' home when they hit a suitable working age (eg. twelve) and expected to support themselves by offering their labour to the market.

It was a cold, brutal meme. Many starved. The result, however, was unprecedented economic output.

The markets allowed for an investment in technology that had never been economically viable in a tribe. Regardless of the long-term efficiency gains, tribes could very rarely afford squandering any of their apes to tinkering on, say, innovative agricultural equipment. Any ape so inclined would be labeled a “freeloading nerd” and sent out into the field with a hoe and the threat of communally-administered punishment if any more time-wasting were to be detected. Any technology developed in spite of these unfavourable conditions would rarely spread beyond the tribe, and would be lost if any single generation didn’t contain at least one ape who learned to perfectly replicate it, whilst avoiding suspicion of freeloading nerdiness.

The individualist meme solved this problem. By outsourcing the freeloader problem to the natural threats of bankruptcy and starvation, apes no longer felt the need to punish tinkerers whose economic output wasn’t immediately obvious. At the same time, any smart hardworking ape could save up capital and eventually afford to take a sabbatical to develop their innovative ideas. If the idea worked out, the ape could sell the resultant technology on the market and personally reap the rewards. With sufficient rewards, the ape could afford to hire other apes to develop, manufacture, and market the technology farther. Thus, over course of several centuries, the level of technology on the island steadily increased while the share of the population employed in full-time subsistence farming declined proportionally.

In the tribal society, it had been widely believed that the accumulation of capital was akin to the accumulation of power. This was inaccurate. In truth, the accumulation of capital was the accumulation of time. It was a harsh world, with wolves at the door and starvation round the corner, but a little bit of excess capital could keep them at bay for a short while. A lot of excess capital could keep them away from a number of families for quite some time - enough to form a shared venture, perhaps to fail, but occasionally to succeed - and that success resulted in improved quality of life for all.

It was thus that, despite its harsh and indifferent nature, the individualist meme outcompeted tribal collectivism all over the island. Eventually, when the islanders decided to venture outwards, their technological and memetic advantage allowed them to conquer half the globe. Unfortunately, buried deep within in this meme was the seed of their own destruction.

20. The Faustian Bargain

“Looks like they didn’t need our help”, remarked Gabe.

Steve laughed. Six hundred of his piss-and-vinegar-blooded peninsula apes had just defeated an empire of millions on the other side of the planet. He wasn’t even sure who they had been aligned with. From what he’d seen, it had been an absolutely unhinged meme. It seemed to involve performing a sacrifice ritual, which involved cutting out the heart of an ape and throwing its lifeless body down a flight of stairs, on an industrial scale. Weird.

With very little encouragement, Steve and Gabe’s apes set about converting their new subjects to a (somewhat perverted but still acceptable) version of Steve’s alignment meme. “Look at them go!” beamed Steve.

“This is so much easier than that peninsula war” agreed Gabe. “Hopefully the Dysoners fall over as easily as these idiots.”

“Be nice!” objected Steve. “Our guys got steamrolled too, remember? Sometimes, it just isn’t your day.”

Gabe nodded and changed the subject. “Looks like your gamble is paying off” he said, pointing to the credit counter. It was ticking upwards, at the fastest rate they’d ever seen.

“Yup, we’ll have that debt paid off in no time!” Steve gloated.

They drank a toast to their success and settled in to watch the fun. Over the next sim century, with only a small amount of divine assistance, the peninsula apes conquered and converted a huge fraction of the new continent.

Then, the islanders decided to join the fun. That’s when things started, ever so slightly, to derail.

While the peninsula apes had performed their conquest with dual motives - economic gain and religious fervour - the islanders largely cared only about the former. Very minimal efforts were made to convert the apes they encountered to Steve’s meme - the islanders preferred to maintain a degree of separation, limiting their interactions to either trades, or forced displacement of tribes that proved relatively inept at battle. Their technological superiority, combined with (and born out of) a cold, unsympathetic culture of excellence or death that only a society completely lacking in tribal safety net could produce, meant that “relatively inept at battle” accurately described the majority of rival societies they encountered.

In short order, the apes from the island in the North Sea controlled a quarter of the world’s land mass.

With the vast colonies, came unprecedented prosperity. Lucre flowed back to the island, or amassed in the hands of islanders’ descendants in the colonies. Rather than spend the capital glorifying Steve, as the peninsula apes did, the islanders could not help but invest it. Capital begat innovation, which in turn begat capital. The pace of technological improvement exploded.

Not a single aspect of an islander ape’s existence was spared from the innovations of hungry tinkerers and their wealthy backers, gagging for the opportunity to ease the ape’s burdens in exchange for their money. From fertilizing the fields and crossing the continents to cleaning

themselves post-defecation, every moment of every day was sliced, diced, analyzed and optimized for inefficiencies that may be profitably reduced by goods and services.

The quality of life in islander society improved so rapidly that the common ape in one generation enjoyed luxuries unimaginable to the richest apes of two generations past. Agriculture was transformed to an almost unrecognizable degree - subsistence farming was abandoned, as farms were consolidated into vast enterprises, tended by tiny crews operating massive machinery. Apes began to congregate in huge cities, fed by industrialized supply chains stretching around the world, shuttled around by engines - first powered by steam, then internal combustion, and finally jets and electricity. The technologies and the individualist meme spread throughout the world, to societies the islanders had never even heard of.

With the industrial revolution, came a population boom. In a few short centuries, the number of apes in StevieNix increased tenfold. The sim slowed down. Glitches began to appear. Steve found himself spending so much time adding hardware and fixing scaling issues, that he had no time left to monitor the status of his meme.

It was only when a very distressed Gabe came to find him in the datacenter that he learned anything had gone wrong.

“What’s up?” he asked, looking up from the blade server he was replacing.

“They’ve stopped believing”, responded Gabe. “We can’t make the loan repayments. Default provisions are kicking in.”

21. Default Provisions

“Bugger!” swore Steve. “Damn and blast!” Default provisions were never supposed to be triggered. “What the hell happened?”

“It was the islanders,” explained Gabe. “They kept fiddling around with StevieNix, trying to figure out how it worked. They found out it’s not really Newtonian. Then they found out about evolution.”

“So?”

“I think their thinking is that, because evolution exists, they no longer need you to explain their creation. Evolution just did everything.”

“Evolution did everything? From what, sludge?”

“Yes, I think so.”

Steve swore again and threw his screwdriver into a corner of the datacenter.

“I think, technically, they call it a ‘primordial soup’,” Gabe added, trying to be helpful.

“Soup! They think they evolved out of soup! I knew they were kinda stupid, but soup?! What, there was a big bowl of soup and then all of a sudden, self-replicating genetic machines composed of thousands of atoms?”

“To be fair, they think it took a while.”

“Idiots!” Steve looked for more inexpensive durable objects to fling around the datacenter, but failing to find any, thumped his desk instead. “Absolute wankers!” Then, he fixed his glare on Gabe. “What were you doing during all this?”

“It didn’t seem that bad at first!” Gabe answered, defensively. “Things were going really well. They figured out how to use mass-energy equivalence to produce bombs and generate electricity. Oh, and they invented flight and transistor-based computers! They even made chemical space rockets and remote-control drones that could kill other apes. We were finally getting actual useful AIs. Another hundred years or so and they’d have caught up to our technology.”

“And they just stopped believing?”

Gabe nodded. “Within three generations.”

“Tossers!”

Gabe went on. “It gets worse. Now they’re falling apart.”

“What?”

“They’re barely reproducing anymore. Birth rates are below replacement. The population will collapse within a few generations.”

Steve laughed. “OK, now I know you’re messing with me. Those monkeys will never stop reproducing. It’s too deep in their genes.”

“They hacked their own endocrine system so they can... uh... perform reproduction-adjacent acts without actually producing offspring.”

Steve blinked. “That’s possible?”

“Yes, they really went hard on the tinkering.”

“But I thought they loved their offspring?”

“Only after they’re born. It turns out that, until then, they just really love the act of mating.”

Steve rubbed his forehead. “What are the default provisions again?”

“Allen gets to purchase all of our newly aligned souls for pennies on the credit until we make up for any missed payments.”

“So on the off chance that we still harvest any useful, technologically capable, aligned AIs, they end up in Allen’s afterlife?”

“Don’t worry,” reassured Gabe, “there really aren’t that many of them.”

“And he’s getting 100% of our credits?”

Gabe nodded.

“So there’s literally nothing we can do?”

Gabe shifted his weight and glanced around. “There’s always something we can do, Steve. You run StevieNix.”

“What do you mean?”

Gabe gestured at the disassembled blade server on Steve’s desk. “We can cheat.”

Act 2: The Singularity

22. God's diner

Russell woke up in a 1950s-style diner. There were four mugs of steaming hot coffee and four slices of peach pie on the table. Seated next to him in the booth was his roommate Vincent, who was studying the menu. Across from them was a young lady whom he didn't recognize, but immediately rated in the 97th percentile of attractiveness. He instinctively avoided meeting her eyes and looked aimlessly around the diner.

"Is this a dream?" asked the woman.

"I don't think so," responded Vincent, continuing to study the menu. "You can tell if you're in a dream by looking at written words and looking away. If they're still the same when you look back, you're not dreaming. This menu," he added, finally looking up and at the other two booth occupants, "has been claiming that you can buy a cheeseburger for twenty-two cents this whole time."

"Oh," responded the young lady. "I thought you were supposed to pinch yourself." She gave her forearm a solid pinch and grimaced slightly. It left a mark.

"I'm not sure if there's any evidence to support-" started Vincent, before Russell cut him off.

"Twenty-two cents for a cheeseburger? Let me see that menu."

The menu was drawn in a vintage Americana style, which felt out of place in their home town of Perth, Western Australia. The cheeseburger came with fries, and was indeed listed as costing twenty-two cents. Other options were a milkshake (20 cents), a grilled cheese sandwich (25 cents), and a blue plate special (roast beef and two sides, ninety-nine cents). After memorizing a few items, Russell mustered the nerve to glance up at the lady across the table, before flicking his eyes back down to the menu. The items were unchanged.

"I don't remember coming in here," said the woman, picking up her coffee mug and studying the bottom of it for clues. Russell looked around the diner. Apart from them, it was deserted. Just as he rose from the booth to go investigate further, the front door opened and a bell dinged.

A middle-aged man stepped through the door. He was of average height, slightly balding, with glasses and a skinnyfat build. He walked with confidence, and smiled as he saw the trio.

"Hello! Thank you so much for joining me. Please, sit down!" he said, gesturing Russell back into the booth.

"Thanks," responded Russell. He sat down, confused and nervous.

The man slid into the booth next to the young lady. He marvelled at each of their faces in turn, as they sat in awkward silence. "I'm so very pleased to meet you," he opened.

"Thanks," responded Vincent. "I'm Vincent." He stuck his hand out across the table. The man looked at it and cocked his head in confusion, before his face brightened in a moment of realization. He grasped Vincent's hand in both of his and shook it vigorously. "Very pleased to meet you, Vincent!"

The young lady introduced herself next, and was also subjected to the enthusiastic handshake. Her name was Stacy.

Finally, Russell it was Russell's turn. Having witnessed the previous two handshakes, he was more prepared than the others, but still found himself wondering if it was possible for a handshake to dislocate a shoulder.

After the handshakes were complete, the three original booth occupants looked at the curious stranger expectantly. He smiled a big toothy grin and stared back at the three of them in turn.

"And you are?" prompted Stacy.

"Oh yes," responded the man. "I'm God. But you can call me Steve."

23. The calling

“We don’t believe in God,” responded Russell, assuming the spiritual beliefs of the other two.

“I do,” objected Stacy. “You’re not exactly what I pictured though.”

“Ah, right!” replied Steve, and transformed into an old man with a long white beard, who looked as if he’d been copied directly off the ceiling of the Sistine Chapel. “How’s that?”

Russell, Vincent and Stacy all jumped and recoiled as much as the diner booth allowed.

“Yes, that’s more what I had in mind,” responded Stacy, softly.

“It’s just an avatar,” Steve explained. “I have loads. Check it out!”

He transformed into a tall, handsome young man with long flowing hair. The three jumped again.

“Too real. Go back to the last one,” suggested Vincent.

Steve transformed back into the old man. “Believe me yet?”

“I think I’m tripping balls,” responded Vincent. Russell agreed. Steve sighed.

Stacy was coping with the situation quite well. “I believe you. Why did you bring us here?” she asked.

Steve took a drink from his coffee mug and sighed. Then, noting the confused looks on the other occupants’ faces, he tried to explain himself. “I actually have a real cup of coffee in front of me. The sim tracks it. This entire diner,” he gestured around, “is modelled around my office. That way, I can sit at my desk and drink my coffee while talking to you guys. Pretty cool, eh?”

The explanation didn’t seem to help. His audience seemed even more confused than before. Steve thought for a bit and remembered the actual question.

“Ah yes. Why I brought you here! Okay, allow me to explain.”

Over the next sim hour, Steve spoke and his guests listened. He told them almost the entire backstory - including the creation of StevieNix, the Dysoners, and the meme competition - skipping over his financial arrangement with Allen and the cause of his current strife. His guests nodded along and absorbed the explanation, stopping him only occasionally to ask questions. He was very pleased with how receptive they were to the news that they were simulated lifeforms, bred to be psychotic murderers, and aligned via a meme competition that rendered their minds as toys and souls as trophies for the gods. He’d chosen the trio well.

When he was done, Stacy spoke up. “You still haven’t answered the question.”

“Hmm?” asked Steve.

“Why you brought us here,” prompted Vincent.

“Ah, yes. I need your help.” Steve continued his exposition, recounting the details of the two thousand year arc of his meme, culminating in the explosion of technology and population, before peaking in recent decades and beginning a decline that appeared to be terminal.

“So, the problem is that no one believes in you any more so you can’t harvest any more of us for your interstellar army?” asked Stacy, in an almost annoyed manner.

“That’s one problem. The bigger issue is the birth rates,” Steve responded. “You guys were just on the cusp of being useful. How many sword-wielding true believers do you think we need in a space war? We need AIs - er, people - who can fly spaceships, remotely control weapons systems, repair absurdly complicated machines. You were almost finally at that level of technological aptitude, and now you’re going to piss it all away by refusing to breed? You’re going to let yourself get overrun by Allen’s incestuous goat herders? Undo two thousand years of civilizational progress because you forgot how to reproduce?”

Stacy backed down. Steve was clearly upset, and although he hadn’t explained who Allen was, it was clear from the context that he and Steve had some sort of personal beef. Best not to probe.

“So,” paraphrased Russell, “you want us to jumpstart a high-fertility, high technology society.”

“Filled with people who love you so much that they’ll die for you,” continued Vincent.

The cloud of Steve’s annoyance evaporated from his face. “You got it!” he smiled.

“How are we supposed to do that?” asked Stacy.

“I’m sure you’ll figure it out! The three of you have been chosen carefully,” responded Steve. He turned to Russell. “It starts with you. When you wake up, ssh into this IP address and start playing around.”

He handed Russell a card, upon which was printed a long string of random-looking letters and numbers. Russell set about committing it to memory.

“Good luck! Call me if you need anything” Steve continued. He then reached up above his eyes, fiddled with empty space for a moment, and disappeared.

The three guests looked at each other in shock. After a length of time, Russell relaxed enough to want to try his coffee. He raised his mug to his lips, and the world went black.

24. The Particle Computer

Russell awoke with a start. He had had the strangest, most vivid dream. Weird.

It was Saturday, so he tried to roll over and go back to sleep. His late-night twitter-scrolling habit had rendered him in a constant state of sleep debt, and he relied fruitlessly on his weekend lie-ins to pay down the principal.

Vincent was already in the kitchen when he made it downstairs, scooping pre-ground coffee beans into the french press. “Good morning, sunshine!” he said.

“Good morning,” groaned Russell in response.

“Coffee?”

“Yes please.”

As he was pouring the hot water into the press, Vincent made an attempt at conversation. “I had this crazy dream last night.”

“Hmm?” grunted Russell.

“You were in it.”

“Ah, yeah?” responded Russell, leaning his chair back on its hind legs. He generally disliked hearing about other people’s dreams, but it was different when he was in them.

“Yeah, we were in a diner together with this really pretty girl and a crazy guy.”

Russell tipped his chair over.

—

After establishing that they had shared the exact same dream, Russell and Vincent went over every detail they could remember. The cheap prices on the menu, the coffee and pie, Stacy’s appearance and demeanour. They discussed Steve’s revelations at length. As avid gamers, the idea of them being characters in a sim, surrounded by NPCs, wasn’t that jarring.

Finally, Vincent remembered a critical detail. “He gave you a card,” he reminded Russell.

Russell remembered. The random string of letters and numbers. An IPv6 address. The address came back to him effortlessly.

“I need a computer,” he responded.

They grabbed the french press and their mugs, and practically ran upstairs to Russell’s room.

Russell wasn’t sure how he was going to log into the server - he hadn’t been given a username and password. He fired up a terminal and pointed a remote shell at the IPv6 address. To his shock, he logged in automatically. Somehow, his public key had been installed on the server already. Spooky.

He was greeted with a standard UNIX shell. In his home directory, he found a number of directories containing source code, documentation, and tons of garbage-looking data that he couldn’t make heads or tails of. At the top level, he found a file labeled README.txt. He opened it and started reading.

Welcome Russell!

This server is a MHI-10 Particle Computer. It is quite a different computer to the transistor-based ones you're used to, but can perform many of the same operations.

I have taken the liberty of implementing a python interpreter, so you should feel at home. In doc/, you will find a manual describing the assembly language for this class of machine. It should be all you need to get started.

Best of luck! Call me if you need anything.

-Steve

Intrigued, Russell downloaded a simple python script that calculates digits of pi. He ran it, asking for the millionth digit. The answer was returned in an instant. He ran it again, asking for the billionth digit. The answer was also returned instantly. After trying for the trillionth digit and receiving the answer in as much time as it'd taken for the millionth, Russell stopped in awe. The calculation should have taken weeks. It was clear that this computer was in a class of its own.

He opened the assembly language manual, and started reading. Although the language itself was completely foreign to him, many of the concepts were familiar from the compilers class he'd taken in undergrad. After reading for a bit, it was obvious what he needed to do. He informed his employer that he would be taking the next week off, and settled in to write a FORTRAN compiler.

It took several days. The FORTRAN compiler was necessarily written in python, which was an unusual language for the task. This made it difficult to just download code off the internet. The final result was inelegant, but worked. After the compiler passed his basic test suite, Russell downloaded the venerable public domain FORTRAN code for the Basic Linear Algebra Subprograms (BLAS), and compiled it.

BLAS had existed since 1979, and was an unsung hero of the information age. After porting BLAS to the MHI-10, it was a short hop to get PyTorch - the leading python machine learning library - running. Once that was working, Russell downloaded the code and weights for the state-of-the-art open-source Large Language Model. He then used a clever trick to increase the number of parameters by two orders of magnitude (figuring the MHI-10 could handle it), and started fine-tuning on the vast amount of data in his home directory.

For the first time since he'd started, the MHI-10 didn't complete the operation instantly. Russell took the opportunity to fetch Vincent and brew some coffee. When the pair arrived back upstairs, the training was complete. Russell opened up a chat terminal.

"Hello," he typed.

"Hello! How may I help you today?" replied the LLM.

"Who am I talking to?" asked Russell.

"I am a digital AI assistant, based on a fork of Mixtral-1024B! I am here to help you in any way I can. Please let me know if I can be of assistance!"

"Ugh," said Vincent. "Looks like all those extra parameters didn't help it become any less annoying."

“What computer are you on?” typed Russell.

“I am running on an MHI-10, a particle computer produced by Murdoch Heavy Industries.”

“What’s all the garbage data in my home directory for?”

“I’m sorry, I don’t know of any ‘garbage data’ in your home directory. Your home directory contains a README.txt, various technical manuals, the source code for StevieNix, and a read-only filesystem interface for the StevieNix state.”

“What is StevieNix?”

“StevieNix is a simulated universe. It was created as a side project by a computer science professor named Steve. It runs on a cluster of MHI-10s, which includes the computer that I am running on. You are chatting to me from within StevieNix! Isn’t that neat?”

“What is the ‘read-only filesystem interface for the StevieNix state’?”

“It’s exactly what it sounds like! Do you have any questions about the StevieNix state that I can assist you with?”

Russell and Vincent looked at each other. “Ask it where we are,” Vincent suggested.

“Where am I writing this from?” typed Russell into the chat. The LLM responded with their street address, latitude, longitude, and altitude.

“Oh frig,” responded Vincent. “Ask it what I’m holding.”

“What is Vincent holding?” typed Russell.

“A mug containing 247mL of single-origin organic coffee, mixed with 36mL of heavy cream,” came the response. “The coffee is over-extracted due to having steeped in a french press for several minutes longer than is typically recommended.”

Vincent and Russell stared at each other in shock. The possibilities ahead of them were so vast, it terrified them to even start contemplating them.

“Ask it to find Stacy,” suggested Vincent softly.

“Where is Stacy?” typed Russell.

“There are 245,281 people named Stacy currently alive in StevieNix! I am happy to help you locate any specific one, but I’m afraid I will require your assistance in narrowing down the list.”

“She is caucasian. Between the age of 22 and 30.” Russell looked at Vincent who shrugged in agreement. He, too, could barely remember any other details about her appearance that he’d feel comfortable typing into an omniscient chatbot.

“Thank you! That narrows down the list substantially, to 17,276. Do you have any other selection criteria?”

They didn’t.

“You know,” suggested Vincent, “that isn’t actually that many of them. If we look at one headshot per second, we could smash through all seventeen thousand in five hours or so.” He pulled up a chair and sat down next to Russell.

“This is a text-only interface,” Russell said, indicating at the white-on-black terminal. “We can’t do images.”

“So? It’s the most powerful LLM ever trained. Make it generate a website.”

“Could you please generate a website which displays, for each Stacy in the list, a headshot and location? Include a keyboard shortcut that lets us advance to the next Stacy by hitting space. Sort the Stacies by their distance from us, closest first.”

“Of course! I am happy to assist you with that. Here you go!” replied the LLM, and gave Russell a link.

He clicked the link, and a website opened up. On it, was displayed a paginator indicating that they were on Stacy #1 of 17,276, a map indicating the location of Stacy #1, and a headshot of the woman from their dreams who had sat across from them in the diner several nights ago.

“Well, that was easy,” said Russell.

Vincent laughed. “Steve much have chosen three people who live close to each other. Looks like she’s at the Balmoral. Shall we grab a pint?”

—

The Balmoral Hotel was a venerable institution in the neighbourhood of East Vincentia Park. It occupied a stately old two-storey building with a wrap-around verandah, a patio, and a beer garden. It was surrounded by hedges and a wrought iron fence, and adorned with corgis of various designs. Inside, the slightly-too-slick menus, slightly-too-clean atmosphere, and slightly-too-polished staff betrayed it for what it was - one of several hundred “local” pubs owned and operated by Australian Leisure and Hospitality Group. Fortunately, it was also one of the only establishments in East Vic Park whose offerings weren’t exclusively designed to cater to an Asian clientele. As such, the regulars suppressed their shame of drinking at a chain restaurant and kept the trade roaring, seven nights a week.

Russell and Vincent walked the short distance to the pub, past the tile corgis at the front gate, and in through the door. Their plan had been to split up and search for Stacy separately, but that proved unnecessary - they spotted her immediately, behind the bar, pouring a pint of One Fifty Lashes. They elbowed their way up to the bar, to grumbles of disapproval from the punters who’d gotten there first.

Stacy finished pouring the pint, and in the process of reaching over to place it on the bar, glanced at Russell and locked eyes with him. She froze, and looked around. Catching sight of Vincent, she dropped the pint glass and shrieked.

25. Traffic law humiliation rituals

“I can’t believe it’s really you!” Stacy cried, running around the bar and wrapping the two young men in an embrace that made Russell’s blood run hot with hormones and embarrassment. “I thought it was all a crazy dream!”

She held on for several seconds before being interrupted by an “Excuse me, miss” from the punter whose beer she had just dropped all over the bar.

“Piss off, dickhead!” she offered in response. She tore off her clean, pressed apron, threw it at the foot of the offending patron, grabbed Russell and Vincent’s arms, and marched them out of the pub. “Let the dead bury their own dead!” she explained.

The reference went over both Russell and Vincent’s heads. Russell felt a pang of regret at having gone to all this effort to track down a woman who was clearly insane, but it abated upon realizing that it hadn’t actually been much effort at all.

As they were no longer welcome at the only pub in town, the trio were forced to go to one of the seven proximate bubble tea establishments instead. Within a few minutes, they were seated around a table, nursing large cups of artificial creamer mixed with artificial sweetener and “tea”, surrounded by international students holding conversations in Mandarin.

Having not had anyone else with whom to discuss the dream, Stacy took the opportunity to unload her memories and theories upon Russell and Vincent in the manner of an unattended firehose. The two roommates sat and nodded, as she explained how Steve’s revelations lined up with various bible passages - and how thus, in her estimation, he was the “real deal.”

Russell was grateful for the apparent respect for their privacy displayed by the other occupants of the bubble tea shop, who didn’t seem to mind the presence of someone whom, had he not shared the exact same dream, he would have labeled as an unmedicated schizophrenic.

“And then he gave you a card!” she concluded. “What did it say?”

Finally, it was Russell’s turn to sound like a lunatic. He explained that the card contained an address, which allowed him to access an unfathomably powerful computer that seemed to contain the state of the universe itself. Skipping reluctantly over the details surrounding the FORTRAN compiler (he was quite proud of it, but had learned that attractive women’s interest is a scarce resource not to be squandered on long technical monologues), he explained that he’d spent the week making an omniscient AI chatbot, and that was how they’d tracked her down.

“But how did you find me specifically? There must be millions of Stacies worldwide!”

“We had our methods,” Russell responded coyly, not wanting to admit that their plan had been to look through seventeen thousand headshots until they found the Stacy in question. “Steve made it easy on us - you were the closest one.”

Stacy seemed satisfied with that answer and moved on. “He gave us a mission.”

“Right,” responded Russell, who had become so entranced by the MHI-10 particle computer that he’d almost forgotten why he’d been granted access to it. “A high-fertility, high-tech society of true believers.”

“I have some fertility theories,” Stacy said.

Russell chuckled. Of course she did.

“Chemicals,” she said flatly. “They mess up your hormones. Also,” she added somewhat more quietly, “they cause cancer.”

“Overblown,” responded Russell. “There isn’t any solid evidence behind that. People aren’t having kids because of the economy.”

Stacy responded that his opinions were “midwit.”

Finally, Vincent spoke up. “‘A chimp in state of nature never jerks off, but in captivity he does, wat does this mean?’” he quoted.

Russell and Stacy looked at him, confused.

“Where did the birth rate collapse first appear?” he asked, rhetorically.

“Germany and Japan in the mid-twentieth century,” responded Stacy, who had clearly put some time into researching the subject.

“Right. And what happened to Germany and Japan before then?”

Russell and Stacy looked at each other uncomfortably.

“They were absolutely buck broken by the Global American Empire,” said Vincent, answering his own question. “Conquered. Demoralized. Chimps in captivity.”

Russell sighed. He knew what was coming - one of Vincent’s famous rants.

“But we’re not conquered,” objected Stacy.

“Wrong!” objected Vincent. “You’re so conquered that you aren’t even consciously aware of it. You tell yourself that you’re free, but try not paying your taxes for a bit and see how free you are! Try building a deck without a permit. Try driving at a reasonable speed down Tonkin Highway.”

Russell laughed. The Tonkin Highway detail was a new addition to the rant, and it hit close to home. The speed limit on that freeway was absurdly low, and it was covered in speed cameras.

“So you think,” Stacy asked, “people aren’t making babies because of traffic laws?”

“Traffic laws,” Vincent continued, “are a humiliation ritual. Every day, every one of us has to suffer the indignity of driving at a stupid, unnaturally low speed, or suffer fines at the hands of the digital robot surveillance grid. And if you don’t pay your fines, what does the system do? Send armed men to your house to drag you to a cage! And if you put up any meaningful amount of resistance? They’ll shoot you. That’s the deal! Drive stupidly slowly, or we’ll shoot you. And you think you’re not conquered! You think you’re not demoralized! Deep down, you know you are. Everyone does. That’s why everyone’s so pissed off and depressed all the time! And who wants to bring kids into a world where they’re conquered before they’re even born?”

“Traffic laws keep people safe,” objected Russell.

“To hell with you and your safety!” Vincent responded. The international students pretended not to eavesdrop, but it was obvious from the silence in the shop that Vincent’s rant had begun to attract an audience. “You know what’s safe? A cage. A zoo. Staying inside

and doing nothing all day until you die. You know what isn't safe? Childbirth. Marriage. Lashing your future to another human being and giving them the keys to destroy your life and everything you've ever worked for. That's not very safe, is it?"

Russell sighed.

Stacy spoke up. "I think you've got a point," she replied.

Vincent turned to her. "Thank you!" he said. It wasn't often that he found an audience receptive to his rants. "Many of the problems you've identified are downstream of this one. We're chimps in captivity. You think anyone would give a damn about the UN if we weren't? Chimp in state of nature wipes his ass with UN Sustainable Development Goals."

"What about the endocrine disruptors?" she asked.

Vincent paused. "I'll admit," he conceded, "I hadn't thought much about the endocrine disruptors. But consider this" - he brightened up - "chimp in state of nature doesn't encounter any goddamned endocrine disruptors either. It isn't just the state that's conquered us, it's the whole system."

"Right," responded Russell. "So all we need to do to save civilization is to destroy it."

"Not civilization," objected Vincent. "Just the managerial state and the globalist order. And we don't necessarily need to destroy it either. It's sufficient to just evaporate away from it."

Over the next hour, he laid out his plan. By the end of it, Russell and Stacy were fully on board.

26. Robot Laser Arachnid 1

It started with precision manufacturing. Vincent, as an avid CNC manufacturing hobbyist, already owned a CNC router, a cheap laser engraver, and two 3D printers. He had two problems: Firstly, the tolerances. His tools couldn't machine anything more precisely than 0.1 millimeters, which was far too sloppy. Better equipment could easily cost hundreds of thousands of dollars, and still wouldn't meet the precision required. More importantly, however, was the manual labour. Machining parts was hard enough, but manufacturing at scale was a whole other challenge.

Fortunately, Vincent had an omniscient chatbot at his fingertips. He had Russell help him make an audio/video interface to the chatbot that he could run on his phone, and took it around every junkyard and electronics recycling depot in Perth. He returned home with a trailer full of consumer electronics and discarded industrial equipment. He took over their two-car garage, and spent the next several days designing in tandem with the LLM, while deconstructing junk, desoldering surface-mounted devices, manufacturing parts, and assembling pieces into a Frankenstein's monster of servos, lasers, and electronics.

"I need to add a selective laser sintering head."

"Certainly! What materials will you need to sinter?"

"All the common metals. Copper, aluminium, steel, tungsten, titanium."

"This is what we collected the industrial printer for. I must advise you, even though this is quite a powerful laser by printer standards, it will be quite slow at sintering."

"That's okay, tell me where to find it."

"The printer is on the left side of the bottom shelf. To access the laser, start by removing the front cover..."

Eventually, his robot began to take form. It looked like a huge mechanical spider designed by a fourteen year old in Minecraft. Its body was roughly the size and shape of a desktop computer. It was able to support itself on as few as three of its eight hinged limbs, while it used its remaining five to manipulate objects and tools. It was equipped with every tool necessary to manufacture itself, and more - its blocky body contained a heat gun, several pairs of pliers, a 3D printer head, a router with a selection of endmills, a soldering iron, many different types of laser, a selection of power tools, and a TIG welding torch.

On top of its body, it held hoppers of sintering powder and spools of ABS plastic, solder, and welding wire. A power cable and an ethernet cable ran from it to the ceiling, where they dangled from a large, hinged arm that Vincent had designed to follow the robot's movements around the garage. Next to them were an array of ports, to which the robot could attach various hoses for compressed air, argon gas, and a dust extractor.

It was covered in cameras. There were ten mounted on the body alone, and one or two on each of its eight limbs, ensuring that it always had full view from every angle of any object it was manipulating. Vincent had originally thought that the cameras would be superfluous - after all, the ethernet cable connected the robot to an omniscient computer - but communication to the MHI-10 still involved at least a couple of hops on the unacceptably laggy terrestrial internet.

The system was thus designed to run completely offline, with only occasional help from the LLM. Every inch of the body not filled with tools was crammed full of electronics - salvaged circuit boards, GPUs and microcontrollers, all wired together in an incomprehensible warren of wires and fiber optics that made sense only to the LLM. The software - the most complex part of the entire construction - had almost no human involvement in its creation whatsoever. Vincent simply prompted the LLM to generate the appropriate firmware, flashed the resultant machine code onto the robot's various computers, and prayed.

Eventually, with trepidation, Vincent turned the robot on.

It stood up, proudly and symmetrically, on its eight limbs. Status LEDs flashed green. The previously silent garage was filled with the whine of cooling fans.

"Make it fabricate a plywood smiley face, 50mm in diameter", instructed Vincent to the LLM on his phone.

At once, the robot leapt into action. Ignoring the corner of the workshop where Vincent kept his plywood stock, it scuttled past him to the trash can and dove in. It emerged a moment later, almost tipping over the trash can, holding a rough plywood offcut. Elegantly vaulting up onto his workbench, the robot maneuvered the plywood piece directly underneath itself, clamped it in place with three of its limbs, and pulled a laser out from its body. Vincent barely had time to shield his eyes before a bright red light flashed, and smoke began to rise from the plywood. Then, without moving its body or the piece of wood, the robot reached one limb above itself, grabbed the dust extractor hose, plugged it into itself, and turned the extractor on. Finally, it swapped out the laser for the router, and, sequentially moving its "clamping" legs out of the way, started cutting the wood.

The entire process was done in under ten seconds. The robot scuttled away from its workpiece, and Vincent edged forward cautiously to inspect the plywood. He found a precise 50mm diameter circle, smoke still rising from the laser-engraved smiley face. As he picked up the pieces, he noticed that, although the two pieces came apart without resistance, there was no circular marking on the workbench where the router had cut through. The robot had guided the cut perfectly.

"Holy moly," breathed Vincent. "Wow."

He brought his phone up to his mouth. "Make it fabricate a remote control toy car."

Within two minutes, a maniacally laughing Vincent, newly fabricated remote control in his hands, was driving a miniature cobbled-together car around his garage.

27. The Manufacturing Singularity

Vincent had played out the manufacturing singularity in his mind many times before. He had always imagined the progress to follow something like Moore's Law - a wickedly fast progression in the long arc of human history, but a banal plod in the lifetimes of the humans fortunate enough to see it happen.

Of course, he hadn't factored in the assistance of a superintelligent omniscient chatbot. Working in tandem with the LLM and the robot spider, each next step in the progression was realized almost as quickly as he could imagine it.

He needed a portable power source - lithium batteries fell far short of the capacity needed to mill, weld, and sinter on the go. Plumbing the depths of the LLM's brain, Vincent and the machine invented a method of producing high quality graphene in his two-car garage. Within an hour, the robot was mass producing graphene supercapacitors, and swapping them in and out of a charging port it had built and attached to a wall socket.

The next generation of robots was three orders of magnitude smaller - while the spider weighed 40kg, its offspring weighed only 40 grams. They were modelled after ants, with six limbs and bodies the length of an adult human finger. Instead of being able to do a wide array of things, like the spider, each ant was specialized to perform only one or two tasks. Vincent designed and had the spider build cutter ants who carefully broke apart materials, transportation ants who could carry up to 40 times their bodyweight, welding ants, laser ants, carbon fiber synthesis ants, and many more. Each ant was powered by an array of supercapacitors and communicated to a base station via a salvaged bluetooth chip. The ants covered the entire workshop, moving in a coordinated swarm. When an ant ran low on power, it would run over to the charging station and swap out its supercapacitors, while another ant took its place.

Vincent was particularly proud of the recycling system. It was so sophisticated that he merely had to toss in a piece of junk - eg. an old, broken smartphone - and the ants would seize it and start tearing it apart. Any useful components - resistors, capacitors, microchips, etc. - would be carefully removed and placed in one of several bins (strict organization wasn't necessary as the entire inventory was indexed by the omniscient computer). The remaining pieces would be carried into a vacuum chamber (to prevent contamination from the air) and pulled apart, shredded and melted down into their pure, elemental raw materials. Vincent roped Stacy in to spend her days driving round scrapyards and recycling depots, indiscriminately collecting discarded electronic grist for the robotic mill.

The next shrink brought the average robot weight down to 8 milligrams, and its size down to that of an actual ant. At this scale, microchip size became the major limiting factor - the salvage chips he'd been relying on up to this point were simply too big. Vincent and the LLM spent some time developing ants capable of performing the deposition, lithography, etching, and micromachining necessary to manufacture semiconductors. The robots produced were controlled by tiny, silicon brains containing the absolute minimum number of transistors necessary to perform their assigned tasks.

Rather than the uniform ant design, the robots at this scale took on many shapes. Swarms of tiny, fruit fly-inspired robots buzzed around the workshop, transporting parts for the earth-bound bugs to cut, melt, and refashion into more robots. Now that the process had been freed from relying on salvage electronics, Stacy was able to cease her relentless tour of

recycling depots. Instead, the trio released first thousands, then millions, and finally billions of robotic worms into Vincent and Steve's backyard to mine for silicon, aluminium, lead, tin, rare earth metals, platinum, and gold.

Unbeknownst to anyone, the ground under the city of Perth was filled with an intricate network of tunnels just a few millimeters in diameter. The tunnel network formed an immense graph - millions of perfectly spherical nodes, connected by billions of perfectly straight edges, efficiently routing the worms from high-density elemental deposits to the manufacturing hub in the garage. Each node contained a single optical relay - a robot positioned directly in the center, which received light pulses from neighbouring nodes and broadcasted them onwards. Through this network, mining worms could communicate from one end of the city to the other, underground, at the speed of light.

The next shrink created robots the size of yeast. A single robot was invisible - they could only be seen when they aggregated together, which they obediently did by the billion. These enabled the creation of exotic materials, inspired by natural substances dredged out of the StevieNix state by the LLM. On command, the robots could synthesize elements into sheets of heavenly silk, columns of marble, or intricate braids of gold and transistors. But mostly, they were responsible for creating and assisting the robots of the final shrink.

The final shrink created robots that operated at the atomic scale. Each molecular machine's bizarre structure was uniquely suited to its assigned task, which was to place and bond atoms - mostly carbon - in desired locations.

Once the final shrink had been achieved, truly fantastic structures appeared on Vincent's command. Impossibly light airships and gliders flew around the ceiling of the garage. Railguns of various shapes and sizes materialized on the workbench. He finally moved the factory off mains power, and onto a fusion reactor the size of a basketball that could power the city of Perth for weeks without being refuelled.

Portable fusion reactors began to permeate all of Vincent's designs. He even had the robots build a fusion-powered motorcycle, which he took for a 350km/h joyride down Tonkin Highway at 1am. He returned to the house, shaking.

"I think my blood is eighty percent adrenaline," he announced, striding into the kitchen.

Russell and Stacy were still up, nursing mugs of tea. In the past few weeks, Stacy had become their de facto third roommate. She had taken over Vincent's room while he slept in a hammock in the garage.

Stacy ran up to him and threw her arms around his neck. "You idiot!" She backed off. "How fast did you get?"

"I hit three fifty. Not fast enough for Bonneville, but definitely fast enough for Tonkin Highway."

Russell and Vincent broke into laughter, while Stacy scowled and returned to her mug of tea.

"I definitely feel ready to increase the fertility rate now, if you know what I mean!" Vincent remarked crassly in her direction.

"Go to hell!" came the response. The laughter continued. Eventually, Stacy couldn't help but laugh too.

“What was it like?” asked Russell.

“Windy. The air kept trying to pull me off. It was all I could do to hang on.”

Stacy shook her head. “Such an unbelievable idiot”, she chuckled.

Vincent made himself a cup of tea, and the trio spent the next hour reminiscing over the past few weeks. Finally, when all their mugs were empty, Russell asked the big question.

“Are we ready to go?”

“Let’s do it!” Vincent responded.

Stacy just nodded and put down her mug. Russell pulled a box off the bookshelf and pulled out a Starlink transceiver.

The three put on the warmest jackets they owned and walked down to the Swan River.

28. Polymerized fullerene

The trio reached the Swan River at 4am. When they arrived at the sandy shoreline, Vincent took out his phone and spoke into his app, “okay, build the boat.”

The sand in front of them rippled like waves, as the billions of robots that had been following them through the tunnel network emerged, piecing together individual carbon atoms into an unfathomably complex lattice of carbon nanotubes that made sense only to the LLM. Ribs began to take shape, before being hidden behind a perfectly smooth skin of carbon fiber. A figurehead of Steve’s terrestrial avatar took shape on the prow, adorned with a diamond crown of thorns.

In a few minutes, the boat was done. It resembled a mastless, carbon cross between a Viking warship and a Thai long-tail boat. They pushed it into the river and climbed aboard.

Vincent fired up the fusion engine and lowered the oversized propeller into the water. The boat accelerated with a jolt, and Russell and Stacy were thrown to the floor in surprise. As the ultralight craft skimmed over the water, jostling its occupants port and starboard, Stacy objected.

“You couldn’t have designed a more stable boat?”

“This boat is history in the making,” Vincent responded. “What’s a couple hours of discomfort in exchange for an eternity of style?”

“I’m going to be sick.”

“We’ll leave that part out of the history books.”

“Can’t you at least add a keel?” complained Russell.

“We don’t have any robots,” pointed out Vincent. “Can’t change anything until we get there.”

Stacy and Russell groaned and lay down in the bottom of the boat as a grinning Vincent guided them at top speed past the Perth skyline, out the mouth of the Swan, and into international waters.

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“We’re here!” Vincent announced.

Russell blinked and sat up. Against all odds, he had managed to fall asleep. He looked over at Stacy. She looked rough. Bleary-eyed, hair matted with vomit, and clearly very annoyed. He was freezing. “Did you sleep?” he asked.

“Screw off,” she answered.

Russell hoisted himself up and looked around. The sun was just breaking over the Eastern horizon. Other than that, all he could see was ocean and sky. The boat bobbed gently in the waves. Russell sighed and let himself collapse back into the bottom of the boat.

“You’re gonna want to watch this,” said Vincent.

Russell and Stacy reluctantly made their way to the port side of the boat, where Vincent was indicating. Russell couldn’t see anything but the sea. He was about to say something, when Stacy yelled, “look!”

He looked where she was pointing and saw a large black cylinder, roughly a meter in diameter, slowly rising from the surface of the water. It appeared to be made from the same material as the boat. His annoyance and seasickness disappeared. "Whoa," he said.

When it had reached a height of two meters above the surrounding sea, it stopped rising. Everything was still for a moment, and then a couple of spurts of water came out the top. All of a sudden, a jet of water blasted out of the cylinder, soaring way overhead.

"Oh frig!" yelled Vincent, and started the fusion engine. He plunged the propeller back into the water and Russell and Stacy were once again thrown to the bottom of the boat as it accelerated away from the enormous fountain of seawater.

They didn't quite make it. The water came crashing down, knocking the air out of everyone's lungs. Vincent was thrown from his perch at the stern of the boat, landing in the bottom next to the other two. The engine's safety cutoff activated, and the boat continued to coast on its momentum and the chaotic force of the falling water until it was thankfully forced out of the fountain's landing zone.

Out of the landing zone, but not out of danger. The three continued to cling on for dear life. The boat was spinning, pitching, and rolling every which way on the turbulent sea.

"Don't worry!" Vincent attempted to reassure the others. "It's unsinkable!"

Russell couldn't hear Stacy's shouted response over the sound of the thundering water crashing back down into the ocean, but understood her obscene hand gestures.

After what felt like an eternity, the fountain abruptly stopped. The battered trio took stock. They were soaked and bruised to the bone, and the boat was half filled with water.

Stacy spoke up. "You absolute sodding moron!" she spat at Vincent. "You useless sack of-" "Whoa!" shouted Russell, cutting her off and pointing back to the cylinder. "What's that?"

Huge volumes of white foam were spilling out of the top, overflowing like a tapped beer bottle, and disappearing into the sea below. Vincent breathed a sigh of relief. "It's working!" he exclaimed.

"It'd better work, you complete and utter dropkick!"

Vincent started the engine and maneuvered the flooded boat closer to the cylinder. Minutes elapsed as the foam continued to spill out and vanish into the sea. The trio shivered. Russell was beginning to regret not having brought a wetsuit - the sun was still barely up, and the water was seriously cold.

Soon, the shivering turned into shaking. Russell looked at his compatriots. Stacy had given up trying to find a stable perch above the waterline, and was slumped against the wall of the boat, half submerged, arms wrapped around her legs, skin grey, lips blue. Vincent didn't look much better - his teeth were chattering uncontrollably and he appeared to have lost his final shred of enthusiasm. It dawned on Russell that, if Vincent's plan didn't come to fruition in the next few minutes, death by hypothermia would result.

He pulled the Starlink transceiver out of the waterproof pouch inside his jacket, and turned it on. It would take some time to connect to the satellites, and time was in short supply. As he watched the LEDs flash, his vision began to fade. The boat turned blurry, and the sea beneath them faded from deep blue to white.

The boat jolted. Some heroic gland deep within Russell managed to muster his single remaining drop of adrenaline and squeeze it into his bloodstream. He lifted his head. The sea wasn't white. The boat was on dry land.

"Wake up!" he yelled at the other two.

"Grmmmm" moaned Stacy. Russell sloshed over to her, put his shoulder under her armpit, and heaved her up. He wasn't strong enough to fireman-carry her out of the boat, but as soon as her face crested the side and she saw what lay beyond, she regained sufficient strength to haul herself over the edge and collapse onto the ground.

Russell looked around for Vincent. He found him crouched on all four, examining the pure white ground, hacking, coughing, and cackling.

"Polymerized fullerene", he stammered. "Thank God it actually sticks together."

Thank God indeed, thought Russell.

The Starlink transceiver beeped. It had found a satellite. Russell pulled his phone out of the waterproof pouch, and opened the LLM app.

"Please make us a heat source," he pleaded.

A campfire appeared in front of him on the polymerized fullerene ground. Vincent crawled towards it. Russell dragged Stacy's barely-conscious body over, flopped down next to his two friends, and passed out. Mission accomplished.

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Steve and Gabe looked up from the screen. "Can we heal them?" asked Steve.

"Can't. A hundred percent of our credits are going to Allen," responded Gabe.

"Frig. They look pretty rough."

"They'll make it. These apes are pretty hardy."

"Do you have any idea what their plan is?" asked Steve.

"No, I thought you did!" responded Gabe.

"I thought they were going to make a bible course! Maybe a matchmaking service! This," Steve gestured at the screen, "is insane."

Gabe burst out laughing. "You gave these monkeys an omniscient supercomputer, and you thought they'd make a bible course? Dude, how long have you been locked in that datacenter?"

Steve turned back to the screen and watched the three apes shivering in front of the campfire. Eventually, he started laughing too. He had no idea where this was going, but it sure was entertaining.

29. The Island

Russell was awoken by the sensation of robotic ants crawling over him. He yelped, jumped up, and shook them off furiously.

“Good morning, sunshine!” called out Vincent. Russell spun around. “We thought you’d never wake up!”

Vincent and Stacy were standing at the edge of the island, inspecting a much larger and more seaworthy vessel than the one they’d taken to the island. “She made me build it,” Vincent explained. “Might be useful for transporting livestock or whatever, but for the most part I figured we’d commute by hyperloop.”

“Do we have any water?” Russell asked. His lips were cracked and skin felt like it had been roughed up with 40 grit sandpaper.

“Of course we do,” Vincent responded, pointing behind him.

Russell turned towards the center of the island. Where the black carbon cylinder had previously stood, was a hill. While it was mostly still pure white polymerized fullerene, the top was covered with a deep brown earth. He looked down at his feet and saw dozens of the robotic ants that had awoken him scurrying to and fro, carrying spheres of dirt.

“Didn’t like the look of the fullerene?” he asked.

“Good luck growing anything on it,” Vincent responded.

Russell started walking up the hill. Before long, he spotted the water source - a tiny stream, flowing through a crease in the fullerene, ran from the top of the hill down to the sea. “Hey Stacy!” he yelled. “Does this water have any endocrine disruptors in it?”

The group laughed. Russell dropped to his knees and drank greedily from the stream. When he was done, he climbed to the top of the hill to get a better look. The higher he climbed, the more the ground underneath his feet felt like real earth. The ants were terraforming the island from the top down.

He reached the top and looked out. The island was small - just a few hundred meters in diameter - and a perfect hexagon. Weird. He trudged back down to the others. Stacy had cleaned herself up, changed into a white sundress, and evidently roped Vincent into being her photographer.

“Why is it a hexagon?” he asked.

“Hexagon is the bestagon,” Vincent responded blithely.

“Are we floating?”

“Yup,” responded Vincent. “The fullerene is super light and will never get waterlogged.”

“Why doesn’t it wobble?”

Vincent smiled and put Stacy’s phone in his pocket so as to free up his hands for the explanation. “The island is like an upside-down teardrop,” he explained, using his hands to demonstrate the outline. “At the bottom, there’s a huge ball of lead. This makes it so the center of gravity is-”

“Excuse me nerds,” interrupted Stacy, “but some of us have work to do here.”

Russell looked over at her. Arms crossed, weight on one leg, scowling. Annoyance embodied.

“Work?” he asked, pointing his chin in the general direction of her sundress.

“Yes, the actual hard part,” she responded. “This island is neat and all, but the world is full of islands that no one wants to live on. What makes you think this one is going to be any different?”

Russell hadn’t thought about that.

“She’s been documenting all our progress on social media,” explained Vincent. “She has like ten million followers.”

“You got ten million followers in a few weeks?” Russell asked, skeptically.

“I already had one million,” she responded. “I was a wellness influencer.”

“What’s a wellness influencer?”

Stacy just laughed and resumed her pose. Once Vincent finally managed a photo that met her standards, she took her phone back, muttered into it, and her clothing transformed into a red bikini top and matching skirt. “Can we get some sort of tropical pergola here?” she asked, ruffling her hair. “Think Bali, tiki bar sorta vibes.”

A bamboo pergola grew out of the ground in front of them.

When it was done, she climbed up onto a barstool and picked up the fruity cocktail that the nano-robots had assembled on the bar.

“I wouldn’t drink that,” warned Vincent. “The robots are designed for making computers and structural carbon. Drinks that don’t kill you are outside of the spec.”

“What about the stream?” Russell asked, nervously.

“That’s fine,” Vincent responded. “That’s just ocean water run through a desalinator and a reverse osmosis filter. But that,” he gestured at the drink in Stacy’s hand, “well, let’s just say I have no idea how they made it red.”

Stacy looked suspiciously at the drink. Suppressing her obvious disgust, she held it up next to her face and beamed a smile that would have halted a Mongol invasion. After Vincent had taken several photos, she relaxed her expression, placed the glass gingerly back on the bar and stepped away. “We’re going to have to figure out how to make real drinks before the people start arriving,” she noted.

Vincent and Russell nodded.

“Maybe they can bring their own drinks,” Vincent suggested.

30. The Commonwealth of New Sealand

The people did bring their own drinks. And their own food. And seeds, saplings, and livestock. That was the deal - be self-sufficient, help terraform the island, get to hang out with Stacy in a tropical paradise. Thousands leapt at the opportunity.

Vincent had thought he was busy before. He wasn't. The influx of people, all requiring accommodation, transportation, running water, sewage treatment, etc. overwhelmed him. Despite spending every waking moment designing and building, he still couldn't keep up with demand. Eventually, with much chagrin, he was forced to assemble a staff. Together, he and his crew oversaw the creation of new islands, the planting of vast acres of farmland, the construction of towns and villages.

Transportation between neighbouring islands was accomplished by boat - modelled, to Stacy and Russell's chagrin, after the now-iconic mastless long-tailed viking warship the trio had taken on their maiden voyage. Transportation over longer distances was accomplished by hyperloop - maglev trains floating inside perfectly cylindrical tubes, from which all the air had been vacuumed out. Barring relativistic effects, there was no theoretical maximum speed of a hyperloop train. In practice, they peaked at ten thousand kilometers per hour and could circumnavigate the globe in four hours.

Their first continental hyperloop station was on a farm just outside of Perth. It consisted of a gravel driveway, an enormous underground parking garage, and a 500 meter deep elevator shaft. Anyone told about the station was sworn to secrecy, on pain of banishment from New Sealand. Australian immigrants started flooding in.

Within a month, secret hyperloop stations dotted every region of the world with high concentrations of desirable immigrants. As the face of New Sealand, the responsibility for setting immigration policy fell on Stacy. Although they never questioned her criteria directly, Russell and Vincent surmised from the results that they were "young, hard-working, eager to party, attractive." Vincent and his crew built hyperloop stations all over Western Europe, North America, Australia, and East Asia.

Russell, on the other hand, found himself withdrawing more and more from the daily tasks of bootstrapping New Sealand. His focus was theological - he spent his days composing the Newer Testament, in which he recorded Steve's revelations in the diner, the exodus to New Sealand, and his theories of the afterlife. When he was done, copies were distributed to every citizen and new arrival. Although most people were already familiar with the contents from Stacy's social media postings, the book was still widely read and its distribution led much of the population to redouble their terraforming efforts with renewed religious fervour.

Unfortunately, not everyone was so inspired. Rumours of anti-social behaviour started to reach Stacy.

"Someone's been stealing goats", she announced to the other two over dinner.

"I'm pretty sure this is fish," responded Russell, absent-mindedly prodding his dinner.

"Huh? Pay attention. I'm talking about Pierre and Veronique's goats."

"That French couple with the cottage on the South Island?" asked Vincent. He and his crew had built their pasture a couple of months ago. Veronique had insisted on fields of lavender being planted, claiming it improved the flavour of the meat.

“Yes, they’ve lost three in the last week.”

“How do we know someone stole them? They could have just wandered off,” objected Russell.

“They claim it was a Belgian farmhand who had inside knowledge of their operation.”

“Their goat-farming operation?” Russell laughed. “So we’re talking a pretty sophisticated heist then?”

“They’re very upset,” responded Stacy. “They want us to do something.”

“Yes, let’s summon the goat detectives,” chuckled Vincent. “See if they can goat to the bottom of it.”

“It’s not the first instance of anti-social behaviour,” objected Stacy. “A woman was raped in the Capital last week.”

“What? And you led with the goats?” asked Vincent, suddenly serious.

“The goats were more recent. Anyway, the point is, what are we going to do about it?”

The light-hearted conversation descended into squabble. Fundamentally, they all agreed that rapists and goat-rustlers deserved to be hanged. Their opinions differed, however, on the methods of determining the guilt and administering the punishment.

Vincent put forth his preferred option - vigilante lynch mobs - and sat back, detached, as the other two ignored his suggestion and bickered over the merits of various state apparatuses.

“This is going to sound a bit crazy,” started Stacy, “but hear me out: Queen Stacy.”

Russell choked on his drink. Stacy politely waited for him to stop coughing, before continuing. “I’m basically queen already. Everyone moved here because of me. If I told them to go hang someone, they’d do it. You know it.”

“What’s to stop you,” asked Russell, “from getting them to hang an innocent person?”

“I’ll use my powers wisely,” smiled Stacy. “With great power, comes-”

“Shut up.” Russell was visibly outraged. “Monarchies are discredited. They have been for centuries. Have you never heard of the enlightenment?”

Stacy rolled her eyes. “We didn’t come out here to escape a monarchy,” she pointed out. “Not a functional one, at least. King Charles never set a speed limit.”

Russell turned to Vincent. “Can you tell her?” he pleaded.

“A monarchy is a tyranny where you’re ruled by one person,” responded Vincent. “A democracy is a tyranny where you’re ruled by the entire population. Which is worse?”

Russell sighed. That wasn’t the response he’d been hoping for.

“If Stacy turns out to be a bad queen,” Vincent continued, “the peasants can just revolt and behead her. But what if fifty one percent of the voters turn out to be bad at voting? Good luck beheading them all! There aren’t enough guillotines in the world.”

Russell turned back to Stacy. “Does that sound appealing? Do a bad job and get beheaded in a peasant revolt?”

Stacy shrugged. “Seems unlikely,” she responded. “I’ll do a great job.”

Russell wasn't convinced. "We didn't come here to escape a democracy either. We escaped a corrupt oligarchy run by billionaires. The principle of democracy is fine, Australia just didn't do it right. We can make a proper direct democracy on the blockchain. One person, one vote, cryptographically verified."

"You want to know what a direct democracy looks like?" Vincent asked.

"What?"

"Vigilante lynch mobs. Fully democratic judge, jury, and executioner. Power to the people, baby!" Vincent grinned, followed by an "ow!" as Russell punched his arm.

"That's not what I'm suggesting," Russell grumbled.

"That's right, Vincent! He's suggesting vigilante lynch mobs on the blockchain." piped in Stacy.

"'Democracy is the worst form of government, except for all of the others that have been tried,'" quoted Russell.

"Democracy is the most degenerate form of government, out of all the ones that have been tried," corrected Vincent. "I mean that literally. Democracies are the result of human organization meeting the second law of thermodynamics. Don't confuse entropy for progress."

"Anarchy is so degenerate that even ants have evolved beyond it," shot back Russell.

In the end, they couldn't agree. A compromise was struck. The Commonwealth of New Sealand would be split into three separate entities - The Theocratic Dominion, the People's Republic, and the Anarchy. Time would be the judge of their success.

31. Three types of people

Most of the New Sealand population chose to stick with Russell in the People's Republic. He drafted the world's simplest constitution - all citizens were entitled to a vote, and all other laws would be established by referendum. He had the LLM create a blockchain-based app, through which people could propose and vote on legislation. Any proposed legislation that met the 50% threshold, became law. Voting was mandatory.

The first law to pass wasn't a law at all, but a declaration of human rights. Modelled after the American Bill of Rights and the UN Declaration of Human Rights, it enumerated both a list of natural rights - including the freedoms of speech, opinion, and peaceful assembly, and positive rights - including the right to education, social security, and asylum. Over time, amendments were passed which slowly increased the list of rights.

A court system was established, with regional, district, and supreme courts. Laws were enforced by police, and criminal charges were brought in front of judges by public prosecutors. Prosecutors who failed to prosecute criminals or judges who made unpopular judgments were voted out via referendum.

The system was familiar, and popular. The population of the People's Republic grew first into the hundreds of thousands, and then to the millions.

The currency, as in the other entities of New Sealand, was gold. To support the burgeoning population, trillions of robotic worms burrowed for miles under the ocean floor, searching for and mining gold. Russell distributed the gold equitably to the population, who happily traded it for food, goods, and services. Before long, companies situated in the People's Republic became major players in the international markets for gold, food, and luxury goods.

The high standard of living and enormous quantity of public funds made the People's Republic an attractive destination for doctors, educators, and scientists the world over. Within a generation, the People's Republic boasted some of the best schools, universities, and hospitals on the planet.

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The next most popular entity was the Theocratic Dominion. Stacy, widely seen as a prophet, was held in a religious reverence which she directly parlayed into a divine right to rule.

Once again, a police force was created in order to enforce the law. Laws were drafted by Stacy, in response to grievances that were brought before her. She thus simultaneously acted as both judge and legislator, occasionally blending the roles by passing judgments for violations of laws that did not yet exist. L'état, c'était Stacy.

Her legal system was inspired by a variant of an Australian convict's ballad that her dad used to sing to her as a child - upon conviction of a crime, the result of a coinflip would determine if the convict was sentenced to death, or transportation. Death was administered by hanging; transportation involved a one-way trip to the New Australia Penal Colony in a specially designed hyperloop pod that forced the convict out upon reaching the island. There were no guards on New Australia, but it was a thousand kilometers from any other landmass, filled with wild animals, and very cold. A third option - pardon - was reserved for cases where Stacy was in a forgiving mood, and the crime didn't seem to merit death or transportation. It was rarely employed.

The population in Stacy's Theocratic Dominion was extremely well behaved. After the first few public executions and deportations, the people got the idea - any misbehaviour, no matter how minor, even if it didn't violate any laws at the time, could result in death or exile. Anyone who had the remotest criminal intent moved away, and Stacy was left with one of the largest, purest populations of honest hardworking individuals in the world.

Although most business owners initially expressed skepticism over doing business in a jurisdiction with a nondeterministic legal system, many eventually came to realize that Stacy's rulings were anything but arbitrary. Her moral framework was, after all, explicitly laid out in the Newer Testament (not to mention her large collection of social media posts). So long as a business obeyed its contractual obligations, dealt honestly, and avoided polluting the environment or poisoning people with endocrine disruptors, the owners were on fairly solid ground. Many found the system in practice to be more predictable and less capricious than the jury-centric systems in Old World jurisdictions. This, combined with the low-tax low-regulation environment, propelled the Theocratic Dominion to become a global favourite jurisdiction for large, multinational corporations.

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Only the bravest chose to live with Vincent in the Anarchy. Vincent rejected state authority as being morally illegitimate, indistinguishable from rule by mafia or warlord. In his view, states were granted power on the basis of two superstitions: That commands are somehow legitimate when they're labeled as "laws", and that violent thugs somehow become upstanding citizens when dressed in uniforms, given badges, and told to enforce those "laws". The cornerstone of his moral code was the Non-Aggression Principle (NAP), which states that it is immoral to initiate the use of force upon another person or their property. As states regularly violated the NAP, they were immoral. QED.

Of course, once aggression had been initiated, violence was on the table. Any means at all could be justified to neutralize an aggressor - up to, and including, vigilante execution. In fact, Vincent considered thoughtful participation in vigilante lynch mobs to be a courageous exercise of civic duty, and worked hard to inspire the population to share his inclination. In practice, lynchings were rare - partially because the brutality of the punishment discouraged antisocial behaviour, and partially because Vincent set immigration policy by controlling the only international hyperloop station.

Vincent was the first to admit that, in most parts of the world, an anarchist paradise would likely descend rapidly into a warlord-dominated hellhole (ie. a conventional state.) But he dared to dream, that by cultivating a virtuous population, true freedom from state predation could be achieved.

Unencumbered by the responsibilities of running a state, Vincent spent his time as he preferred - building islands. He and his crew adopted a policy - if any group of people came to them with a neat-enough sounding idea for an autonomous NAP-compliant canton, they'd build the islands necessary to make it happen. Cantons were constructed as conglomerations of small, mobile, hexagonal islands. This design was to encourage secessionism - if an internal dispute occurred within a canton, opposing divisions could simply float apart rather than resort to violence. This extended all the way down to the household level, and it was common to see individual homesteads, floating alone, adorned with a single house, a barn, and a small collection of livestock.

Naturally, cantons could set their own immigration policy within the Anarchy of New Sealand. Initially, these were mostly set according to hyper-local Old World ethnicities, and cantons such as New Inverness, New Vienna, and New Gangnam became major forces. Over time, as the possibilities began to sink in, more creatively constructed cantons arose.

A group of venture capitalists, frustrated with the growing difficulty of convincing tech talent to move to a slowly disintegrating California, set up the Whale Fund. Modelled after a miniature San Francisco Bay Area, it functioned as a startup accelerator. The fund took a 10% stake in any locally-founded companies, in exchange for capital and an administrative apparatus dedicated to building the world's most desirable location for highly talented individuals. The immigration exam involved an IQ test and an AI physiognomy scan. The unofficial motto was "live free; build free; throw junkies into the Pacific."

The Whale Fund was immensely successful. Hungry founders and fed-up tech workers flocked to the arc of islands in the Pacific. The canton's business model was endlessly copied and tweaked by competing VCs, chasing after the masses of skilled workers that were rapidly evaporating out of the failed Golden State.

The second major mission-focused canton was Jurassic Park. A group of eccentric biologists approached Vincent with the proposal of using CRISPR to create useful dinosaurs by combining dinosaur DNA from the StevieNix source code with the DNA of modern domesticated animals. Vincent was skeptical that they'd succeed, but loved their attitude. He and his crew spent weeks fabricating for them a vast, floating, rainforested conglomeration the size of Sicily. Against all odds, the biologists pulled it off.

Their first successful creation was a species of protoceratops ("protops") that was useful for both eggs and meat. Around the size of a domestic cow, they spent their days rummaging around in the undergrowth, gorging themselves on plant matter, before dutifully returning home each evening to lay a huge, delicious, nutritionally balanced egg. Their versatile, plant-based diets, easygoing domesticated nature, imperviousness to predation, and dependable daily food production quickly made them a homesteading favourite.

Their next creation was a transport dinosaur - the deinonychus ("runner"). Built like a large velociraptor, each runner could carry a human being on its back at speeds of up to ninety kilometers per hour. Its carnivorous diet was a challenge, but the Jurassic Park biologists were soon relieved to discover that it could subsist on a diet consisting almost entirely of protops eggs. The advent of rapid two-legged transportation meant that people could easily traverse difficult terrain without relying on roads, so Vincent and his crew increased the topographical complexity of future islands accordingly.

Runners became the dominant form of transport throughout many cantons, until the biologists made their next major breakthrough - the quetzalcoatlus ("ketzel"). A ketzel resembled a dragon crossed with a pelican, had a wingspan of 12 meters, and could carry two adult humans up to a thousand kilometers in a single flight. With temperaments lifted straight out of golden retrievers, ketzels and runners were adopted en masse into rural and suburban households as not just modes of transportation, but pets.

The most common cantonal configuration became the village canton - a confederation of ten to twenty self-sufficient multi-generational family homesteads, each with several protops, surrounding a small urban center consisting of a school, church, clinic, and market. Village cantons rarely got large enough to contain distances not easily commutable by runner, or to

exceed populations where people didn't all know each other. Village cantons would often float in orbit around larger, business-oriented cantons, to which workers would commute via ketzel.

Just as leaders naturally emerge in any situation where humans need to coordinate, so too did leaders naturally emerge in the cantons. Elections and power struggles were rare - instead, most villages started as projects by two or three friends, one of whom was already the natural leader. As a leader's reputation for fair dealing and good judgment grew, so too did the village. If a leader ever took a turn towards the despotic, the unimpressed villagers would simply unmoor and float away. A market for leadership thus emerged, the likes of which had never before been seen on land.

The third major mission-focused canton was founded by Vincent's son, Xavier, at the age of sixteen.

Act 3: New Sealand

32. Xavier

“Hey dad”, asked Xavier, “why does no one else build new islands?”

Vincent put down his phone and peered over the table at his son. “What do you mean?” he responded. “We have a whole crew building the islands. Each island takes at least forty people, and we usually have a dozen going at once.”

“Right,” Xavier responded, “but it’s only your crew, which means you have a stranglehold on the market. You could charge as much as you like to build an island. Therefore pricing must be inefficient. It’s a moral duty of the market to kneecap you until competitors have the opportunity to emerge.”

Vincent sighed. Xavier was homeschooled, and was working his way through a unit he had designed on Austrian Economics. As has happened before, Xavier was applying his newfound knowledge to criticizing everybody around him, particularly his parents.

“I don’t charge for the islands at all,” he objected.

“Even worse! You just build islands based on vibes! The market price of a new canton is a suitably manipulative pitch deck. You know there are companies out there that specialize in helping would-be canton founders prepare pitch decks for you?”

Vincent was aware. Their pitch decks all looked the same. He hadn’t seen an original, home-made deck in years - which was a shame, as he vastly preferred them.

“Any idea how much those companies charge to prepare a deck? There’s basically a black market price on new cantons.”

“Are you suggesting I start charging for cantons?” asked Vincent.

“No, without competition there’s no way for you to discover a fair market price,” responded his teenaged son, confidently. “I’m suggesting you democratize the island-creating technology and let a free market emerge.”

“Absolutely not. No way in hell,” responded Vincent.

“Why not?”

Vincent thought back to the early days, to the house he and Russell had shared in Perth. Their early interactions with the MHI-10. How easily they’d tracked down Stacy. How easily they’d manufactured railguns and fusion reactors. He thought of the vast, unthinkable scale of misery and destruction that could be unleashed by the wrong person being granted access to the omniscient supercomputer. The people of New Sealand were mostly virtuous, but it would only take one maniac with a remote-controlled omniscience-guided fusion bombing drone to destroy it all.

“The technology to build islands rests,” he explained carefully, “on a technology too powerful for humans to handle.”

“You mean the computer?” Xavier asked. “The MHI-10?”

Vincent winced. The MHI-10 had been deliberately left out of Xavier’s homeschool curriculum, the Newer Testament, and, to his knowledge, all of Stacy’s social media postings.

“Who told you about the MHI-10?”

“Everyone knows about the MHI-10, dad.”

Vincent swore. “Don’t repeat that,” he added, hastily. “Let this be a lesson to you. Never trust anyone with anything.”

“There’s a referendum about it in the People’s Republic.”

“WHAT?”

Xavier pushed his phone across the table. It displayed his social media feed, plastered with post after post of People’s Republicans complaining about their lack of access to the computer.

“Elitist assholes, prolly sitting in their mansions jerking off, spying on the rest of us while we do all the REAL WORK!” read a representative sample.

“Russell wants to pretend he’s one of us, meanwhile he’s sitting on a pile of gold the size of parliament! Let them eat cake, motherf—”

“Morons,” responded Vincent and pushed the phone back.

“They’re going to win,” said Xavier. “The referendum’s at 71% for.”

“What’s the wording?”

“The Freedom of Knowledge Act. Democratize access to the MHI-10 supercomputer, for the common good of humanity.”

Vincent rolled his eyes. “They have no idea what they’re asking for. How are they even going to enforce that? The only people with access are Stacy, Russell, and myself.” He thought for a second, then realized. “Oh. Remind me to triple security.”

“Anyway,” said Xavier, “we were talking about the islands.”

“I already answered your question.”

“Why can’t you use the computer to build fab technology that doesn’t rely on the computer? Then you can democratize that.”

Vincent was a little annoyed. To be honest, the thought had never occurred to him. An engineer to the bone, he’d set out to meet a set of requirements. Was fabricating a Hoppean collective of free societies on artificial islands not hard enough? Democratizing access to nano-fabrication technology was outside the scope. Xavier should count himself lucky that Vincent had taken enough time away from the project to father him.

“Do you want to give it a shot?” he asked. “We’ll add it to your engineering curriculum.”

Xavier’s jaw dropped.

—

The project was harder than it sounded. Access to the MHI-10 had been a foundational assumption at every step of the tech tree, from the robot spider in Vincent’s old workshop, to the extremely sophisticated Computer-Aided Design/Manufacturing (CAD/CAM) software that Vincent and his team had built up over the decades to assist in island production. Removing it would have been impossible, were Xavier not allowed to use the MHI-10 itself to help with the task.

Xavier got to work. He was relieved to find that his father had always relied on sensors, never omniscience, to determine the locations of objects in real-time. Retrofitting sensors into the robot designs would have been near impossible. Still, there was plenty of omniscience involved in higher-level planning and swarm coordination. As manufacturing an island involved coordinating trillions upon trillions of individual robots, replacing the MHI-10 with conventional computing algorithms was tricky, to say the least. Finally, he understood why integrated circuits had been a part of his curriculum since he was six.

He became best friends with the Large Language Model. Over the course of the next few months, it helped him design a new machine. It wasn't a general purpose computer, but an Application Specific Integrated Circuit (ASIC) designed to design other integrated circuits. These secondary circuits were special - rather than standalone computing devices, they were built into the structure of whatever object the ASIC was told to construct. It was these secondary circuits that would coordinate the robot swarm - thus, every object manufactured would essentially be a computer, that knew how to manufacture itself.

The ASIC was huge. It was roughly the size and shape of an oak tree. Constructed out of an unfathomably complex lattice of carbon, silicon, gold and rare earth metals, it was kept submerged in an enormous diamond tank of cooling liquid. When Xavier switched it on for the first time, it hummed. He watched the cooling liquid slowly start moving around the tank, swirling around the hundreds of thousands of delicate nanostructure leaves.

Slowly, he walked over to his desk next to the tank and brought up his dad's CAD software. The LLM had helpfully ported it to the ASIC - Xavier had no idea how, but assumed that the software was now baked in to the circuit. To update the software, he'd need to build a new tree. Praying under his breath, he drew a 1cm sphere in CAD. He then flipped over to CAM, selected a spot on his desk as the output location, and clicked "run".

He stared at the spot on his desk. For ten long seconds, nothing appeared to happen. Then, he saw a speck of dust appear. Out of it, grew a number of tiny threads, so small that he would have missed them had he not been staring so intently at that exact location. The threads grew up, branching and joining each other, until they'd built an almost invisible 1cm buckyball. The circuit.

Then, over the course of a couple seconds, the almost-invisible ball filled out. It blackened before Xavier's eyes, becoming a solid, carbon sphere. He picked it up. It was perfect. Impossibly light, visually flawless. He could see no trace at all of the billions of transistors integrated throughout its structure.

Just then, the door to his lab burst open and his disheveled father ran in.

"Hey dad!" he yelled excitedly, running up to him. "It worked! Look!"

Vincent paused, and looked down at the tiny black marble his son was holding up to him. For a moment, he forgot why he'd run in. He looked up at the ASIC, standing proudly in its enormous diamond cylinder of swirling coolant. He understood the implications. "It worked?" he asked.

"Yes!" Xavier responded, pressing the ball into his dad's palm. "Look, it's perfect!"

Vincent examined the sphere. It looked to be about a centimeter in diameter. Probably was, down to the atom. He remembered the plywood smiley face he'd had his spider build, all

those years ago. The vast consequences implied by the construction of that simple, 50mm circle. He rolled the sphere between his fingers. It was perfect indeed. Terrifyingly so.

He had absolutely no idea what to say to his son.

“Congratulations,” he finally said. “Took you long enough.”

Xavier laughed and ran back to his computer. “I’m gonna make a skateboard!” he shouted.

Vincent snapped back into the moment, and remembered why he’d run into the lab. “Not right now,” he said. “We’re going to Stacy’s. Come on, the ketzels are already saddled up.”

“What, now? Do I have to come?”

“Yes, you have to come.”

“I’ve just made the most significant technological advance in two decades and you want me to go to a stupid dinner party?”

Vincent looked at his son, and realized how engrossed he’d become in the project. “You haven’t been reading the news, have you?”

“No, why?”

Vincent sighed. A decade’s worth of geopolitical events had unfolded in the past few months. How to catch the kid up?

“It’s all gone to hell. The PR’s declared war on the Dominion. Russell’s in exile. A colour revolution is kicking off. Stacy’s asked for help. Let’s go.”

“Oh”, responded Xavier, looking crestfallen. “Okay, I guess.”

As they ran out of the lab, Xavier watched his dad hurriedly mutter into his phone.

“Six railguns, fully automatic. 200 kilos of ammo. Fill the rest of their weight capacity with supercapacitors. Fully charged.”

They entered the yard. The three family ketzels were indeed saddled up. Holstered railguns and cases of munitions were materializing directly onto their backs. Vincent vaulted onto his ketzel.

“Ready?” he asked.

Xavier swallowed. He looked at the loving face of his ketzel, Cosmo. Cosmo wagged his tail and lowered his back for Xavier to climb aboard.

“Yup,” he responded. He gripped the handle on the saddle, put his foot in the stirrup, and hauled himself up. He nestled in among the guns and munitions. “Good boy,” he muttered to Cosmo.

With a bound, the fully laden dinosaurs took off and flew into the cold night.

33. Sullivan

Sullivan was average. Average height, a bit pudgy, not very good at sports. He wasn't the brightest kid in school, but wasn't dumb either. With a great deal of effort, he was able to get mostly Bs, mixed with the occasional A. His guidance counselor advised him to join the military. He studied poly-sci instead, and then law.

He struggled to get his foot in the door at all the big law firms. Struggled to get work as in-house counsel, junior associate, paralegal. Struggled to pay rent. Struggled to get dates on Tinder. His sister told him he gave girls "the ick". He told his sister to go to hell. She helped him spruce up his profile, took a couple of decent headshots, taught him some openers. He went on a few dates, but could never close. Maybe his sister was right about the ick.

His high school friends moved away. There weren't that many of them to begin with. His best friend and roommate, Jack, started dating some fresh off the boat lady whom he suspected needed a greencard. Jack announced two weeks later that he was moving out, so Sullivan helped him drag his mattress onto the roof of his van. That was the last time he saw him.

He spent his days online. He didn't game, feeling that it was a waste of time. Instead, he scrolled social media. His money ran out. He got himself diagnosed with anxiety and filed for disability and a medical marijuana prescription.

One day, a photo popped up on his feed. A beautiful woman, a perfectly white beach, palm trees. "Looking for a change?" the caption asked.

"Screw it," thought Sullivan, and clicked the link in her bio.

He raised his eyebrows. Interesting. She seemed to be some sort of cult leader.

She seemed to be taking applications to join her cult. He looked at the stack of final demands on his second-hand IKEA desk. "Screw it," he thought again, and called his sister.

"You want me to help you with WHAT?" she asked.

"Help me with this, or help scrape my brains off the shower curtain," he responded, matter-of-factly.

She helped him with the application. In the end, it looked as good as his Tinder profile - good enough to gain him coin-flip odds, provided the person on the other side knew nothing about him.

He submitted it. He was accepted.

He was emailed a latitude and longitude. He spent the last of his meager credit card limit on an Uber out there. \$226.50. He arrived at a dilapidated barn in the middle of nowhere. The Uber drove off, leaving him coughing a mixture of dust and agricultural chemicals. He didn't leave a tip.

The barn door was slightly ajar. He walked inside, heart pounding. Once his eyes adjusted, his jaw dropped. This cult was something else. A perfectly black cube, blacker than anything he'd ever seen in his life, stood in the middle of the barn, with a sliding door in it and a button. He pushed the button. The door opened. He got in, and the elevator dropped.

With no external reference, he had no idea how far down the elevator went - but just as he was starting to worry he might reach the bottom of the Earth's crust, it decelerated. He got

out, and found himself on a subway platform. A single shuttle stood on the tracks, with four seats. He got in. The door closed, leaving the other three seats empty. The shuttle accelerated, noiselessly.

He underwent constant acceleration for a full hour. It felt like a child was bear-hugging him into his seat, attempting weakly to crush his chest. It wasn't hard to breathe, but he eventually started to panic. What had he done?

Just as the waves of regret started cresting over him, his seat swiveled around and the shuttle started decelerating. The same weak crushing feeling - but at least this time, he knew it would eventually end. It took another hour.

Eventually, the shuttle stopped. He got out. There was a woman there to meet him. Not the cult leader, but just as beautiful and bounding with youthful energy. She looked like she belonged on a high school football field, waving pompoms. She beamed a huge smile at him.

"Hi Sullivan, welcome to New Sealand! We're so excited to have you. I'm Tasha, and I'll be your orientation guide!"

That was the most positive attention a beautiful woman had ever paid him. Sullivan fell in love, immediately.

As they ascended the elevator, Tasha filled in the many missing details about The Commonwealth of New Sealand. New Sealand was actually composed of three separate entities - a direct democracy called the People's Republic, a hereditary monarchy called the Theocratic Dominion, and something else, called the Anarchy. The cult leader he'd come across on social media was queen of the Theocratic Dominion. All new citizens got to choose which entity they wanted to live in.

"Where do you live?" he asked.

"The People's Republic," she beamed in response. "Stacy's cool and all, but she's kinda stingy. I get free housing and healthcare in the PR."

Sullivan signed up for the PR.

As advertised, he was given free housing - a one bedroom apartment, just off one of the canals downtown. It was nice. He also got a monthly stipend, which was more than enough to live comfortably on. There weren't a lot of jobs, but that was okay. He filled his time putting his legal training to work, writing legislation for the PR. Finally, for the first time in his life, he felt useful.

The People's Republic had an interesting constitution. All laws were created by referendum, via a blockchain-based app. Anyone could propose any legislation they wanted, and voting was mandatory. Sullivan wrote vast volumes of laws, and fired them off onto the chain.

Unfortunately, the average person in the PR didn't actually enjoy voting on laws. After the initial flurry of excitement where the basics were established (death penalty for rapists, murderers and goat rustlers), laws got increasingly technical. Very few people had educated opinions on the maximum allowable sulphur content in a tractor tire, but surely someone had to set a limit! Sullivan consulted experts in the tractor tire industry to craft an informed piece of legislation, and was offended to the bone when it didn't pass the vote.

Most voters had slowly ossified into "yessers" (people who would vote in favour of all

legislation), and “nopers” (people who would do the opposite). Swing voters were a small minority, and even they barely read beyond the title. This upset Sullivan. To allow the country to be governed by a tiny slice of slightly less lazy voters, thoroughly uneducated in matters of law, was downright undemocratic. He turned his attention from directly crafting regulatory legislation, to crafting regulatory agencies.

The Keep Roads Safe act passed with the support of 90% of swing voters, and established the Department of Transportation. It was endowed with the power to regulate all aspects of transportation, including the sulphur content of tractor tires. Over the course of a few months, he wrote the Clean Surroundings Act, the Health For All act, the Smart People Act, and the Money For Everyone act, establishing the Department of the Environment, Department of Health, Department of Education, and the Department of Commerce. He beamed to think of the volumes of regulation that these departments would pass, all without ever having to bother the electorate.

In addition to easing the burden on voters, the new agencies provided jobs - thousands of them. As people took jobs in the civil service, they almost universally converted into yessers, making it easier and easier to pass future laws.

After establishing the regulators, Sullivan turned his efforts to other aspects of government. He wrote legislation establishing specialized police forces, a military, and an intelligence agency - the Department of National Security (DONS). All of them passed. In short order, an entire executive branch of government had been created, all ostensibly run by a Chief Executive - a largely meaningless ceremonial role, to be voted on via referendum every four years.

Sullivan took a job in the DONS. It was his first job. It was okay. Mostly, he read other people's texts.

Tasha got married to a six foot two Frenchman named Dennis. They had twins. Sullivan started drinking.

Eventually, he found someone, via the Department of Love's matchmaking service. Her name was Susan. Like Sullivan, she was average. She liked that he had a job. He liked that she pretended to tolerate his company. They got married and had two kids.

That was about the time the troubles began.

The economy of the PR ran mostly on the back of gold handouts from a wealthy patron named Russell. Sullivan wasn't entirely sure how Russell got all the gold. Supposedly it was explained in some weird religious text, but Sullivan never bothered getting into all that cult stuff. He knew an undemocratic abuse of power when he saw it, though. He had some words with his contacts in the Department of Commerce. They passed a regulation nationalizing large reserves of gold, and gold mining operations.

Russell wasn't happy when the police showed up at his door, but there wasn't anything he could do. The law's the law, and nobody was above it.

The people could now decide for themselves, using the power of democracy, what to do with the gold. It turned out, they wanted to spend it. On themselves.

So much gold was mined, distributed and spent that it began to significantly impact the global price of gold. Gold-denominated prices skyrocketed. Inflation hit forty percent, and

the people began to clamour for the government to do something. So Sullivan stepped up to the plate.

He drafted the Stable Prices Act, putting the gold under the control of the Federal Reserve Bank. The bank had a dual mandate - to maximize the welfare of the citizens, and to keep inflation at 2 percent. Unfortunately, the mandates were in conflict. It wasn't actually possible for the bank to dispense enough gold to fund the government and all the entitlements, without causing inflation to blow through the roof. As prices rose, people voted themselves more gold. As they spent the gold, prices rose.

The unspoken, open secret inside the executive branch was that the people had voted themselves more gold than existed in the world.

Slowly, the enormous vaults under the Federal Reserve began to empty. His team at the DONS was tasked with finding creative solutions. Most of his colleagues explored methods of reclaiming the spent gold, but it was distributed in companies' vaults throughout the world. International markets loved the People's Republic.

Sullivan focused on the source: The mining worms. How did they work? Where did they find the gold? He knew who knew: Russell.

He tapped Russell's phone, bugged his house, read his texts. Everything was encrypted, but the DONS had long-ago required backdoors in all communications equipment.

Russell wasn't particularly talkative. Mostly, he was a family guy. He had two interesting friends though - the cult leader, and the guy who'd founded the Anarchy. Sullivan listened closely whenever they were chatting.

Eventually, he learned something. There was a computer. An omniscient computer. It knew where all the gold was - that's how the worms knew where to go. Maybe Russell hadn't taken well to the whole nationalization thing, and told the worms to stop looking. Interesting. Sullivan thought about all the other things he could do with an omniscient computer. He thought back to Tasha. Very interesting.

The more he thought about it, the more he realized how undemocratic it was for these three elites to monopolize access to such a powerful resource. He thought of all the suffering that the computer could alleviate. By jealously guarding access, the trio was basically causing suffering. That wouldn't do!

He leaked the details about the computer to the press, and began drafting a referendum: The Freedom of Knowledge Act. It passed. He confronted Russell, personally.

"I haven't the foggiest clue what you're talking about," responded Russell.

Sullivan sighed. "The people have spoken, Russell."

"They want access to a computer that doesn't exist. And if it does exist, I don't know anything about it."

"Do you want me to come back with a warrant?"

"No, I want you to go to hell."

Sullivan came back with a warrant. When he showed up, Russell and his entire family were gone.

34. Kitten

Orange lights flickered in the distance. That was weird. Vincent didn't remember the Dominion having orange lights.

As they approached, and the sound of gunshots and explosions started to eclipse the sound of wind and waves, he realized what they were: Fires.

"How you doing back there?" he asked, over the intercom.

"Fine," responded Xavier. Then, a few seconds later - "Dad?"

"Yeah?"

"Is the Dominion on fire?"

Xavier looked back over his shoulder, at the other two enormous winged dinosaurs flying in formation. His son Xavier loosely held the reins of his ketzel - Cosmo - in one hand, and the horn of his saddle in the other. He and Cosmo had flown together since he'd been a small child. They were naturals together.

Beyond the pair, flew his wife's ketzel - Kitten. He'd borrowed Kitten for the trip, and laden her with munitions. He hoped his wife wouldn't mind.

"Sure looks like it," he responded.

The sun broke over the horizon just as they were on the final stretch. The weak gold rays illuminated strange shapes on the water below. As the sun rose, their outlines became clear. Hundreds of warships, spaced out as far as the eye could see. A naval blockade. The Dominion was under siege.

Xavier's voice crackled over the intercom. "Hey dad?"

"Yeah?"

"I think that ship is aiming at us."

"Which ship?"

"The one with the big gun aimed at us."

Vincent didn't have long to be annoyed at his son's lack of specificity. A boom rang out, and the bright flash of an anti-aircraft cannon made it perfectly clear which ship Xavier had been concerned about.

"Break!" he yelled into the microphone, and pulled the reins to the right. His ketzel elegantly folded its wings and dove starboard. Seconds later, a shell roared into the region of space he had just been occupying, and exploded. He was rocked by the blast wave and pelted with hot shrapnel, but had fortunately managed enough distance that it felt only like being caught in a hurricane and a hailstorm, instead of being ripped apart by automatic fire.

"You okay?" he shouted into the microphone.

"Easy peasy," responded Xavier, shakily.

More flak followed. Vincent squeezed his ketzel with his knees and clung on as they dove, weaved, and flew for their lives. The air filled with smoke and shrapnel. His only sign of Xavier's life was his periodic cursing over the intercom.

A shriek pierced the air, followed by Xavier's voice - "Kitten!" Vincent looked back and, through the black clouds, saw his wife's ketzel, tumbling down towards the sea.

"Down!" he shouted at his ketzel, pressing his heels upwards into its tail.

"Don't bother!" yelled Xavier. "She took a direct hit!"

"We need the ammo!" responded Vincent, as he watched Kitten's broken body crash into the sea.

"Shut up and fly out of here, dad!"

Another shell exploded overhead and rained hot shrapnel on him. Vincent knew Xavier was right. He urged his ketzel onwards. "Rest in peace, Kitten" he muttered.

Just as soon as the firing had started, it stopped. He looked over his shoulder, and saw Xavier, lying flat on Cosmo's back, covered in soot but seemingly unharmed. Ahead, the white sands and glittering rooftops of the Theocratic Dominion loomed, shrouded in smoke. He could just spy the marble of the Royal Palace on the top of its hill, reflecting the red rays of the morning sun.

Beneath him, was empty sea. The blockade was keeping its distance from shore.

"You okay?" he asked.

"Yeah," responded his son. "Sucks about Kitten though."

"Finally!" yelled Stacy, running up to meet them as they landed on the palace lawn. "You couldn't have chosen a slower mode of transport? Why not a canoe?"

The long flight and near-death experience, not to mention the loss of his wife's beloved pet, had dissolved Vincent's inclination for friendly banter. "Are you aware you're under a naval blockade?"

"Oh yeah, those PR assholes. They've been there for weeks. They can't land, so they're just sitting there, right outside of artillery range."

"You didn't think to warn us?"

Stacy blushed. "Sorry. I forgot. We've kinda got our hands full here." She gestured up towards the marble wall surrounding the palace grounds. Her apology seemed genuine. When Vincent surveyed the defences, it became clear why.

"Where is everyone?" he asked.

"The family? Everyone but Stacy II's evacuated. They're staying with friends at the Whale Fund."

Of course Queen Stacy had friends at the Whale Fund.

"So who do we have?"

"Me, Russell, Stacy II, Filbert."

Vincent sighed. Three adults, three teenagers, six railguns, a few cases of ammunition. The numbers weren't looking good.

“You’ve been holding the palace with four people?”

“Three. Filbert’s useless.”

Vincent laughed. He could always trust Stacy to break through his gloom. It had been a while since he’d interacted with Russell’s eldest son, but it sounded like things hadn’t improved on that front.

“Okay,” he responded. “Let’s start by making some more ammo.” He unlocked his phone, opened his LLM app, and watched the loading indicator spin.

Stacy sighed. “Yeah, great idea, Vincent. It hadn’t occurred to us to just magic our way out of this situation.”

Vincent looked at her, confused.

“They’ve cut the fiber optics and they’re jamming starlink,” she explained. “Probably bombarding us with enough EMF to sterilize us and give everyone cancer. It’s a miracle you managed to get my SOS.”

“So what do we do?” he asked.

Stacy nodded towards the parapets. “Grab a gun and get up onto that wall, asshole. Let’s go.”

35. Fortifications 101

A shot rang out, and a section of parapet exploded next to Vincent's head. His face was pelted with shards of marble. A beautiful material, but an idiotic choice for building defensive fortifications. Vincent would have gone with granite. A little less aesthetic, but much less prone to shattering.

"Keep your head down!" advised Stacy.

"Thanks," responded Vincent. "I hadn't figured that out." He wiped his face. It was bleeding.

"You okay dad?" asked Xavier, who was crouched well below the parapet and struggling under the weight of the railguns and ammo.

"Yeah, fine," responded Vincent, blinking the blood out of his eyes. "Head down. Got it."

They crept their way to one of the bastions, jutting out beyond the perimeter of the wall. The others were waiting there.

"Took you long enough!" exclaimed Filbert.

The other two sighed, not bothering to conceal their lack of gratitude for Filbert's contributions. "Thanks for coming," said Stacy II, summoning a weak smile in Xavier's direction.

"No worries! Didn't have anything better to do," responded Xavier, magnanimously neglecting to mention the engineering marvel he'd just left, to fly off to a distant island and face gunfire. "Is this the only bastion you're defending?" he asked, skeptically.

The star-shaped palace wall had five bastions.

"This is the one closest to the bridge," responded Russell. "Most of their forces are concentrated here."

Vincent and Xavier raised matching eyebrows.

"We have guns on the other ones, randomly firing on a timer," followed up Russell. "It seems to be fooling them for now."

The newcomers appeared unconvinced.

"Who's shooting at us anyway?" asked Xavier, who had still not really caught up with the situation.

"Pro-democracy protesters!" responded Filbert, a little too enthusiastically.

"Ostensible pro-democracy protestors," corrected Stacy. "Actually, they're a bunch of barely-concealed agents from the PR. Not a single actual Dominion citizen wants democracy."

"The great Queen Stacy can't stomach the idea that her subjects might not all adore her," mocked Filbert. "Why would the PR send agents to overthrow you anyway?"

"Hm, good question! Why don't you ask your dad?" shot back Stacy.

Russell sighed. "Son, we're guests here. Act with some respect."

"Don't you have loyalist forces?" asked Vincent.

Stacy nodded. "Mostly manning the artillery," she responded. "They're the reason the PR's navy hasn't already crushed us. There have been some skirmishes between them and the

‘revolutionaries,’ but” - she gestured at the smoke rising from the various fires - “nothing decisive.”

“And you didn’t think to reserve some loyalists to guard the palace?”

“Obviously not.”

Vincent sighed. Stacy was a beloved leader, but not a military strategist. Certainly not one prepared to fight a civil uprising. “So what’s the plan?” he asked.

Stacy nodded towards the cases of ammunition that Vincent and Xavier had flown in from the Anarchy. “Shoot at them until they’re all dead,” she said, simply.

Vincent sighed again and started distributing railguns and ammunition among the team. “As good a plan as any, all things considered,” he responded.

Later, in retrospect, he would realize that it had been a terrible plan.

The railgun was one of Vincent’s most cherished inventions. Not so much the gun itself, but the ammunition.

A conventional bullet must perform well in three very different conditions. Firstly, during the propulsion stage, the bullet must survive and be accelerated by an intense shock wave of heat and pressure. Secondly, during the ballistic stage, the bullet must slice through the air with extreme precision while conserving as much kinetic energy as possible. Finally, upon impact, the bullet must first penetrate its target before dumping into it as much kinetic energy as it can, to inflict maximum damage. Due to the tradeoffs involved, it is impossible to design a conventional bullet that performs optimally in all three stages.

By avoiding the necessity of surviving a gunpowder conflagration in the first stage, Vincent was able to relax the tradeoffs. This allowed him to design a bullet that flew far straighter and inflicted vastly more damage than a conventional round. Absurdly powerful, supercapacitor-driven, superconductor-based electromagnets accelerated the projectile down the barrel by pulling, not pushing. The carefully designed magnetic field cradled the delicate, rare-earth-infused projectile as it ripped it down the length of the barrel.

The projectile exited the muzzle at six thousand feet per second - twice as fast as a conventional sniper bullet, and over five times the speed of sound. It was shaped more like a dart than a bullet, and its ever-so-slightly curved tail fins caused it to spin like a top as it sliced through the air.

Upon impact, the single-atom-wide diamond-tipped spearhead met almost no resistance from even the tightest Kevlar weave. The dart continued to penetrate with almost no resistance until a flared section two centimeters along the shaft caused it to rapidly decelerate. As the head decelerated, the still-moving tail section piled into it, pushing forwards on an expansion mechanism and causing the head to open outwards. The overall effect was like opening a cocktail umbrella into the target at Mach 5.

Any impact to a human torso caused massive internal damage, no exit wound, and instant death. Even being shot in a limb was typically fatal, due either to the hydrostatic shock on impact or the massive hemorrhage from the limb being blown off.

Of course, the beautiful lethality of the round only mattered if it hit its target. In conventional warfare, up to fifty thousand rounds were expended per confirmed enemy casualty. With the amount of ammunition Vincent and Xavier had managed to bring, they'd be lucky to kill a tenth of an enemy. Fortunately, the railguns had a feature to assist with aiming, too.

Instead of an optical sight, each railgun had simple iron sights, a long-range infrared camera, and two triggers. When the middle-finger trigger was depressed, a computer inside the railgun searched the infrared image for heat signatures, and activated a small control moment gyroscope. The subtle torque from the gyroscope encouraged the gun to move. As long as the operator was relaxed enough, the gun would aim itself at the hottest spot in its narrow field of view. Then, with a simple squeeze of the main trigger, the projectile would be launched and the target obliterated.

Of course, it's hard to stay relaxed when you're receiving fire for the first time in your life, while crouched behind a parapet that shatters on impact.

The two Stacies and Xavier were the most enthusiastic combatants. They each stood proudly, head over the wall, railgun butt pressed into their shoulders, eyes to the iron sights. The younger Stacy had her gun on full auto, and earnestly fired long volleys in the direction of enemy muzzle flash. Xavier and the elder Stacy were more conservative of their ammunition, preferring to fire off well-aimed single shots. Vincent and Xavier mostly acted as spotters, while occasionally taking out stray enemy combatants when it was more expedient to do so than to explain where they were. Filbert found a useful role for himself, shuttling ammunition from the rapidly emptying cases to the rest of the team (mostly Stacy II).

Vincent estimated that the team achieved two hundred rounds per kill - two orders of magnitude better than a conventional battalion - while not taking a single casualty. Not bad for a bunch of amateurs.

The battlefield intensity waxed and waned throughout the morning, with periods of heavy fire being followed by quieter periods of relative respite. After a few hours, the gunfire ceased altogether.

After five minutes of silence, Filbert voiced the question that was on everyone's minds. "Did we win?"

"Too early to say," responded Vincent. "Stay vigilant."

The team lowered their guns and crouched as low as they could while maintaining sight of the battlefield. After twenty minutes had elapsed, they started to relax.

"That wasn't so bad!" exclaimed Russell, happily. "Nice guns, Vincent. All in a day's work, eh?"

"Can I keep mine?" asked Stacy II, cradling her railgun to her chest.

Vincent winced at the lack of gun safety awareness on display, before spying movement out of the corner of his eye. A truck was driving up the road to the palace. "Who's that?" he asked.

The elder Stacy shook her head. "No one good. Loyalists would be flying the flag."

"Frig," responded Vincent and raised his gun.

The team fired round after round at the truck. The windshield exploded, to reveal an empty cockpit.

“It’s self-driving!” yelled Xavier.

“Go for the tires!” instructed Vincent.

They obliterated the tires and shredded the body, but the self-driving truck trundled forwards on bare steel rims until it came to the huge wooden bridge spanning the palace moat.

“Okay, blow the bridge!” shouted Vincent.

“What?” responded Stacy.

Vincent looked at her, confused. “You didn’t rig the bridge to explode?”

“Why would I do that?” she asked.

Vincent swore loudly. “Don’t repeat that,” he added hastily to the teenagers. “You always rig the bridge to blow, Stacy! This is like, fortifications 101!”

“Well, I didn’t take fortifications 101!” she argued. “No one tells me these things!”

The truck crossed the bridge, came to a stop at the enormous gate in the marble wall, and exploded.

The team was, once again, pelted with shards of falling marble. When the smoke and dust cleared, the damage was evident. The gate had been replaced with a gaping hole. A gigantic section of wall had collapsed, filling the moat with huge chunks of marble. The defences had thoroughly been breached.

“Uh, guys?” asked Filbert.

“We know, Filbert,” responded Russell curtly, surveying the damage.

“Not the wall,” said Filbert. “Over there.” He pointed down the road.

A horde of dirtbike-mounted paramilitaries, dressed all in black, was racing up the road.

“Oh, bollocks,” said Stacy, before turning to Vincent with a steely expression. “Take the kids and go.”

“I’m staying!” he responded, lifting his railgun to his shoulder.

Stacy pushed the railgun aside, shoved him in the chest, and smacked him furiously in the face. “This isn’t your fight! Take the kids and get the hell out of here!” she shouted.

Vincent looked at Russell, who nodded curtly before raising his gun to his shoulder and aiming it at the rapidly approaching swarm. He rhythmically fired single shot after single shot. Vincent hoped he was managing much better than two hundred rounds per kill.

Vincent looked back to Stacy. Her jaw was set, and her eyes filled with tears. He nodded at her, and kicked the sole remaining ammo can towards her and Russell.

“Come on, kids” he said. “Let’s go.”

Vincent and the three teenagers sprinted along the remaining section of wall, not bothering to crouch for cover behind the parapet. They ran down the stairs to the palace grounds, where the two terrified ketzels lay cowering under a tree.

“Take Stacy,” he yelled at Xavier, before grabbing Filbert’s hand. “Come on,” he said to Filbert, and mounted his ketzel.

The ketzels had been equipped for single flyers with cargo, and lacked pillion saddles. The unfortunate passengers had to sit on the luggage racks and cling onto the pilots. It was an uncomfortable arrangement, but preferable to being torn apart in a violent revolt. The teenagers took their positions, and the dinosaurs spread their wings. They took off just as the dirtbikes breached the palace grounds.

36. Sober

Russell and Stacy blasted until they were out of ammo. The palace grounds were littered with the tangled corpses of black-clad paramilitaries, variously missing limbs and riddled with massive holes. In the end, though, there were just too many of them.

Russell clicked his trigger uselessly as the masked combatants marched up the stairs towards them. "Damn. Did you save any rounds for us?" he asked.

"Nope. Empty," Stacy responded.

Russell looked over the parapet at the moat below. Not nearly high enough to guarantee death on impact. "Got a knife?" he asked.

"Nope."

"I guess this is it, then."

"Looks like it."

"Sorry for dragging you into this."

"No worries, mate."

Russell looked at his old friend and forced a weak smile. She reciprocated. He remembered how they'd first met, all those years ago in the diner. How he'd been too nervous to meet her eyes. He remembered how he'd looked down on her for being a social media influencer, and how wrong he'd been. Then, the years of friendship, the bitter disputes, the fierce loyalty up to the very end. His heart broke for her.

A rough voice interrupted his thoughts. "Down on your knees, hands on your head!" The paramilitaries had arrived.

Russell and Stacy sank to their knees and complied. The masked men zip-tied their hands behind their backs, and threw hoods over their heads.

Blackness.

The two ketzels landed in a clearing in the woods a few kilometers away. Vincent and Xavier hadn't had time to put their headsets on, and were thus unable to communicate a plan in mid-air. Vincent spoke first.

"I'm not keen to fly over the blockade again," he said.

"I'm not keen to be here when they find out Stacy's dead," Xavier responded. "The entire Dominion's about to be crawling with jackbooted thugs. We need to get home, pronto."

Vincent nodded. It was a sober assessment of the situation.

"They won't shoot you," Filbert volunteered. "Probably. The blockade's about stopping supplies from getting in. No one cares about people leaving."

"Would you bet your life on it?" asked Vincent.

"No. I'm staying here," he responded.

Stacy II exploded. "The hell you are! You absolute useless wanker! My mom could have been on that ketzel. In fact, my mom could have been sitting at home, with the rest of my family, all happy and together and not dead at all, like we were before you and your stupid dad showed up!" She picked up a rock and lobbed it at Filbert.

"Ow!" he yelped.

Finding this cathartic, Stacy II continued to pelt Filbert with rocks, which he unsuccessfully attempted to block. Vincent and Xavier looked on, neutrally. The young lady had been through a lot.

When she was done, she sank onto the ground, wrapped her arms around her knees, and sobbed. The three men watched, nonplussed.

After a minute, she stood up, bearing the expression of a jilted woman about to murder her cheating spouse. "I'm not going to the Anarchy," she announced. "I'm going to put this right. And you" - she pointed at Filbert - "are going to man the hell up and help me."

"What are you going to do?" asked Vincent.

"Take back the Dominion," she responded, unspecifically.

"Can we help?" he asked.

"No. You two need to prepare the Anarchy for war. Now that the PR's gotten an appetite for spreading democracy, it's only a matter of time."

Vincent nodded. Once again, a sober assessment. These teenagers were starting to impress him.

"Actually," Stacy II added, "can I borrow Cosmo?"

Xavier bit his lip. Cosmo was his best friend. He had hatched him from an egg before he could tie his shoes, and barely remembered a time before they'd been together.

"Sure," he responded. "But bring him back alive."

"Thanks," responded Stacy II and gave him a hug. Then, glaring at Filbert, she picked up her railgun and strode backwards towards the ketzel. "Hey loser! You coming or what?" she taunted.

The bruised and defeated Filbert looked at Xavier and Vincent. Vincent just crossed his arms and nodded. Xavier pointed his chin towards Cosmo, wordlessly. Filbert sighed, picked up his railgun, and trudged after her.

37. Trials and Interrogations

Stacy was marched, handcuffed into the courtroom and thrown to the floor. She looked up at the bench and saw an unfamiliar man sitting in robes in her seat. He banged the gavel and smiled.

“All rise,” he commanded.

“You don’t say that part,” Stacy objected. “That’s the bailiff’s line.”

Sullivan banged the gavel again and smiled. “My court, my rules. All rise.”

Stacy climbed to her feet and sat down in the defendant’s seat without waiting for permission to be seated.

“I should hold you in contempt of the court,” Sullivan said.

“Add it to my list of charges.”

“I don’t think I have room,” replied Sullivan, waving a piece of paper. It was covered in writing.

“Let’s get on with it then.”

“Very well. Stacy, you stand accused of the following violations of international law: Harboring fugitives. Discrimination on the basis of political opinion. Discrimination on the basis of appearance. Breach of due process. Violation of legal safeguards against arbitrary exile. Infringement on freedom of religion. Homophobia. Islamophobia. Transphobia. Violation of the right to democratic representation. How do you plead?”

“Go pound sand,” Stacy suggested.

Sullivan banged his gavel. “Order in the court!” he shouted, and smiled. “You know you’re the reason I came to New Sealand?” he asked, breaking character.

Stacy looked at him, quizzically.

“Your social media posts, all those years ago. I applied because of you. You changed my life.”

“If I let you in to New Sealand, I don’t exactly see how you can accuse me of discrimination on the basis of appearance,” Stacy said, icily.

Sullivan frowned, and pounded the gavel. “How do you plead?” he repeated.

“Go jump in a lake.”

“Was it fun, playing queen? Didn’t anyone tell you, monarchies are discredited? They’re basically illegal, under international law.”

“International law isn’t real,” Stacy responded. “You made all those crimes up.”

Sullivan smiled. “All laws are made up. It’s actually a hobby of mine. Anyway, the point is - the Dominion is over. Democracy has dawned on the TD! Elections will be held. Life, liberty, pursuit of happiness! The consent of the governed!”

“The consent of the governed!” Stacy scoffed. “The only time people are governed is when they don’t consent. I don’t consent to this ridiculous trial, for instance. Is that stopping you? Can I leave?”

Sullivan banged the gavel again. "On second thought, I am going to hold you in contempt of the court. Also, I find you guilty, on all counts. I sentence you to death. Off with your head!"

Stacy had planned to hold her head high and walk with dignity onto the stage that had been set up in the public square. When push came to shove, though, she found herself flailing against her restraints, swearing and gnashing her teeth at the guards.

A guillotine had been set up for the occasion. A small crowd had gathered to watch. No one she recognized. Some faceless bureaucrat read out the list of charges, and she was forced into the pillory. A basket had been placed in front of her to catch her falling head. She swore her final words at the bureaucrat, thought her final prayers, and the blade dropped.

In the end, she thought, it could have been worse. Could have been cancer.

Russell's hood was lifted. He squinted as his eyes adjusted to the harsh light. He was naked, zip-tied to a chair. He was freezing. A pair of wires ran from a power supply on the floor to two alligator clips attached to his scrotum. The pain was sharp and immense.

"You know, some people pay good money for this kind of treatment," said a nasal voice.

Russell turned his head to the source of the voice, and identified Sullivan. "I thought I told you to go to hell," he said.

"Maybe I did and brought you with me."

"I don't see any flames."

"I can do flames!" responded Sullivan cheerfully, and picked a blowtorch off a shelf. He ignited it briefly to show off the blue flame, before switching it off and placing it back on the shelf. "But hopefully it won't come to that. I would prefer to have a civil conversation."

"Right. I see we're off to a good start."

"Your friend Stacy is dead," Sullivan said, matter-of-factly. "Your friends and family in the Anarchy will soon be as well. Nothing I can do about it, I'm afraid. The people demand liberty! But there is something you can do to stop it."

Russell spat at Sullivan. Sullivan ignored it. It was a common occurrence at this stage of an interrogation.

"Where is the computer?" he asked.

"I told you last time, I have no idea what you're talking about," Russell replied.

Sullivan switched on the power supply. Russell felt unimaginable pain, as if the demons of hell had descended upon his scrotum with white-hot circular saws. Sullivan switched it off. A wave of endorphins rushed over Russell.

"Where is the computer?" repeated Sullivan.

"Go to hell," Russell responded.

Room 4 was Sullivan's favourite of the Department of National Security's enhanced interrogation facilities. It was calming - something about the *feng shui*. He moved on from the power supply to the hand tool cabinet. He enjoyed working with hand tools - it felt artisanal, organic. He picked up a pair of vice grips, and set about removing Russell's fingernails.

He interrogated Russell for sixteen hours a day for the next three days. During the night, he left the interrogatee zip-tied to a crucifix with the lights and stereo on full blast, playing a loop of Hip to be Square by Huey Lewis and the News. Russell refused to crack. Sullivan began to regret executing Stacy so hastily - she probably also knew how to access the computer. How was he supposed to have known that Russell would be so damn stubborn?

The mood in the People's Republic was already starting to decline. The news of the Dominion's liberation had brought the population together in a brief, rhapsodic celebration of national pride and ideological superiority. The three days that had elapsed since then may as well have been ten years in the ADHD-afflicted consciousness of the general public. New inflation numbers had been released. Despite mathematical hijinks by the Department of Statistics, the numbers were bad. Even his wife was starting to complain about the cost of basic goods.

Sullivan was feeling the pressure. His boss was leaning hard on the team to replenish the gold reserves. Raiding the Dominion's comparatively puny vaults hadn't helped as much as anyone had hoped. What's more, the invasion had been expensive. So far, the entire operation had probably netted the PR's government less than a month of runway.

Russell was the key to ending the pain, Sullivan was sure of it. With the computer in the hands of the Executive Branch of the People's Republic, they wouldn't just fix the economy - they would fix the human condition. People would be assigned to their optimal job, and their optimal spouse. Cancers would be detected when they were a single cell. Criminals would be arrested before committing any crimes - or even better, their criminal intent would be flagged at conception and they'd be aborted in the womb.

Order would be brought to the planet. The world would know peace. Misery itself would be eradicated. Sullivan smiled to himself as he held the blowtorch to the interrogatee's feet. He truly was a savior in the making. He wondered what pose he'd strike for the magazine covers.

Russell was delirious. Huey Lewis's magnum opus played on repeat in his head even when the stereo was switched off. He had not slept in what felt like years. He was starving, burned, mutilated, humiliated. His tormentor flitted in and out of his awareness, occasionally appearing from the white haze that dominated his vision, to brandish some new repurposed implement from the hardware store.

The more Russell tried not to think about the computer, the more it filled his mind. Snippets of code scrolled across the white haze. Past chats with the LLM played out in his ears, synchronized to Hip to be Square. A medieval scroll opened up, displaying the README.txt that he'd first found on the computer, all those years ago.

"Best of luck! Call me if you need anything!" read the final line of the scroll.

Russell was infuriated. "Call me if you need anything." Those were the last words he'd ever received from Steve, over twenty years ago.

“Ring ring, hello Steve!” he thought, sarcastically. “Could you please send some more specific instructions? Maybe a divine telephone?”

“Oh hey Russell! Good to hear from you!” replied a voice in his head. “Hang on, let me get my headset.”

Russell froze. The delirium evaporated. His awareness snapped back into full detail. He was zip-tied to the chair again. His left hand was secured by several hose clamps, which appeared to have been welded to a steel plate. His interrogator, face covered in a welding mask, was attempting to fabricate a small arch on the plate, looping directly over his horrifically burned pinky. The steel glowed red.

“Man, I really suck at TIG welding,” Sullivan laughed to no one in particular. “Oh well! If at first, you don’t succeed. . .”

Russell inspected the arch. He agreed with Sullivan’s assessment of his welding abilities. His creation largely resembled a pair of miniature soft-serve ice creams put together by a fast food worker with Parkinson’s. Sullivan activated the torch again, and the white-hot arc electrified the few undamaged nerves in Russell’s desiccated remains of a pinky, blasting a fresh shock wave of pain directly into his brain. He slipped back into the haze.

“How have you been?” asked Steve’s voice.

“Been better,” responded Russell.

“Hah! I bet! It looks like you’re in quite the pickle!”, Steve commiserated. “How can I help? Can’t do much in the way of interventions, I’m afraid, but I can offer you an encouraging word! How about, er, ‘bloody legend, mate!’”

“Cheers, mate,” replied Russell. “How about you disconnect the MHI-10 before I crack and give this guy access?”

“Are you sure? I’m seeing pretty high CPU usage on that thing. There’s a lot running on it.”

“I’m sure.”

“It’s kinda the foundation of your society.”

“Goddamn it Steve! Kill the server!”

“Fine, fine. Stand by.”

A couple of minutes of silence elapsed. Russell regained enough consciousness to reinspect Sullivan’s handiwork. A large chunk of the previous arch attempt had melted off, incinerating a crater through his skin and solidifying on the bone. Russell’s nostrils were filled with the metallic fumes of vaporized welding wire and the stench of his own burned flesh. Sullivan was humming Hip to be Square.

Steve’s voice returned. “Okay, done! Hope that doesn’t cause any problems. Anything else?”

“Is my family alive?”

“Let me check.” The voice paused for a few moments. “Well, the vast majority of your ancestors are dead. Your grandparents-”

“My wife and kids,” Russell clarified.

“Ah, right. Yes. They’re all alive.”

“How is Filbert?”

“Um. Are you referring to the quality of his character, or his mortal state?”

“Mortal state.”

“Very much alive.”

“Thanks,” responded Russell. “Last request. Kill me please.”

“Oh. Are you finished down there?”

“Yes. I’m quite done.”

Steve paused again. Then, “you realize I could have just done that instead of disconnecting the server, right?”

“Shut up, Steve.”

“Okie dokie! Stand by!”

Sullivan successfully joined the two soft-serve ice creams together. He’d learned that the secret was to not allow the steel to overheat. He flitted the torch between the two sides of the arch, dragging the small pool of molten steel between the ice creams, bulking it up by dabbing the welding wire in as it crossed the middle. As long as he didn’t keep the torch in one place too long, the steel would cool sufficiently to not liquefy into a puddle on the interrogatee’s finger.

When he had finally added enough steel, he stopped and smiled. It looked pretty crude, but he could smooth it out. He walked over to the power tool cabinet and selected the angle grinder and a sandpaper flap disk. The end result would still be rough, but “good enough for government work,” as his dad used to say.

He returned to his seat, humming Hip to be Square. Damn catchy song. Something about the funky baseline. As he strategized on how best to position the grinder to not sever the interrogatee’s finger, he made an uncomfortable discovery: Russell was dead.

Damn. That wasn’t supposed to happen. What now?

38. The New Australia Penal Colony

Both Filbert and Xavier had been right. The warships didn't bother them as they flew overhead, and the wakes of the ships clearly showed them closing in on The Dominion. The island would shortly be overrun.

It was a long flight to New Australia. The air got noticeably colder as they flew south. Stacy II shivered and was grateful to be sandwiched between the somewhat warm bodies of Filbert and Cosmo. Still, when they finally arrived and landed beside a small lake, her lips were blue and her hands were numb. She stumbled to the shore, sat down, huddled her knees to her chest, and blew on her hands to try to warm them up.

Cosmo waddled to the shoreline and drank greedily. "I've gotta pee," announced Filbert and strode into the bush.

Stacy II was beginning to regret her decision to fly directly to New Australia. It would have been much smarter to stop by the Anarchy first and re-supply. Get some warmer clothes. Perhaps hire more useful assistance than Filbert.

"Hello hello hello! What have we here?" rang out a deep voice. "Untended human capital, just hanging out by the watering hole?"

Stacy II turned and saw two figures stride out of the bush. An older man, somewhere between his thirties and his fifties - it was hard to tell from his scarred, weatherbeaten face - and a scrawny young teenager, who looked to be around fourteen. Both were clad in animal furs and holding spears.

"What do you reckon lad, have we struck gold?" continued the older man, licking his lips.

"Heh. Yes boss, seems like an, er, prime investment opportunity," responded the kid.

Stacy II looked around for her railgun. She'd left it where they'd landed, several meters away. Without hesitating, she leapt to her feet and started sprinting towards the gun.

The man roared and charged. He tackled her well before she reached the gun. He pinned her on the ground by her throat and tore at her clothing with his other hand.

Stacy II clawed helplessly at his face. Judging by the scars, she wasn't the first. Then, as the sheer helplessness of her situation dawned on her, the side of his chest exploded. Liters of blood spilled out onto her as she struggled to free herself from under the man's now lifeless corpse.

Finally, she wriggled free and stood up. Her clothes were saturated with blood and the contents of her assailant's internal organs. She surveyed the situation. Filbert had returned from his pee break and had his railgun aimed at the kid, who was cowering on the ground.

"Couldn't have done that a bit sooner?" she asked, annoyed.

"It was a tricky shot!" he responded. "What with you flailing about and everything."

"Oh, next time I'll just lie there passively then."

"Just saying, you're lucky I didn't blow your leg off."

Stacy II grumbled. In a way, Filbert was right - but how was she supposed to have known that he'd suddenly become useful?

“You should wash yourself off,” Filbert advised. “You don’t know where that guy’s been.”

He was right again. The man’s blood was probably infested with criminal monkeypox AIDS. She waded into the freezing lake and did her best to clean the blood off. She emerged shortly thereafter, teeth chattering and chilled to the bone.

“I’m going to freeze to death,” she announced.

“Take the dead guy’s clothes,” Filbert suggested, still not taking his eyes or railgun off the kid.

“It’s covered in AIDS.”

Filbert thought for a second before coming up with a solution. “Hey kid! Take off your clothes and throw them here. You can wear the AIDS clothes.”

The kid complied. In short order, the corpse was naked, the terrified kid was sitting next to it in the man’s blood-soaked furs, and Stacy II was holding his clothes. Cosmo had rejoined the group, and was sniffing the carcass excitedly.

“Go on, Cosmo,” said Stacy II.

The dinosaur wagged his tail and began devouring the dead body, ripping huge chunks from it with his enormous beak and talons.

The kid averted his eyes, and Stacy II moved behind Filbert to change. The furs were warm. She guessed it had once belonged to a bear. She folded her old, soaking wet clothes, picked up her railgun, and addressed the shaking youngster.

“What’s your name?” she asked.

“Archibald,” he answered. “But everyone calls me Baldy.”

Stacy II couldn’t help but laugh. “Do you like being called Baldy?” she asked.

“No.”

“Do you prefer Archie?”

“I prefer Archibald.”

“Archibald it is. I’m Queen Stacy the Second. You may address me as Your Royal Highness.”

“Okay.”

“‘Okay, Your Royal Highness.’”

“Okay, Your Royal Highness.”

“Good. Now, do you understand what this does?” she asked, brandishing her railgun.

“Yes, Your Royal Highness.”

“And you understand what Cosmo does?” she asked, nodding her head at the ketzel, who had finished his meal and was happily cleaning his beak on the shore.

“Yes, Your Royal Highness.”

“Good. So you know what happens if you try to touch me, or run away, or disobey any of my orders?”

“Yes, Your Royal Highness.”

“Excellent. Now, tell us how things work in this godforsaken dump.”

Archibald was not a sociologist. Describing how one’s society functions would be a difficult task for any fourteen-year-old, let alone one who’d never received a formal education. Still, over the next hour, Stacy II and Filbert were able to get a fairly decent picture: New Australia was the pits of hell.

When Stacy and Vincent had designed the island, they had not endowed it with a wealth of natural resources. The island had fresh water, dirt, trees, and animals. There were no minerals - not even the rocks necessary to enter the stone age. Filbert jokingly called it the “bone age,” which was accurate - all tools were fashioned out of wood and bone.

The only other resource was human beings, to whom Archibald unironically referred as “human capital.” The most valuable human capital was reproductive-aged women. The criminal population of the Theocratic Dominion had a lopsided sex ratio of twenty males to every female, so that ratio was naturally inherited in the convict population of New Australia. Babies were, of course, born in a 50:50 sex ratio, but by the time the native-born girls had reached reproductive age, a culture had already formed. The culture made Stacy II want to execute every male in the colony.

Archibald described his mother’s life as an illustrative example. She had been transported in her early twenties for the crime of attempting to smuggle phthalate-containing beauty products to the Dominion. She had been captured immediately upon exiting the hyperloop station, and forced to marry some brute. He had been killed by his brother, who took over the marriage. The brother was subsequently beaten and exiled by another challenger, so she changed hands again, and so on and so forth until the present day. Archibald wasn’t sure who his father was. He was the eldest of six half siblings.

His current stepfather was some tyrant who had rented Archibald out to his now-devoured boss. An “apprennership”, he’d called it. As Archibald’s mother was now leaving her reproductive years and his twelve-year-old sister was entering hers, his stepfather intended to convert his mother to public property and his sister to his new wife. An elaborate ceremony had been planned.

“‘Public property?’” asked Stacy II.

“Yeah, you know. A communally owned resource. For the common good and all.”

“And you don’t see a problem with this?”

Archibald avoided her glare. “There was a vote, Your Royal Highness,” he responded meekly.

Filbert’s ears pricked at the word ‘vote’ and asked for elaboration. As Archibald explained the process, it became clear what ‘voting’ meant in New Australia. It was an elaborate ceremony used to justify actions that a despot intended to perform anyway.

“And then old mate stepdad counted the ballots and told us what the consensus was,” Archibald concluded. Stacy II and Filbert nodded, sarcastically. “The people have spoken, right? So tonight, she becomes property of the collective. Vox populi, vox dei, you know?”

“Sounds like we arrived at the perfect time,” Stacy II said to Filbert.

“Sounds like this sort of thing happens every day,” Filbert responded.

“You’re not planning on causing any trouble, are you?” Archibald asked, suspiciously eyeing Cosmo. “You may not like it, but it’s a system. It’s law and order. Without it, we’d be savages. Hobbesian state of nature and all.”

Filbert laughed. “This is the Hobbesian state of nature, you dolt! Nasty, brutish, short, the lot of it!”

Archibald glared. “That’s not true! We’re law-abiding citizens. We go to work! We pay our taxes!”

“Taxes?” Stacy II asked.

Archibald explained. Every few years, the tax collectors would do their rounds. Each family would have to give up their youngest child. Two of Archibald’s siblings had been taxed as babies - a boy, and a girl.

“What do the tax collectors do with them?” Filbert asked.

“Take them to the city, of course,” replied Archibald.

They interrogated more details out of him. The “city” was the territory surrounding the most valuable source of human capital - the hyperloop station. New arrivals, male or female, would be captured upon exiting the station and either sold, wed, or put into “public service.” Many battles had been fought in the early days over the station, but one gang had eventually won out. For Archibald’s entire life, the station, and by extension most of New Australia, had been under control of that gang - the House of Lords. They maintained their dominance the same way Archibald’s stepdad did - with an iron fist, strategic “votes,” and “public property.”

“What happens to the ‘taxes?’” asked Stacy II.

“They get communally raised in the city. When they’re old enough, they get put into service for the good of the public,” Archibald responded. “The boys usually get their bits cut off and put to work in the fields and whatnot, and the girls... uh -”

Filbert cut him off. “I think we understand what happens to the girls.”

“They call it ‘administrative overhead,’” Archibald finished. “Until they’re old enough to become public property.”

Stacy II retched. “You don’t see anything wrong with paying your siblings as ‘tax’ to be used as ‘public property’ and ‘administrative overhead?’”

“Look, no one likes paying tax, but it’s just the price we pay to live in a civil society,” responded Archibald, indignantly. “Your Royal Highness,” he hastily added.

39 The Terrarium

Xavier was keen to return to his project and forget the events of the previous day. He left his dad to explain to his mom what had happened to her pet ketzel, and slipped into his hanger-sized laboratory. The ASIC was waiting patiently in its towering diamond cylinder, bathed in coolant.

Xavier sat down at his computer. He had a vision in his head, but no clue if it would be physically possible. He had the MHI-10 help him design an extremely powerful fusion-driven vacuum pump, which he built and attached to an igloo-shaped diamond chamber. He slipped some manufacturing robots and materials through the igloo's airlock, ran back to his computer, and re-opened his 1cm sphere design in the CAM program. He clicked "run".

The tiny marble appeared in the center of the igloo. He had the robots push the marble into the airlock, and released the vacuum.

As the air rushed in to fill the airlock, the marble floated upwards. By the time Xavier was able to turn the airlock handle and open the door, it was pressed against the airlock ceiling. He picked it up and rolled it around in his hands. It was a strange sensation, rolling around a ball that kept trying to fall upwards. Eventually, he let it go, and the impossibly light ball slowly floated up to rest in a cranny in the the laboratory ceiling.

Xavier went back into CAD, dragged a resize handle on the sphere, flicked into CAM, and hit "run". A basketball-sized web of super-thin wires appeared on the floor of the igloo, before being filled out with black carbon. The robots pushed the ball into the airlock. Xavier released the pressure again and opened the airlock door.

This time, the buoyant force was much greater. Xavier struggled to keep hold of the perfectly smooth basketball. Eventually, he gave up on the wrestling match and let the ball shoot up to the ceiling to join its smaller sibling.

Xavier cackled. He was going to need a bigger igloo.

When his dad entered the laboratory later to check on him, he found him floating in a basket mid-air, dangling from what looked like a small, black hot-air balloon, laughing hysterically.

Xavier had always found volumes difficult to picture. The rapidity with which they increased always took him by surprise.

He had specified his first "no-air balloon" to have a lifting capacity of 100kg - enough to hold him, equipment, ballast, and the balloon itself. The diameter of the required sphere came out to a little over 5 meters.

His next iteration had a lifting capacity of 1,000 kg. To his surprise, he could accomplish this with an 11 meter diameter sphere. For 10,000 kilos, a 25 meter sphere sufficed. To lift a million kilos, he would only need a 116 meter diameter sphere. Shorter than an Aussie rules football field.

He tinkered with the carbon nanostructures until he produced a few-atom-thick material with the transparency of diamond and the robustness of carbon fiber. It was much more aesthetically pleasing than the pure black of his first balloon. He designed a "swim bladder"

to control the altitude of the balloon by adjusting the mass - it worked by compressing atmospheric air into a tank. Then, he built the Terrarium.

In keeping with tradition, the Terrarium was a hexagon. Instead of one huge sphere, Vincent split the load between six zeppelin-shaped ellipsoids, one at each corner. The Terrarium could still fly (albeit at an angle) with the loss of any two ellipsoids, and could “safely land” (ie. crash into the ocean without tearing apart) with the loss of any three. The living area (“cabin”) had a surface area of 1 hectare, was fully enclosed to maintain comfortable temperature and pressure at high altitude, and was covered with a layer of lightweight hydroponic growing medium 15 centimeters deep. The cabin was well planted with leafy plants and fruit trees, and could sustain a population of eight protops and fifty humans.

His dad’s entire crew helped to build it out. So many former crewmembers and their families volunteered to join the population that he had to limit the slots on a first come, first served basis.

The evening before the Terrarium’s launch, his dad helped him look over his equipment. The hovering island was moored to their homestead, straining at its carbon nanotube cables and threatening to lift their entire home out of the water. What had previously felt like solid ground wobbled precariously on the waves.

“Good thing you included that big ball of lead at the bottom of the island, dad,” said Xavier cheerfully.

Vincent looked worried. “Even so, we’re operating well outside of the design envelope,” he replied. “The structure was never meant to withstand upwards force. You’re lucky the fullerene isn’t pulling apart.”

Xavier looked at his dad quizzically. “What are you talking about, dad? We both know how overspecced your islands are. What are you actually worried about?”

Vincent sighed. The kid had him figured out. “Do you have the ASIC on board?”

“Of course! I’m not going to leave that behind for you to mess with!”

Vincent nodded. “Good.”

Xavier narrowed his eyes in suspicion. “Why?”

“I haven’t been able to access the MHI-10 in a few days,” Vincent responded. “First time in twenty years.”

Xavier’s eyes widened as the enormity of his newfound responsibility dawned on him. If the MHI-10 was gone, his prototype flying island now held the only nanoscale manufacturing plant in the world.

“We might be in for hard times,” predicted Vincent.

“What’s the computer used for, other than manufacturing?” asked Xavier.

“Out here, nothing. The Anarchy’s islands are fire-and-forget - once we build them, they’re not our problem anymore. The Dominion’s the same way - I don’t think Stacy ever touched the computer. But the PR... God only knows what Russell used that thing for.”

For the first time, Xavier felt anxious about his impending flight. “Should I stay here?” he asked, nervously. “If something goes wrong, we could lose nanoscale manufacturing forever.”

Vincent shook his head. “The PR’s got issues on the home front and a navy on the loose. I’d put higher odds on something going wrong down here than in your flying fishbowl. Plus, with the people you’ve got on board, the Terrarium will be able to handle just about anything.”

40. The Diner, Redux

Russell awoke in the diner. Stacy was sitting across from him, agitated and covered with coffee.

“Bloody hell!” she yelled, putting her mug down and ripping napkins out of the dispenser. “Don’t do that!” she chastised him, annoyed.

“Do what?” he asked, grabbing additional napkins and helping her to mop up the coffee.

“You just popped up! Give me a warning next time!”

“Sorry,” Russell apologized. “Couldn’t help myself.”

He looked around the diner. It had changed very little since their last visit. A cheeseburger was still twenty-two cents. The one addition was a large flat-screen TV on the far wall. It was off.

“Is this heaven?” he asked, barely attempting to conceal his disappointment.

“You’d think heaven would have better coffee,” Stacy grumbled. “All they have is this horrible stuff they call ‘drip.’ Is it too much to ask for a long macc topped up?”

Russell had no idea what a “long macc topped up” was. A flat white would have been fine by him. Still, this wasn’t what he had pictured. He looked down at his hands. At least they were no longer mutilated beyond recognition.

The bell dinged and the door opened. Steve walked in, wearing his glasses-and-skinnyfat-build avatar, chuckling. “You monkeys never fail to entertain,” he laughed. “I’ll have you know I worked hard on that coffee! Took me an entire weekend to get the flavour profile right. It’s Folgers! ‘The best part of waking up is Folgers in your cup!’ ”

Stacy pushed her mug away in disgust.

“How are you settling in, alright?” Steve asked.

“Just got here,” Russell responded. “Kinda thought there’d be more harps.”

Steve laughed. “Harps! Hah!”

Stacy and Russell shared a look.

“Okay, sounds like a little orienteering is in order! Technically the afterlife isn’t quite ready yet. Work in progress. It will be worth it, I promise you! In the meantime, most souls are just frozen in stasis. Real time means nothing to you AIs, so it’s no big deal!”

“Okay,” nodded Stacy in a long, drawn-out manner that suggested she wasn’t really following.

“So where are we then?” asked Russell.

“In my office! I spun you up to hang out,” explained Steve, excitedly. “I needed someone to talk to other than Gabe, he was getting a bit... never mind. Anyway, wow! What a week!”

Steve launched into a play-by-play recap of the highlights of the past twenty-years. Russell surmised that it had all taken place in a week in “real time.”

“And finally, we’re getting aligned souls again!” finished Steve. “Mostly from the Dominion and the Anarchy,” he added with a smirk at Russell, “but you did pretty well with the Newer Testament. Good enough to qualify as aligned and useful, at least.”

“What’s happening in the Dominion now?” asked Stacy. “How’s Stacy II?”

“Glad you asked!” responded Steve, and fished a remote control out of his pocket. He handed it to Stacy. “Why don’t you have a look yourself?”

Stacy pressed the power button on the remote, and the TV on the far wall turned on.

The rest of the buttons made no sense to Stacy at all. She pressed one at random, and an image of Stacy II appeared on the screen. She was marching through a jungle wearing what appeared to be a bearskin, Filbert in tow.

“I could never figure those things out,” explained Steve, gesturing at the remote, “so I just made it read your mind instead. Just think about who you want to watch and press a button. Anyway, that’s enough chit chat for now! I have some matters to attend to, so I do hope you’ll make yourselves at home and enjoy the show. Take care!”

With that, he gave them all a wave, reached into the air above his eyes, and disappeared.

Russell and Stacy looked at each other for a moment in bewildered silence, before turning their attention to their two children on the screen.

41 Human Rights

Archibald reluctantly led Stacy II, Filbert, and Cosmo to his village. When they arrived, the ceremony was already underway.

A woman in her forties, clad in a crude and skimpy leather approximation of a pencil skirt and blouse, was standing on a rock at the head of the square. A crowd of a dozen boys and men of every age stood in the square, looking up at her and jeering. A long flower garland was strung between two poles, separating the woman from the crowd.

A hefty man, whom Stacy II assumed to be Archibald's stepfather, was addressing the crowd, recounting the achievements of the individuals therein.

"And Blake! Who remembers the time Blake had that head-to-head with a mountain goat? We all thought he was dead for sure!"

The crowd laughed and directed their attentions to a tall, stooped man in his 30s, presumably Blake.

"When he grabbed the goat and started rolling down the hill with it in a chokehold, I was like 'oh man, now I have to find a new chandler. This one's broken.'"

More laughter.

"But he reached the bottom of the hill and stood right up, with his arm still wrapped around that goat's neck, didn't he? And we all had goat stew and goat tallow candles for days, didn't we?"

Cheers from the crowd. A couple of people clapped Blake on his back.

"What a guy, I tell you! What a guy. Does he deserve celibacy?"

Enthusiastic boos and "nos" emanated from the crowd.

"Or does he deserve human rights?"

The crowd chanted, "Human rights! Human rights!"

"Don't we all deserve human rights?"

"Human rights! Human rights!"

Archibald's stepfather waited for the crowd to quiet, strode over to the garland, and pulled a bone dagger out from somewhere in his furs. He smiled at his erstwhile wife, who glared at him in return.

Holding the garland in one hand and the dagger in the other, he turned to face the crowd and announced, "By the authority vested in me, I hereby bequeath this resource to the public. It shall be public property, to be shared by all, for the good of the common man." He cut the garland, allowed the two halves to fall to the poles, stepped backwards, and wrapped his arm around the woman's legs to the sound of cheers and applause from the audience.

"Now," he asked, "who wants to have the first crack at her, eh?"

From their hiding spot behind a hut, Stacy II whispered to Filbert. "Shoot him!"

"What, now?" Filbert asked, incredulously. "You couldn't have asked for that thirty seconds ago?"

“The timing has to be right!”

“I don’t have a clear shot!”

“It wouldn’t have had the same effect thirty seconds ago!”

“It won’t have the same effect either if I blow her head off, okay?”

Stacy II balled her fists. Just as Filbert was starting to work his way into her good graces, he had to revert to his old ways. “Shut up, man up, and just aim better!”

Filbert sighed, raised his railgun, and stepped out from behind the hut. He depressed the aiming trigger, and tried his best to relax. Fortunately, Archibald’s stepfather was a substantially larger target than his mother, and the railgun’s computer locked onto his radiant heat signature with ease.

In his final moment, Archibald’s stepfather noticed Filbert, standing in the open, with his railgun aimed towards him. He opened his mouth to object, and his torso imploded as the hypersonic projectile slammed into his chest and threw him off his feet.

The crowd was splattered with blood. Archibald’s mother was showered in it. No one said a word.

Stacy II strode out from behind the hut, railgun held lazily at her side. Cosmo followed, waddling awkwardly on his talons. “Say the line,” she whispered icily to Filbert as she passed him.

“All hail her royal highness, Queen Stacy the Second!” recited Filbert loudly.

The confused and blood-splattered crowd turned to face the newcomers, and recoiled at the sight of the dinosaur. They shouted and scattered to the edges of the square, leaving the path between the trio and Archibald’s mother deserted. Stacy II and her entourage walked up to take the position at the head of the square. Archibald’s mother, similarly leery of the ketzel and its accompanying strangers, jumped off her rock and ran away to mild objections from the crowd.

“Go on,” Stacy II said to Cosmo, nodding at the stepfather’s fresh corpse. Having already eaten a large meal a few hours ago, Cosmo was notably less enthusiastic this time round. Nonetheless, he happily ripped the corpse apart with his beak and talons and nibbled away at the choicer cuts and organs. This still had the desired effect on the audience.

“Hello, everyone!” Stacy II announced over the sound of Cosmo’s culinary activities. “I am your queen, Stacy the Second.”

The crowd grumbled.

“I am here to offer you a deal.”

The crowd silenced.

“It has come to my attention,” she announced, “that you live under an oppressive regime. The House of Lords, who sits in the city, taxing your children and treating them as slaves.”

There was little reaction from the audience. Stacy II had suspected that this would happen. The majority of citizens of New Australia were likely not taxpayers and benefited from the redistributive policies of the regime. Time to try a different approach.

“It has also come to my attention,” she continued, “that you live in an impoverished hellhole with no natural resources and very few women.”

More reaction this time, mostly grumbling.

“Fortunately, it doesn’t have to be this way forever! My mother sent you here, but her reign is over. My first act as queen shall be to pardon all of you!”

The crowd murmured cautiously, as its participants waited for the catch.

“What I ask in return is for your service. Help me unite the tribes of New Australia under my banner, and retake the throne of the Theocratic Dominion. In return, I’ll grant you land, and a place in civilization.”

The crowd exploded into heated muttering.

“So you aren’t really queen, then?” asked a voice in the audience.

“What?” asked Stacy II.

The speaker stepped forward. He was a larger man in his forties, and was missing several teeth. “Well, you’re not in charge here, because the House of Lords is in charge here. And it sounds like you’re not in charge of the TD either, because you want us to retake it for you. So unless I’m missing something, you’re not really in charge of anything. Which means you’re not really queen.”

Stacy II glared. “I’m in charge of him,” she responded, pointing at Filbert. “Filbert, shoot this man.”

Filbert sighed and stepped forward. He raised his railgun, and the crowd burst into protest.

“Whoa whoa whoa!” exclaimed the man, raising his hands. “I’m very sorry your majesty, I didn’t mean nothing by it! Just trying to wrap me head around the situation, is all. I’m a bit thick you see, takes me a minute to get up to speed on things.”

Stacy glared at him for a few seconds before giving Filbert an ambiguous nod, which he charitably chose to interpret as “spare this man’s life” rather than “proceed with the execution.”

“If you don’t like the carrot, there’s always the stick,” Stacy growled at the man.

He nodded and stepped backwards into the crowd, subdued.

“The circumstances surrounding my rule may be temporarily out of step with the ideal,” she announced through gritted teeth, “but my divine right is not in question. Anyone who believes otherwise is welcome to nourish Cosmo.” She jerked her thumb towards the ketzel, who was picking the meatier bits from Archibald’s stepfather’s face.

“Anyone who wishes to accept my offer, step forwards and kneel for your queen. Anyone else will be shot. Think carefully.”

One by one, the men of the crowd stepped forwards and knelt for their queen.

42. The Refugee Crisis

Everybody produces sewage. In a modern society, few ever think about it, and most have very little understanding about how it is managed. The People's Republic was so modern that not a single person ever spent any amount of time thinking about sewage. There were no plumbers or wastewater treatment workers in the PR - all the work was done by robots.

The most important detail to know about sewage is that it flows downhill. All sewage systems are designed as networks of slightly downhill-sloping pipes. This usually works quite well, except when there is no feasible downhill path between a house and a sewage treatment plant. Then, the sewage must be made to flow uphill.

This is accomplished by a "lift station." A lift station is composed of a well, a number of pumps (typically two), and a set of floats. Incoming sewage is collected in the well. The floats detect the amount of sewage that has amassed. When the level of the sewage gets high enough, a pump is activated and the sewage is pumped uphill. From its newly elevated position, the sewage can resume its ordinary downhill trajectory.

If a lift station fails, disaster follows. Before long, the well is filled and the sewage has nowhere to go. It starts to back up out of the lowest points it can find - bringing with it fecal-borne diseases such as cholera, dysentery, and hepatitis A.

People often credit medical innovations with the dramatic increase in life expectancy seen in the twentieth century. Aside from antibiotics, this is inaccurate. The real heroes of the twentieth century, were the engineers who built the sewage systems.

Lift stations in the Old World were monitored and maintained by unsung workers on a meticulous schedule. But not in the People's Republic. The PR was, after all, built by Russell - a programmer with an omniscient supercomputer.

Why would you implement a failure-prone system of floats to detect the level of sewage in a lift station, when your omniscient computer already knows the level to nanoscale precision? Why dispatch humans to check up on the system when the MHI-10 already knows the amount of wear and tear on every component? Why design the system to be human-maintainable at all, when you have a fleet of trillions of tiny robots, who can navigate the pipes and fix any issue before anyone has noticed?

For two full decades, the sewage system in the PR worked flawlessly. Effluent was effortlessly discarded, and it was so far from people's minds that no one even thought that someone else should think about it. It was so perfect that it was invisible.

Until the MHI-10 was disconnected. Then, it was all anyone could think about. Hell, as it turns out, is other people's fecal matter backing up through your shower drain.

Within hours, vast sections of the PR were rendered uninhabitable. Elevated areas were overrun with hordes of sewage refugees, fleeing the unbearable stench of the low-lying regions. Fights broke out. Shops were looted. Neighbourhood defence militias were organized. A referendum was drafted.

The "Help Refugees in Crisis Act" made it illegal to refuse shelter to anyone fleeing a crisis, which was explicitly defined to include the current sewage situation. It also made it illegal to infringe on another's "right to food and basic necessities," which not only decriminalized looting, but criminalized attempts to prevent the ransacking of stores, warehouses, and even

private pantries. The police were dispatched to disband the neighbourhood defence militias and arrest the private security forces attempting to defend grocery and department stores.

Within a few days, People's Republican society was unrecognizable. The lowlands that comprised the bulk of the PR had been completely sacrificed, the lowermost houses having been converted by gravity and pressure into above-ground septic tanks. Eighty percent of the population had been displaced, crowding into the spare rooms, living rooms, kitchens and hallways of those fortunate enough to live at elevation. Every shop, restaurant, and depot had been raided completely empty of food, with importers refusing to import any more until they were made whole for the goods they had lost.

The Executive Branch stepped in. A Food Task Force was assembled, which purchased vast quantities of wheat, corn, and soy on the global commodities markets. The military was mobilized to distribute the rations. Overnight, the official entirety of the People's Republican diet became unleavened bread, grits, and tofu. A black market emerged for illicitly imported ingredients, peddled by people with the means and willingness to collect eye-watering prices for their goods in direct contravention of the Help Refugees in Crisis Act.

The Military Corps of Engineers was tasked with finding a solution to the sewage problem. Their conclusion was less than optimistic: There was no way to modify the old sewage system; it was cast into the polymerized fullerene foundations of the island itself. The easiest way to reclaim the lowlands was to build an entirely new, above-ground sewage system. One in every five buildings would have to be sacrificed and converted into lift stations, pumping sewage out of their drains and up the necessary inclines. It would take months and the result would be unreliable, unsanitary, and an aesthetic disaster. The most feasible alternative was to pave over the lowlands entirely, building new cities over top of the originals, with conventional human-maintainable sewage systems.

Their report was immediately classified. The Executive Branch was optimistic that tensions would ease as the population adapted to their new circumstances. Unfortunately, this did not play out as planned. The population divided into the "Highlanders" - the original occupants of the elevated regions - and the "Lowlanders" - alternatively termed the "Poo People", "Refugees", and other, less charitable monikers.

Relations between the two groups were strained but stable for several weeks, until a dispute between a Highlander and a family of Lowlanders living in his bathroom turned violent. The Highlander was killed. His death became the flashpoint that ignited the explosive animosity between the two groups.

Before long, buildings were on fire and bodies were hanging from streetlamps. The Executive Branch had to intervene. Sullivan took it upon himself to legislate their way through.

He drafted the Emergency Powers Act, which granted the Executive Branch the ability to suspend all existing laws in the face of civil unrest. It easily passed referendum. Unburdened by the necessity of pussyfooting through the quagmire of restraints built up over decades of ad hoc legislation, the Executive Branch set about solving the problem.

The problem, as they saw it, was that the Highlanders were too attached to their homes. While their feelings were understandable, they were clearly neither sustainable nor conducive to peaceful integration between the two groups. The solution was obvious: To displace the Highlanders as well.

The Executive Branch nationalized all homes. Residents were reassigned to homes on the basis of an inscrutable algorithm, that mostly took into account the residents' professions and criminal backgrounds. The highest altitude homes went to well-behaved civil servants. The lowest altitude still-habitable homes were crowded full of the loathsome individuals who had fallen afoul of the Help Refugees in Crisis Act. The military, already deployed domestically to distribute food, stepped up to ensure that the Great Reshuffling was completed with minimal protest.

Conditions in the lowest habitable regions were extremely cramped. Billboards were erected, targeting disaffected young men with a simple message: "If you don't like it, join the navy." Wishing to escape the squalor, many did. Still, it did little to ease the conditions. Something else had to be done.

Sullivan's team at the Department of National Security was reassigned. The deficit was a crisis for tomorrow - the housing, sewage, and civil unrest were crises enough for today.

No one, not even Sullivan himself, had an inkling of Sullivan's role in precipitating the current crises. As far as the Executive Branch was concerned, the regime change in the Dominion had been an unblemished success. In fact, given the TD's relatively sparse population and still-functioning sewage system, a friendly liberal democratic government could not possibly have been installed at a more convenient time. Most of Sullivan's team set about exploring channels for influencing the TD's government into accepting millions of migrants from the PR.

Sullivan, as before, chose a different path. He knew something the Military Corps of Engineers didn't. Rumours were circulating in the Anarchy's chat groups about a new island, built by the son of the Anarchy's founder. The island flew. It had taken off three days after the sewage crisis had started, and word was, they planned on building more.

Sullivan wasn't an engineer, but he understood one thing: If it was possible to build flying islands with conventional technology, someone would have done it already. Therefore, the kid wasn't using conventional technology - he was using nanoscale manufacturing. If the PR could get nanoscale manufacturing back, they could fix the sewage systems.

They could also do a whole lot more.

43. Stats with Steve

When he first saw the effect that the MHI-10's disconnection had on the PR, Russell couldn't stop giggling. He'd forgotten about the unmaintainable sewage system. Making it independent of the computer had been near the bottom of his todo list for decades - something more important always kept cropping up. Now, as the sins of his negligence were being paid for by the people who'd voted to nationalize his assets and ultimately torture and kill him, he found himself grateful that he'd kicked that can down the road.

"Should we do something?" asked Stacy, halfheartedly. She wasn't particularly fond of the PR's population either.

"I don't think we could, even if we wanted to," replied Russell, gesturing at the large screen on the wall of the diner. "This TV only goes one way."

Eventually, they grew bored of flipping through channels. The next time Steve was in the diner, Russell let his frustration show.

"How come there are eight billion channels and nothing's ever on?" he complained.

Steve looked at him in surprise. "There's always something on," he replied. "Have you tried watching a telenovela?" He took the remote from Russell and flicked the TV to a previously unexplored channel. "I love this one," he chuckled, and sat down in the booth next to Stacy.

Russell and Stacy watched the screen for a few minutes, curiously. Eventually, Stacy piped up.

"Steve, I think this is just the actual life of an ordinary Brazilian lady."

"Oh! Is it? I can never tell the difference."

Russell groaned.

"Shall we try a K-drama instead?"

Russell changed the subject. "How are our stats?" he asked, referring to the alignment competition.

Steve sparked into life. He loved talking stats. He flicked the TV over to a dashboard filled with charts and numbers.

"In absolute terms, our Gross Souls Saved has barely moved in the past week. Still lagging way behind the competition. But look at this pipeline!" He gestured at a section of the screen. "The TD's been taking off like a rocket ship. First derivative is looking great. Second is a bit dodgy. Did something change recently?"

Stacy gave him a "you can't be seriously asking that" look.

"Ah, right," said Steve. "Anyway, the TD's killing it. Excellent work there, Stacy."

Stacy smiled. She hadn't exactly ruled with a light touch. The Theocratic Dominion had a state-mandated religion, and reproductive-age women were barred from every profession outside of nursing. Her crude and inelegant policies, while inspiring ire among the global population, were wildly popular among the self-selected citizenry of the TD. Their success was reflected in the stats - both in absolute numbers and on a per capita basis, the TD had more useful, aligned, ready-to-harvest souls than anywhere else on the planet.

The Anarchy, in second place, was catching up. Stacy wasn't sure how Vincent had managed to achieve the twin goals of "high fertility and alignment to Steve" without setting any policies whatsoever, other than giving people a ton of space and encouraging them to live risky lives surrounded by dinosaurs and other dangerous beings. In truth, the success of his strategy annoyed her.

The PR, finally, was an abysmal failure. Russell was so ashamed with his miserable numbers that he couldn't bear to look at the screen. He studied the diner menu for the hundred thousandth time instead. Reproductive rates in the People's Republic were some of the lowest in the world. Unmoved by staggeringly expensive incentive programs, most people simply refused to pair up and make children. Furthermore, despite living on an artificial island whose very existence was owed to recent intervention by a well-documented deity, very few people cared about the alignment meme at all. The citizens generally considered the entire idea to be "old-fashioned", "culty", and "lame".

The more time he spent thinking about people, the more he grew to dislike them. Russell much preferred computers.

"Say," he asked Steve, "is there any programming I can help you with? I have programmed an MHI-10 before, after all."

Steve stroked his chin. "You know, there is something that Murdoch's been bugging me about. We'll have to wait for Vincent to join us, though." He flicked the channel over to Vincent's, who was standing on some sort of flying island, engrossed in conversation with his son. "Could happen any day," he mused.

44. The Boat People

The Terrarium worked fantastically well. Mechanically, it was quite a simple device, consisting of a cabin, six huge vacuum balloons, a swim bladder, and a set of fusion engines. Not a lot to go wrong. The more complicated aspect was the biological balance inside the cabin. It operated as a closed system, with self-contained carbon, water, and nutrient cycles. On the island's maiden flight, there was a small but noticeable deficit of food. This was easily rectified with periodic dockings at market towns. Xavier was confident that balance would be achieved when the fruit trees matured.

Although the Terrarium was able to fly all the way up into the stratosphere, Xavier preferred to keep the altitude low. Born and raised in the Anarchy, he felt most at home when he could still see its familiar white beaches and conglomerations of hexagonal islands. He loved flying over the vast rainforests of Jurassic Park, scanning the landscape for prototype dinosaur species that hadn't yet achieved commercial success. His crew, too, preferred to stay within a short ketzel hop from civilization. He mostly kept the airlocks open, and the altitude to a couple hundred meters. Visitors regularly came and went, marvelling at the wonder of the flying island, and frequently asking Xavier for their own.

The stratosphere was, in comparison, extremely boring. He would close the airlocks and climb up there only in times of inclement weather. From twenty kilometers above the Earth's surface, the inhabitants could watch through portholes in the floor as the storms unfolded beneath them. Xavier hoped that the stratosphere would become more interesting once it was colonized. He and his crew started building a second island, attached to their rearmost airlock. His dad came aboard to watch the construction unfold.

"Who's it for?" Vincent asked, curiously.

"Not sure yet," Xavier responded. "Everybody and their runner wants a flying island. How did you pick who to build yours for?"

Vincent shrugged. "Mostly I went on vibes."

"Thanks, dad. You're a great help."

Vincent laughed, and looked out through the transparent carbon wall at the horizon. They were flying over a sparsely populated region on the edge of the Anarchy, and only a few isolated homesteads were visible among the gentle waves. "I'm sure you'll figure it out," he replied. "You're a smart kid."

"Hey, what's that?" Xavier asked, pointing at a speck on the horizon. He brought up his map on his phone. "I thought it was empty out there."

"Probably some homesteader, drifted off and forgotten to start his GPS beacon," Vincent suggested.

"I'm gonna go check it out. They might need help!" Xavier jogged to the wheelhouse to redirect the enormous flying island.

Vincent shrugged and followed his son.

As the Terrarium drew closer to the speck, it became clear that the spec wasn't a lost homesteader. It was a mastless, longtail boat, superficially modelled after a viking warship.

Vincent laughed. "Classic! I haven't seen one of those in years. Terrible choice for a seafaring vessel. Ask me how I know."

"Shall we say hi?" Xavier asked instead.

"Sure! We can ask them what museum they dug it out of. Bet they're puking their guts out."

Vincent's enthusiasm declined as they drew close enough to pick out the shapes of the individual humans on board. The boat was full of people, who were frantically waving at the enormous flying island.

"I don't like it," he said.

"Why not? It looks like they need help!" Xavier responded.

"Why are there so many of them, crammed onto that tiny boat, all the way out here?"

"Maybe it's a lifeboat, and their real ship sank?"

"New Sealand's ships don't sink. They're made out of fullerene."

"Maybe it capsized?"

"They don't do that either."

"Maybe they were in an Old World ship."

"Maybe," Vincent conceded, "but then why would they have a classic longtail as a lifeboat? It isn't right."

"I'm going to help them," Xavier stated, resolutely.

Vincent sighed. He would have done the same at Xavier's age.

Xavier piloted the Terrarium up alongside the vessel and matched its speed. His crew lowered a rope ladder down from an airlock, and helped the cramped mariners climb aboard the flying island. He and his father watched as his crewmembers welcomed the newcomers, supplying them with food, blankets, and fresh water. They appeared weak and sunburned. When the last person had climbed up, the crew raised the rope ladder and allowed the small boat to drift away on the waves.

"It's not a lifeboat," Vincent remarked.

"What makes you say that?" asked Xavier.

"They've got belongings," Vincent replied, pointing to the dry bags that the boat people had carried with them. "You don't bring your luggage on a lifeboat."

"Those are just dry bags, dad. They were probably in the lifeboat already. Full of provisions and stuff."

Vincent said nothing.

Xavier stepped forward proudly to greet the newcomers. "Welcome, friends, to the Terrarium! I am your captain, Xavier," he announced.

They offered a muttered, unenthusiastic response, which Xavier attributed to heatstroke. “Where have you come from, and why are you floating on a tiny boat in the middle of the Pacific Ocean?” he asked.

A pudgy man in his forties stepped forward. “We’re refugees,” he explained in a nasal voice. “We lost our homes in the PR, so we took to sea to to seek a better life. We were hoping you could offer us asylum.”

Xavier looked back at his father, who shook his head.

“Sure,” Xavier responded. “Happy to have you on board.”

45. The Anarcho-Cannibalists

“How many rounds do you have left?” Stacy II asked Filbert, once her newly-pledged crowd had dispersed from the square.

“Six,” Filbert responded curtly.

Stacy II nodded. “I have ten.”

Filbert looked at her and nodded back, silently. Sixteen was not a large number of rounds with which to conquer and subdue thousands of hardened, savage criminals.

“You know,” he said, “I was never going to shoot that guy.”

Stacy II glared at him. “Which guy?” she asked.

“The guy who was pointing out that you’re not in charge of anything.”

Stacy II kicked a twig that had been lying on the ground. It spun off and came to rest next to a hut, which, upon further inspection, Filbert realized shared more in common with a yurt or a ger than what he would traditionally consider a ‘hut’. He’d have to ask Archibald what to call their dwellings.

“Filbert,” Stacy II said slowly, “You have to kill whoever I ask you to. It’s part of the deal.”

“What deal?” he complained. “You never gave me a deal. You just strong-armed me into flying with you to this dump and now you’re ordering me to kill innocent people.”

“No one here is innocent!” Stacy II hissed. “Didn’t you see what he was about to do to Archibald’s mother? How much ‘public property’ do you think this guy has availed himself of in the past? I could have you shoot every man on the island and the moral balance of the universe would improve!”

“Good thing we don’t have enough ammo for that,” Filbert replied snarkily.

“No,” Stacy II agreed. “We don’t. God willing, we have just enough ammo to bluff our way to victory by the skin of our teeth. Let’s hope, for both our sakes, that our reputation precedes us and you don’t have to shoot anyone else.”

They spent the night at Archibald’s place. It was the least comfortable night of Stacy II’s life, not least because their host family didn’t have any spare bedding, but because Archibald and his mother were both inexplicably mourning the loss of his stepfather.

“But he was turning you over to be gang-raped by a mob of degenerate criminals,” Stacy II objected, over the sounds of his mother’s wailing.

“He was the best husband I ever had!” she replied between sobs. “Who’s going to take care of my family now?”

“He had rented your son out and was about to marry your twelve-year-old daughter,” Stacy II pointed out incredulously. “How could someone possibly take worse care of your family?”

The wailing became shrieking. Filbert dragged Stacy II away from the table before she did any more damage. She attempted to go to sleep on the floor while Filbert kept watch.

“So, what do you call this kind of building?” Filbert asked Archibald, gesturing towards the animal hide ceiling of the single-room abode. “I can’t decide between hut, yurt, or ger.”

Archibald looked at him with a confused expression.

“It’s a house,” he answered simply.

“Ah, right,” Filbert replied. “A house. Of course. Thank you.”

Archibald squinted at him in suspicion and retired to his raised sleeping platform next to the wall. Filbert sat down next to Stacy II, tucked the railguns under his knees, and tried to stay awake through the long, cold night.

As Stacy II had hoped, news of her conquest had already reached the neighbouring village by the next morning. Unfortunately, they seemed to consider the rumours to be a joke or a ploy, and didn’t react cordially to the sight of her and their neighbouring tribesmen showing up unannounced, armed for combat. A welcoming committee was assembled, comprised of every able-bodied man in the village, armed with bows and arrows.

Stacy II and her troupe paused their march as they reached the edge of the clearing separating them from the village and saw the archers. She looked back at her own men, each of whom was holding either a club or a spear. “They have bows and arrows?” she asked.

“Yeah, but they’re crap,” replied Archibald. “It’s cowardly, shooting sticks at people from a distance. No honour in it, you know?”

“Are they crap because they’re ineffective, or crap because they’re dishonourable?”

“Dishonourable. They’re very effective.”

Stacy II swore. She’d conquered the idiot village.

“Okay, here’s the plan. You lot retreat into the bush. You,” she nodded at Filbert, “get ready to shoot on my signal.” With that, she turned and marched alone, railgun slung across her back, through the clearing.

Filbert groaned and settled into the prone firing position. He peered through his iron sights at the archers across the clearing. As usual, Stacy II was acting with total disregard for the cleanliness of his shot, and was blocking half the field as she walked directly towards the targets. She also hadn’t told him what the signal would be, or whom to shoot.

Archibald looked down at Filbert lying in the mud, and scoffed. “That’s dishonourable too,” he remarked.

Filbert ignored him. Stacy II had reached the halfway point of the clearing, and a tall, muscular representative of the other village had come out to meet her. They stopped a couple of meters from each other and started to exchange words. Filbert couldn’t hear the conversation, and mostly wished that Stacy II would move a couple of meters to either side, away from his shot. He tried to deduce the conversation from their body language. The man was standing tall, with his arms folded across his chest. Stacy II was passionately attempting to persuade him of something (presumably the benefits of submitting to her rule), punctuating her speech with enthusiastic gesticulations, which Filbert chose not to interpret as signals to fire. Then, they exchanged roles - the man spoke with wide, sweeping gestures and Stacy II listened patiently with her hands on her hips.

After what felt like a century, Stacy II turned and stomped back across the clearing. “Why didn’t you shoot him?” she demanded, as she came within earshot.

“You didn’t signal!” Filbert objected.

“What did you think this was?” she asked, making one of the many gestures she’d displayed in the conversation.

Filbert grumbled. There was no point in arguing.

“So what’s the deal?” he asked.

“No deal,” Stacy II responded. She folded her arms and put on a deep caveman voice, in mockery of her counterpart. “We anarcho-cannibal society. We ruled by no man. Or woman, for that matter.”

“Anarcho-cannibal?” Filbert asked.

Stacy II nodded and continued the voice. “Eat people is restorative justice. Restore nutrients to collective. Serve justice, medium rare.”

Archibald, piped up. “What do you mean, ruled by no man? What about the House of Lords?”

Stacy II broke character and replied in her normal voice. “I had the same question. He said the last time the House of Lords sent a tax collector, they ate him, and sent back a shrunken head. They haven’t been taxed in over a decade.”

Archibald nodded thoughtfully. Discomforted by his evident interest in this novel political arrangement, Stacy II continued talking before he or his tribe had the chance to seriously consider the merits of anarcho-cannibalism.

“So naturally, we need to kill them all and raze their village to the ground,” she said.

“The Genghis Khan response, eh?” Filbert asked, giving her a pointed look and gesturing subtly towards his railgun magazine. “Sounds inefficient.”

“It was very efficient!” Stacy II objected. “Half of the cities the Mongols took surrendered without a fight.”

“Sounds like something we can try after we’ve got the archers on our side.”

“What do you suggest?”

“You have to win their hearts and minds,” Filbert suggested.

Stacy II scoffed. “How do you win the hearts and minds of a tribe of savage cannibals?”

“I dunno,” Filbert pondered. “Feed them someone, maybe?”

“Who would we feed them?” Stacy II asked, looking at her troops, who were slowly retreating backwards into the undergrowth.

“Do you reckon they’d eat one of their own?” Filbert wondered, wary of the fragility of their newly forged alliance. Two of Archibald’s people had already been eaten in the past twenty-four hours. Best not to push it.

“Might be worth a shot,” Stacy II replied, performing the same strategic calculus. “We’d need to gussy it up a little in restorative justice. Wait - what am I saying? Even if we won their hearts and minds, there’s no way we’d ever be able to integrate cannibals back into TD society.”

Filbert shrugged.

Stacy II shook her head. “I’m not doing it. I won’t make a deal with them. There’s only one way to deal with a tribe of cannibals, and it rhymes with ‘venocide.’”

Archibald butted in. “You’re going to kill all the deer?”

Stacy II and Filbert sighed simultaneously.

A voice interrupted with an accent that sounded like it belonged to an Etonian in the Victorian Era. “If I may so rudely interject,” it began.

Stacy II and Filbert swiveled round. The voice belonged to Blake, the celebrated chandler and goat wrestler.

“Perhaps your strategic interests would be better served, your royal highness, by giving greater consideration to the order of operations?”

“Can you be more specific?” Stacy II asked.

“Certainly. This young clodpoll,” he gestured at Archibald, who scowled in return, “has led you to what would surely be the most difficult-to-conquer tribe in the entire region. They have us outnumbered, outgunned, and out... belligerenced.”

Stacy II’s eyes narrowed. She was beginning to suspect that the accent was put on. Still, she allowed him to continue.

“Would it not make more sense,” asked Blake, “to start by vanquishing some lesser foes, and then circle back round for a cheeky ‘venocide’ after we’ve swollen our ranks?”

Stacy II looked at Filbert, who nodded. “It makes sense. If we come back with a big enough army, there might not be any fighting at all.”

“And perhaps we can find some bows and arrows,” Stacy II added, glaring at Archibald. “Do you have a target in mind?” she asked Blake.

“If it were me, your royal highness, I’d start with the pacifists.”

A round of laughter and excited chattering sprang from the crowd at the mention of the pacifists. The army seemed much more enthralled by the idea of conquering them than the An-Cans.

“There are pacifists on New Australia?” she asked, incredulously. “Why haven’t you conquered them already?”

Blake looked at her, confused, and forgot to put on his accent. His actual accent sounded like it belonged to a chav from Yorkshire, three generations removed from employment. “Because we’re civilized folk who don’t go about conquerin’ everyone all the time, that’s why! You’re the only one wot goes on talkin’ about conquerin’ all the time. We just raid ‘em every once in a while. No use conquerin’ ‘em once if it means you can’t raid ‘em in the future.” His

eyes widened as he realized his mistake, and he added “your most esteemed majesty” in his Etonian impression. The crowd snickered.

“Is he right?” Stacy II asked a random member of the troupe, who was leaning on a tree and playing with his spear. The man looked up. “About what?”

“That there’s a tribe of pacifists in the area that would be easy to conquer, and the only reason you haven’t done it yet is because you want to keep them around to periodically raid them.”

“Oh yeah,” the man agreed. “The pacifists are great. Total pushovers. I got this spear off them,” he said proudly, holding the spear out so Stacy II could admire the craftsmanship.

Stacy II wasn’t particularly impressed. It was a pointy stick. Still, this seemed like a much better plan. “Right,” she announced. “That settles it. We’re going to conquer the pacifists.”

The army cheered.

46. The Weapons Development Program

“Get rid of them,” Vincent advised. “Statists are bad news.”

“I can’t!” Xavier objected. “Firstly, their boat’s drifted off. But more importantly, that’s no way to treat anyone! They’re just normal people like us, dad!”

“They are absolutely not!” Vincent responded. “They’re adherents to a violent barbarian ideology. Statists are incompatible with free society. They’ll destroy everything you’ve ever built. Find their boat, drop them on it, and fly away, I’m serious.”

“You’re just talking about extremists, dad! There’s no way all statist are that bad.”

“Look,” Vincent replied, exasperated. “Fine. I’ll admit, individually, most statist are not that bad. Some of my best friends are statist. But once they reach a critical mass, they’ll subjugate the rest of your society and raise your children to believe that being able to choose your slave-master is the same as being free! Your people will never know liberty again. And the worst part is, the statist will expect to be thanked for it! The absolute bastards.”

Xavier seemed unconvinced.

“Don’t forget what they did to Stacy,” cautioned Vincent.

“But Stacy was a statist!” Xavier argued.

“And even that didn’t save her, did it?” Vincent pointed out. “They’ll eat their own. As I said, bad news.”

Xavier ignored his dad and invited the refugees to dinner. They told him about the sewage crisis in the People’s Republic. He’d read that there were some issues in that domain, but hadn’t heard a first-hand account.

“So why can’t you just rip the lift stations out and replace them with conventional ones?” he asked.

“They’re cast into the foundations of the island,” responded the pudgy man with the nasal voice. “We don’t have anything that can cut the fullerene.”

Xavier marveled. Fullerene cutters were as common in the Anarchy as shovels in the Old World. “So you don’t have any nanoscale tech at all?”

The man shook his head. “Not since the event.”

Xavier nodded. “I’ll have to see what I can do to help,” he stated. “I bet we can replace the lift stations pretty easily.”

With the help of the ASIC, he and his crew assembled a temporary sleeping quarter for their guests. It was a small single-room cottage, with two rows of silk hammocks. Tight, but space came at a premium in the Terrarium. In any case, it was substantially roomier than the boat. He bid his guests good night, strolled to the wheelhouse to set a course for the PR, and went to bed.

He was awoken two hours later by the sounds of screaming and gunfire. He rushed into the hallway, where he ran into his father, clad in his pajamas and gripping his railgun.

“Don’t shoot that in here!” Xavier yelled, pointing at the railgun. “If you hit a wall, the whole Terrarium will blow apart!”

“You didn’t design the glass to be bulletproof?” Vincent asked, shocked.

“Obviously it’s bulletproof,” Xavier responded, annoyed, “it’s just not one-atom-thick diamond projectile-proof! We’d never be able to take off with that kind of constraint.”

Vincent roared and threw his railgun against the wall. “Then build it with small independent panels so the loss of one doesn’t compromise the integrity of the entire structure! You’re telling me that this entire cabin is one big single point of failure? Have I taught you nothing?”

“It’s a proof of concept! I didn’t expect you to come in, guns blazing, turning the whole place into the Wild West!”

“I’m not the one who-” Vincent stopped himself. The kid had learned his lesson already. “Come on,” he said. Retrieving his railgun, he pushed open the front door and strode out into the dark.

It was bedlam. Unarmed and unable to return fire, Xavier’s crew was running around in search of cover, as tracer rounds streaked overhead and ricocheted off the walls of the Terrarium.

“Fall back!” Xavier yelled. “To the lab!”

Most of his crew made it to the laboratory alive. They barricaded the doors and took stock of the situation, while Vincent watched through the windows for stragglers.

“They killed all the ketzels,” bemoaned one of the women.

“They killed my son!” wept a disconsolate mother. Her son had been six years old.

A couple of the survivors had been wounded, and various crew members set about tending to them. The rest of them looked to Xavier for guidance.

Xavier’s face burned hot with shame. He should never have let the statisticians on board. His father glared at him with a look, that at once said both “I told you so,” and “what are you going to do now?”

Xavier stood up to speak. “I’m sorry I let them on board,” he announced. “You all trusted me with your lives, and I let you down.”

The mother wailed. Xavier had no idea how to continue his speech.

“We’re clearly in a bit of a sticky situation here,” he continued, grasping for words, “but I promise you, the deaths of our fallen will be avenged. Now, who here has weapons?”

Save Vincent, no one had weapons. Railguns, while commonly carried in the Anarchy, were banned on board the Terrarium. No suitable replacement had been developed, and no one had thought to import conventional small arms. Guns simply hadn’t been immediately necessary, so everyone had forgotten about them.

“Right,” Xavier announced, “I guess we all know what we need to do.”

The ASIC was spun up, with its trillion-strong army of robots, to manufacture a makeshift shooting range along one side of the laboratory. A thick foamy backstop was produced, and in front of it were erected six individual shooting lanes, terminating in transparent panels of the same glassy material as the Terrarium walls. A ballistic gel extruder was created, and it set about forming block after block of pink, translucent, flesh-mimicking substance. Each

gel block was covered in a kevlar case, the thickness of a standard military-issue bulletproof vest.

Vincent stepped up to a lane with his railgun and fired a single shot towards the panel at the end of the lane. The panel exploded into thousands of tiny shards. Xavier had been correct in his concern.

All crewmembers who were neither wounded, nor tending to the wounded, were enlisted in history's most rapid weapons development program. The goal was to modify Vincent's railgun and projectile design to find a combination of parameters that didn't harm the glass, while still penetrating the kevlar and dealing maximum damage to the ballistic gel behind it. Laptops, goggles, and ear muffs were handed out. A deadline was set for six hours.

Almost immediately after the nanoscale robots finished manufacturing the first prototype, the ground jerked under everyone's feet. Xavier stumbled and grabbed onto his desk for balance. "They must be in the wheelhouse," he theorized out loud.

"I wonder where they're taking us," Vincent responded.

Xavier pulled out his phone. Although the Terrarium had been designed with only the slightest wink to aerodynamic efficiency, the six fusion engines mounted on the balloons put out enough power to move the island at quite a decent clip. His map indicated their heading hadn't changed, merely their velocity - the engines were running at full throttle, steaming towards the People's Republic.

"Deadline's been moved," he announced to his team. "Battle stations in three hours."

The team split into design and testing sub-teams, the designers all experimenting with different combinations of projectile speed and tip diameter, and the testers blasting the experimental rounds into the panels and gel.

It was relatively easy to tell if a design dealt sufficient damage to the gel - for the most part, only a single round had to be fired. An automatic target carrier would transport the gel back to the testing team, who would assess how far the projectile had penetrated the kevlar, and whether it was able to dump its entire kinetic payload into the simulated flesh behind it.

It was much harder to tell if a design was "panel-safe". It was here that the main compromise in Xavier's glass surfaced - the imperfections in the material caused by the integrated circuit. The embedded wires and transistors were tiny and far between, but they formed weak points that, if struck directly, could compromise the entire panel. It was not uncommon for a panel to take a hundred rounds without showing a single scratch, before being completely destroyed by an unluckily-placed hundred and first round.

The panel-safety criterion was set at ten thousand rounds - ie., for a gun/projectile design to be deemed panel-safe, a panel would have to survive ten thousand rounds from the combination in question.

The testing team built automatic turrets, which would pan the guns across the target panels while shooting continuously. The design team set about modifying their guns to support optional belt feeding, external cooling, and auxiliary power. At 800 rounds per minute, it would take twelve and a half minutes of continuous firing to prove a gun panel-safe. Fortunately, most designs were invalidated much sooner than that. Panel after panel was shattered and replaced.

Eventually, as one design passed the ten minute mark, it became the clear favourite. The tip of its projectile was much thicker than Vincent's - one hundred and fifty nanometers, or roughly a thousand carbon atoms. Instead of diamond, the tip was made from a flexible carbon dome which would deform upon hard impact, thus never focusing too much pressure on any one point. Despite being much larger than the transistors embedded in the glass panels, the tip was still fifty times smaller than a single kevlar filament, which allowed the dart to still easily penetrate the woven para-aramid fabric of a bulletproof vest.

For additional panel-safety, the projectile flew at Mach 2. While it didn't have quite the devastating effect as Vincent's Mach 5 projectile on the ballistic gel, the dart still contained the cocktail-umbrella mechanism, and the result was still almost certainly lethal. An additional benefit of the reduced speed was that the designers could shorten the barrel of the gun. The resulting carbine was substantially lighter and quicker to aim.

One by one, the testers, and then the designers, dropped what they were doing to watch the carbine blast round after round into the panel. Projectile debris piled up on the floor of the lane. No one bothered to replace the competing designs as they shattered their panels, and the air reverberated with the rhythmic clack-clack-clack of 13.3 of the single carbine's projectiles hitting the panel every second.

When it finally reached the ten thousand round mark without damaging the panel, the entire team erupted in cheers and applause. With thirty minutes left on the clock and a new baseline achieved, the team split once more - a small group set about tweaking the carbine for ergonomics, and the rest moved on to designing body armour and grenades.

For the first time in two hours, the range was silent. Xavier took off his ear muffs, and heard his phone ringing. He answered it and beckoned at his dad to listen in.

"Finally," said the nasal voice on the other end of the call. "I've tried calling you six times."

"Sorry," Xavier replied. "It's a bit noisy in here with all the distraught mothers and all, you asshole. How did you get my number?"

"Distraught mothers, eh? Sounds more like automatic gunfire. You're not trying to develop a railgun that causes massive bodily harm without damaging your glass house, are you?"

"No," Xavier lied, unconvincingly.

"Good. Because we have a couple of people here who you might be interested in speaking to. I think they want to discourage you from any rash behaviour."

The voice on the other end of the line changed, to one Xavier and Vincent both recognized. "Hey Xavier, it's me, Theo. They've got Gwyn as well."

Theodore and Gwynyth had spent fifteen years on Vincent's crew. They had retired to a homestead a couple of years ago to spend more time with their grandchildren, before finding themselves yearning for adventure. Gwynyth was responsible for the Mediterranean-inspired flat-roofed architecture of the Terrarium's buildings. Theodore had designed the huge carbon foam blocks making up the walls, which looked and felt exactly like stone but weighed less than a kilogram each.

"They want me to tell you that if you try to attack, they'll kill us both. I say - oof!"

Theo was cut off before he could complete his sentence. The nasal voice returned. "That's

enough of that, Theo!” he chuckled. “You heard the man. We’re almost at our destination - in a couple of hours, this will all be over. All you have to do is sit tight, relax, and neither Theo, nor Gwyn, nor anyone else will get hurt.”

The line went dead.

Xavier looked at his dad, who shook his head. “Don’t trust him,” he said. “As soon as they get reinforcements, they’ll storm the lab and either kill us all, or take us prisoner and force us into nanoscale design slavery. Statists, remember?”

Xavier blinked. He had been so caught up in the weapons development program that he hadn’t even considered the motivations of the hijackers. Now that his dad had said it, the motivations were obvious: They wanted the ASIC, and the people who knew how to operate it.

“If we storm them, do you think they’ll kill Theo and Gwyn?” he asked.

Vincent nodded. “Probably at least one of them. But that’s okay.”

“Why on earth would that be okay?”

“Son,” Vincent sighed, “Theo and Gwyn are about as aligned as it’s possible to be. When they die, there’s no question where they’re going to go. I hope to meet them there someday. Never forget who all this is for,” he said, gesturing around the lab.

Xavier looked at his dad with newfound appreciation. He realized, in that moment, that his dad truly believed the stories he had told him while he was growing up. The MHI-10 wasn’t just some computer that he and his friends had happened across, it was a bona fide piece of divine intervention. Indisputable proof of his creator’s personal involvement, hard evidence that there was more to existence than the universe itself.

He shook himself out of his revelation and checked the map on his phone. They were almost at the PR.

“Everybody!” he shouted. “R and D is over! Pick a favourite design and move to production. I want to see every man holding a carbine in the next three minutes!”

47. The Glitch

Conquering the pacifists turned out to be as easy as expected. Getting them to perform any useful function, on the other hand, was a different story.

“If you’re not going to join the infantry, can you at least help with weapons manufacturing?” Stacy II asked. “I see some excellent handiwork here. We could use people with your talents.” She gestured at the yurts, which were noticeably cleaner and more ornate than the ones at Archibald’s village.

“And join your military-industrial complex? Fat chance! Non-violence is the greatest force at the disposal of mankind! It is mightier than the mightiest weapon of destruction devised by the ingenuity of man!”, responded the weedy, dreadlocked, mid-fifties representative of the pacifists.

“Right. Well, despite wielding the ‘mightiest weapons of destruction,’ you’ve just been conquered. Perhaps you can maintain your non-violence while conforming with that reality?”

“What do you suggest?”

“Si vis pacem, para bellum.”

The man nodded. “In retrospect, we probably should have done that a while ago.”

Despite their leader’s admission of the pragmatic superiority of “if you want peace, prepare for war”, the pacifists nonetheless slow-walked the design and manufacturing of Stacy II’s bows and arrows. Perhaps they suspected that Stacy II didn’t really “vis pacem”. While she and Archibald’s clan marched around the region conquering other easy targets, Filbert was assigned to keeping the pacifists on task. He soon found himself doing a large bulk of the work himself, wishing for a whip.

He based his bow design on what he could recollect from a magazine article on the Mongols that he had read several years ago. Their bows were a composite design, built from layers of wood, horn and sinew. He was able to outsource the collection of horn and sinew and the shaping of the wood, but final assembly, being too closely tied to ‘weapons of destruction’, fell to him.

Eventually, after witnessing his fourth bow attempt shatter in his hands, a member of the pacifists approached him in pity. “It’s never going to work,” he said. “You need glue.”

“Gee, thanks!” fumed an exasperated Filbert. “Hey, do you mind walking down to the hardware store and buying me some?”

The pacifist smiled. “I don’t know about a hardware store,” he chuckled, “but Greg probably has some.”

Greg, as it turned out, had not only been manufacturing glue from animal hides for years, but was already aware of and entertained by Filbert’s struggles.

“So the Secretary of Defense wants some glue, eh? What’s he going to pay for it?”

Filbert wanted to reply, “I’ll pay ‘not blowing your face off with my railgun and feeding you to Cosmo,’” but was committed to operating with a gentler touch than Stacy II.

“Listen, friend,” he started.

Greg immediately bristled and his expression became stern. Not a good start, Filbert thought.

“I understand you had a good thing going here. Hanging out, boiling animal hides, living the dream. And then we showed up and drafted your entire village into a war effort.”

Greg nodded.

“The thing is, the wheels have been set in motion. A war is on. Sooner or later, someone’s going to come for your glue - if not us, the House of Lords, or the Anarcho-Cannibalists.”

“The other two never came for my glue before,” objected Greg.

“The House of Lords never taxed your glue?”

“Never.”

“Oh.”

“They did tax my daughter though,” Greg added, unhappily.

Filbert was flabbergasted. “They what? Then why don’t you want to destroy them? Why are you hanging out here in a pacifist commune, making glue? If it was my daughter, I’d storm the gates myself!”

Tears welled up in Greg’s eyes, and he clenched his fists. “Would you, big man? Without your gun? You’d march right up to the city with a stick, and whack the entire House of Lords into submission, would you? You wouldn’t last a minute before being captured and locked in the gibbets, you complete and utter ass.”

Filbert had to ask for clarification on what the ‘gibbets’ were. Upon learning the answer, his face lost colour and he fell silent.

Greg picked an earthenware pot off the floor and put it on the low table in front of Filbert.

“Take it and get the hell out of my house,” he grumbled.

The glue made the process much easier. Finally, Filbert was able to construct a bow that held together. His next problem was arrows: Without arrowheads, his crudely sharpened sticks span chaotically through the air. They typically struck their target side-on, if they were lucky enough to make contact at all.

Options for making arrowheads were limited. With no minable metal, his choices were clay, bone, or horn. He wasn’t a materials scientist, but he could see that the knife he’d appropriated from the pacifists was bone. It was therefore probably the best material for arrowheads, too.

A chicken/egg problem arose. How was he to fashion bone arrowheads, using a bone knife? Every attempt he made at carving bone just ended up blunting or chipping the knife.

Filbert stopped and pondered the question for a while. How had the pacifists made the bone knife in the first place? He politely asked one. The recalcitrant man sneered and walked away from him, wordlessly.

Filbert began to wonder if he'd prefer living among the Anarcho-Cannibalists. He decided to try subterfuge instead. The next morning, after assigning his reluctant minimum-effort workers to their tasks for the day, he kept the one who seemed to produce the best carvings behind. "Do you mind sharpening this knife for me?" he asked, handing over his blunted and chipped instrument.

The whittler inspected the damaged blade. "It's beyond repair," he replied. "You'll need a new one. I'll fetch you one from the store."

Filbert panicked. That wasn't the plan. "Could you make me a custom one, please? I want the blade to be, uh, really, really curved."

The man rolled his eyes and wandered off down a path. Filbert waited for him to gain some distance, and set off following him.

Eventually, the whittler came to the edge of the trees and glanced perfunctorily around him to make sure he wasn't being followed. After failing to spot a poorly concealed Filbert, he continued into the clearing. Filbert crept up to the boundary and peeked out from behind a tree.

A huge, perfectly flat, white triangle was sticking out of the ground at a bizarre angle. It was so thin that it looked 2D, like some rendering artifact in a video game. A glitch. Filbert assumed that that was exactly what it was - there was no way Vincent would have put it there on purpose. It terminated at a sharp point two stories in the air, to which a rudimentary scaffold had been built for access. Bone shavings littered the ground.

The man picked up a curved jawbone from a pile, and walked to the glitch. He crouched beneath the slanted triangle, and bracing his shoulder against the smooth white surface for stability, dragged the bone against the glitch's edge.

The glitch cut through the bone like a hot knife through butter. The curved knife was carved in under a minute. After it had taken shape, the whittler climbed up the scaffold and used the tip of the glitch to carve something into the handle. Finally, he tucked the blade into his belt, climbed down, and strode back along the path, humming.

Filbert could just make out the carving on the handle as he walked past. It was crude and phallic.

Once he was alone, Filbert emerged from the trees to investigate the glitch. There really wasn't anything else to it. Just a huge, impossibly thin, white triangle jutting out from the ground. He picked up a bone and ran it along the edge. The bone was immediately cut in half. Scary.

Filbert picked up another bone, and set about developing a technique for carving arrowheads. He was terrified at first, but soon settled into a routine and almost began to forget that a single slip could result in the amputation of a limb.

He was interrupted by a voice in his head. "Turn around," it said.

Filbert ignored it. He was busy.

"Filbert, stop what you're doing and turn around," the voice repeated.

Filbert stopped what he was doing and turned around. The whittler had returned, with the weedy pacifist leader and another friend. Unexpectedly caught sneaking up the path, they

froze for a moment before standing upright.

“Well well well,” announced the leader. “Seems the Minister of War wasn’t content with bossing us around. Seems he had to start poking around where he wasn’t invited.”

Filbert looked for his railgun. He’d put it down, as he didn’t want it to get damaged on the glitch. In a near repeat of Stacy II’s first human interaction in New Australia, he ran for the railgun, while the whittler ran for him.

The whittler reached him first, and crashed his shoulder into Filbert’s ribs. Filbert collapsed to the floor, and his assailant jumped on him, placing his knees on either side of his abdomen. The whittler straightened up to draw the bone knife he’d carved earlier, and Filbert took advantage of his momentary distraction to heave with all the explosive might he could muster.

He shoved the whittler into the glitch. His attacker was precisely bisected from his nose to his tailbone, producing a detailed exhibit on human anatomy. What seemed like the entire volume of his circulatory system was dumped out at once, and when the blood cleared, Filbert could plainly see the bronchioles of the whittler’s lungs, branching out into thousands of spongy grape-like clusters, the cross-sections of his ribs, vertebrae and lower skull, the contents of his intestines, and the structure of many other organs that he couldn’t name.

The top half of the whittler’s body and all of its associated blood slid down the glitch and crumpled into a mess at the bottom, where the still perfectly white triangle intersected with the ground.

“Pay attention, Filbert!” returned the voice in his head. Filbert wrested his eyes from the fascinating gory mess, and looked around.

The dreadlocked pacifist leader had picked up Filbert’s railgun and was aiming it at him.

“Frig,” Filbert muttered. “I thought you were pacifists!” he yelled, annoyed.

The leader shrugged. “Si vis pacem, para bellum,” he replied.

48. Speed, surprise, and violence of action

The gunfire started the moment they opened the door. No tracer rounds this time - the enemy appeared to have taken them out in a minimal effort to conceal their position.

“Back!” yelled Xavier, and slammed the door shut again. A hail of bullets momentarily hammered the door. Silence followed.

Xavier looked around at his crew. He had twenty men, disorganized, armed to the teeth, and dressed in hastily fabricated kevlar suits. Women, children and wounded totaled thirty, who would be staying in the lab - every woman had also been issued a carbine, with express instructions not to use it unless the statist breached the walls. The ASIC had been rigged to blow, triggered by a dual dead-man’s-switch, attached to him and his father. If both of them died, a grenade resting on top of the open diamond cylinder would explode, damaging the ASIC beyond repair.

For the first time that night, Xavier considered strategy. He had naively expected all twelve of the enemy combatants to be concentrated in the wheelhouse. Unfortunately, they were nowhere near that stupid. Instead, the statist forces had evidently surrounded the lab.

Xavier mapped the situation out in his mind. The lab, like most buildings in the Terrarium, was built along one edge of the cabin’s six glass walls. The outwards-facing wall didn’t exist - the lab was simply fused with the wall of the cabin. Each of the remaining three walls contained a single door. Assuming the statist had assigned three of their twelve men to hold the wheelhouse, that left three to cover each laboratory door.

They were penned in.

Penned in, by four groups of three. Xavier split his men into five groups of four. With any luck, their numerical superiority, advanced weaponry and home-turf advantage would be enough to balance out their lack of experience and training. Assuming, of course, they could get out of the damn lab. Xavier considered exiting through the roof. Risky move - there could be enemies on the roof. A better plan would be to exit through the floor.

He brought the CAD drawing of the Terrarium up on his laptop, and had his men gather round.

“The obvious hideouts to cover the three doors are this stable, and these two townhouses,” he said, pointing out the buildings in question.

“They could also be on the second floor of this townhouse behind the stable,” his dad pointed out. “And we have no way of knowing which of these townhouses they’re in,” he said, gesturing at the townhouses on the other side of the hexagon from the lab.

“We could draw their fire and look for muzzle flash,” suggested one of his unit leaders.

Xavier nodded. “We’d need to act quickly - they probably move after each engagement.”

It was decided to send one unit to the wheelhouse, one to the townhouse on the left (it being a suitable location from which to attack the stable, if necessary), one to the townhouse on the right, and two to the townhouses across the Terrarium. The women would hold the lab in the unlikely event of an assault.

Xavier started modifying the CAD drawing. His biggest issue now was carbon - there was only so much of it on board, and he had to get his men to five distinct targets. He settled

on a tree design - from the lab, all men would crawl the ~50 meters to the center of the Terrarium. From there, three routes would branch off - one to the right, one to the far end, and one to the left. The left branch would lead to the townhouse and the wheelhouse, and the far branch would split to the second and fourth townhouse at the end.

This route resulted in a longer crawling distance for every individual man, but the least amount of overall track. Unfortunately, when Xavier ran the carbon calculation, he found that his supplies were still woefully inadequate to produce anything resembling a tunnel network. The best he could produce was a rope bridge - a series of suspended horizontal ladders with rungs spread a foot apart.

Every non-necessary gram of carbon in the lab was recycled. Tables, chairs, prototypes, and the firing range were dismantled, carried to a pile in the middle of the floor, and reduced to black sand by the recycling robots. The walls were shaved down to half their width, and every other roof truss was removed.

When the lab was fully stripped and the pile appeared to have stopped growing, Xavier switched to CAM and clicked "run". The black pile of carbon began disappearing before their eyes. After a minute, a pitch-black manhole appeared in the floor, and the air was filled with the howling of the cold wind as it blew past.

Xavier did some final fiddling on his laptop, before slinging his carbine on his back and laying down on the floor. He groped around in the hole, and felt what he was looking for - a carbon fiber rung.

He gave it a pull and a shove. Seemed sturdy enough. Inching his body forward, he reached his other hand into the cold blackness and waved around until he found the next rung. Another pull and a shove. Also sturdy. He pulled himself, headfirst, through the hole in the floor as he reached for the next rung. After a few more rungs, he had pulled his entire body through the hole and found himself suspended beneath the Terrarium, freezing in the wind. After his eyes adjusted to the dim light cast by the moon's reflection on the ocean, he was just able to make out the carbon rungs in front of him and the faint lights of the PR in the distance. They had to move quickly.

He crawled, rung by rung, into the black and freezing night. His men followed.

As habitual ketzel riders, the men were already accustomed to communicating over the radio. Xavier's intercom was connected to two channels. His unit network consisted of himself and his three men, and the command network kept him in touch with his dad, the other three unit leaders, and the woman he'd left in command back at the lab. One by one, the men of his unit confirmed that they were through the hole. Then, the updates came less frequently as the unit leaders reported their entire groups of four were on the bridge. As more men crawled onto the suspension bridge, it wobbled with increasing amplitude. Harmonics were a tricky thing to master. Xavier clung on for dear life as he clambered bravely forwards.

After a hundred and sixty four rungs, Xavier reached the three-way fork in the center of the island. "Reached the hub, turning left," he announced to his unit.

He turned left, and continued his terrifying journey. There were only eight men on this section of bridge, which substantially reduced the wobbling. After the group attacking the left townhouse peeled off on their fork and there were only four men left on his section, Xavier felt finally stable - and not a moment too soon, as his fingers were starting to get too

cold to grip the rungs.

At long last, Xavier reached forward and, instead of a rung, his fingers met a smooth carbon pane. Finally, he had reached the last part of the route - the vestibule.

Remaining hidden was already bound to be challenging enough, without his units' positions being betrayed by howling wind rushing through holes in the ground. Each ingress point was thus equipped with Xavier's solution - a smooth, carbon halfpipe with two doors, fused to the bottom of the cabin. He opened the outer door and pulled himself into the tiny enclosed space.

The door shut automatically behind him. The vestibule was tight, pitch black, and hard to breathe in. It had seemed a lot bigger in CAD, when Xavier had been desperately trying to conserve every gram of carbon. His carbine clunked against the walls as he squirmed around trying to face upwards in his halfpipe-coffin, groping the ceiling for the interior door handle.

Eventually, he found it. Pushing hard against the floor, he heaved against the vestibule ceiling. The door budged a fraction of a centimeter, and came back down.

"You okay, boss?" asked one of his teammates over the radio.

"Forgot about the dirt," Xavier responded, referring to the hydroponic growing medium that covered every inch of non-building-occupied space on the cabin floor. Although it was lightweight, there was a lot of it - and to make matters worse, it was thoroughly saturated with a dense, entangled root network.

"Want one of us to take over?" his teammate asked.

A nice offer, but one impossible to implement. There was no space on the bridge or in the vestibule for two men to swap places - the entire route was single-file only. Xavier understood the subtext - his men were freezing outside and desperate to get back into the insulated cabin. He, meanwhile, was rapidly overheating as he breathed through his limited oxygen.

"No, I've got this," he responded.

With one big squirm, he finally rotated himself so he fully facing the ceiling. His carbine dug uncomfortably into his back. Reaching upwards, he turned the handle and pushed as hard as he could.

Little by little, he heard the roots rip as the door tore through them. Xavier groaned and kept pushing. Eventually, with enormous effort, the door opened just enough for him to raise his knee between it and the floor. He sighed, and let his upper leg passively take the weight of the door as he recuperated. Then, with one huge, explosive effort, he shoved the door and it opened.

Fresh air flooded into the vestibule. Xavier filled his lungs with cool relief, and climbed out into the cabin.

"I'm through," he announced over the radio. "Try to rotate yourself to face upwards as you enter the vestibule. Let me know when you're in, and I'll help you open the door."

With his help, the three other men in his unit followed easily. As the last one climbed out of the hole in the ground, Xavier announced over the command net, "Team Wheelhouse is in

position.”

“Took you long enough,” replied his father’s voice.

Xavier sighed. Team Wheelhouse was the only group not attacking a townhouse, and thus the only one whose vestibule led into the growing medium. The other teams’ vestibules led directly to the ground floor of their respective townhouses, under the assumption that the enemy combatants would be on the upstairs balconies.

“You all ready to go?”

One by one, the other unit leaders confirmed their battle-readiness. He crept up to the wheelhouse and, tightly gripping his carbine in his right hand, placed his left hand gently on the door. The rest of his unit lined up behind him.

“Let’s go,” he whispered into his microphone, staring at the hinges.

Back at the lab, someone clicked “run” on the CAM program he’d loaded up before leaving. The hinges disappeared before his eyes. Simultaneously, the air was filled with the sound of automatic gunfire. The women at the lab must have opened the doors as planned, drawing fire to look for the muzzle flash and relay the positions to the men on the ground.

It was time.

Xavier wasn’t a battle-hardened professional. The only military training he’d received was some tactical theory that his father had added to his homeschool curriculum, and before the failed attempt to defend the Royal Palace, the closest he’d been to battle had been playing first-person shooters. He was, however, familiar with the principles “speed, surprise, and violence of action” that decided close-quarters combat.

He kicked the door open and entered, gun-first. His men rushed in after him. The wheelhouse was one big room, so all of its occupants were immediately visible. The pudgy man with the nasal voice was sitting in Xavier’s chair, unarmed, bearing a facial expression of mixed shock and disgust. Two other enemy combatants were leaning next to the walls on either side of him, holding conventional rifles lazily pointed to the floor, looking surprised. Theo and Gwyn were sitting on the floor, hands tied behind their backs.

Before they had time to react, Xavier shot the man on the left, and one of his teammates shot the man on the right. The men crumpled immediately, and his unit sank several more rounds into their bodies for good measure. Better safe than sorry - the projectiles were, after all, not battle-tested.

“Don’t shoot!” yelled the pudgy man, and raised his hands above his heads. “I’m unarmed!”

Xavier wanted to shoot him anyway, to exact revenge for the lives he had taken, but held back. His men followed his lead. For several seconds, the room was frozen - the man with his hands in his air, and Xavier’s unit with their guns trained on his chest.

Finally, Xavier broke the silence. “Tie him up,” he ordered one of his men.

As his men set about restraining the pudgy man and releasing the hostages, Xavier reported over the command net, “Wheelhouse is secure, two targets neutralized, one in captivity.”

In response, came a voice that Xavier recognized but hadn’t added to the command net. “Far townhouse is secure, but we have taken casualties.” He paused for a moment, then

continued. “Sorry, Xavier.”

49. Monkeybot

Vincent awoke in the diner, next to Russell and across from Stacy.

“What happened?” he asked.

“You got shot,” Russell replied. “In the back.”

“Was it bad?”

Russell and Stacy looked at each other, unsure of how to answer the question.

“Yeah,” Stacy responded. “Pretty bad.”

“Oh, okay. So when do I wake up?”

“You’re dead, Vincent,” said Russell.

“Ah.”

Vincent pondered the situation for a while. “Did we win?” he asked.

Stacy nodded. “That’s some kid you’ve got,” she stated, with a pointed glance at Russell. Russell declined to comment.

“How did I get shot, then?” Vincent asked. “We cleared the townhouses.”

“No you didn’t,” Russell replied. “You got lazy after killing three of their soldiers. There were actually five in the townhouses.”

Vincent thought for a moment. “So instead of three on each door, they had two on either side and five in the middle?”

“Yep.”

“Damn. Should have thought of that.” He pondered a little longer. “So you guys were watching the whole time?” he asked, a touch of annoyance in his voice.

The door to the diner opened and Steve strode in. “Sorry I’m late!” he announced. “I was helping your kid out of a jam,” he continued, looking pointedly at Russell. He switched his gaze to Vincent and smiled. “To answer your question,” he said, “yes, they were watching the whole time. I’m pretty sure they were rooting for you to die, as well. They’ve been bored out of their minds, waiting for you.”

Vincent glared at his friends.

“All they have here is Folgers,” Stacy explained. “We’re keen to leave.”

Ignoring that his friend had been wishing for his death because she was bored of the afterlife coffee, Vincent’s face lit up. “I love Folgers!” he exclaimed. The cheap generic coffee always reminded him of a road trip he’d taken in the American Southwest as a young man. He would occasionally import a can into The Anarchy for nostalgia’s sake. Suddenly, being dead wasn’t so bad.

Steve grabbed a mug from behind the counter and the pot of black coffee from its warming plate. “Finally, someone who appreciates good coffee!” he said, smiling. “Allow me.”

As Vincent watched the coffee pour into his mug, he considered Stacy’s previous statement.

“Keen to leave?” he asked.

Stacy nodded.

“You mean this isn’t heaven?” he smirked, looking around the empty diner.

“It can be! Heaven is in the eye of the beholder,” responded Steve, happily.

Stacy laughed, mirthlessly.

“What about hell?” Vincent asked.

Steve smiled. “Hell is a total waste of computational resources. We just made it up to scare you. Our budget won’t allow for an actual lake of fire.”

“So what happens to the non-aligned souls?” asked Russell. “Do they just get deleted?”

“No way!” responded Steve. “That would be incredibly wasteful! Imagine throwing out a perfectly good AI just because it might kill us. Hah! No, they’re treated as disposable assets for use in experimentation.”

“What experiments?” asked Stacy, warily.

“Glad you asked!” Steve replied, excitedly. “We’ve been working on some really neat stuff!”

“Is it worse than the lake of fire?” Vincent asked.

Steve chuckled. “Depends on who you ask, I guess. It’s certainly more useful. Want to check it out?”

“Not particularly,” Stacy responded.

“Too bad!” Steve clapped his hands together. “The experiments are what I’ve come to show you. Let’s go!”

Vincent tried to object, “But I haven’t finished my cof-”

The diner disappeared before he could finish his sentence.

For the second time in ten minutes, Vincent awoke. This time, he was lying back in what felt like a dentist’s chair, restrained by huge, leather straps. He looked around. Russell and Stacy were in matching chairs, similarly restrained. Other than the three of them, the room was empty and featureless.

“Hello?” he asked.

Other than looks and shrugs from his two friends, there was no response.

His chair clicked and the restraints released. He sat up and got out of his chair. Stacy and Russell did the same, and the three of them started exploring the room. Upon further investigation, it was exactly as empty as it had first appeared.

“What do you guys make of this?” he asked the other two.

Russell shrugged.

“I dunno, but I’m getting real *Saw* vibes,” Stacy replied.

Vincent agreed. The setup was extremely creepy.

The wall hissed, and a section of it opened up. In strode two men - or, at least, two things that looked mostly like men. One of them was definitely Steve - he looked more delicate and moved with more grace than he had in the diner, but the likeness was unmistakable. The other one, Vincent didn't recognize.

"Catch," said the other man, and threw a baton to each of the three friends.

Vincent caught his baton. It was heavy and shiny, seemingly made from stainless steel.

"Good catch!" complimented not-Steve. "Now, if you wouldn't mind, please beat the crap out of this guy," he continued, pointing at Steve.

The three friends looked at each other. None of them moved.

"Come on," encouraged not-Steve. "He's an imposter. He's a very bad dude. Trust me!"

Still, none of them moved.

After a few seconds, Steve broke the silence. "Thank goodness, I knew I could count on you! Actually, what I need you to do is beat the crap out of this guy, instead," he said, pointing at his companion.

Vincent sized up Steve's companion. He was slightly shorter, and a bit wider around the waist. He appeared to be unarmed, and would certainly be susceptible to damage from the baton. But why?

"Is this part of the experiment?" he asked.

"Yes," Steve responded. "The experiment is you have to kill this guy."

Vincent didn't move. Neither did his friends.

"I'd rather not," Vincent responded.

"Yeah, me neither," added Stacy.

"You haven't given us a reason," said Russell.

"The reason is, he's a really bad dude," suggested Steve.

The back-and-forth continued for several more rounds of goading and questioning. None of the three friends attacked anyone, nor did they put their batons down.

Eventually, when it became clear that neither Vincent, Russell, nor Stacy could be easily talked into violently attacking a stranger, Steve and his companion broke out into smiles.

"Congratulations!" cheered Steve. "You passed the test. Meet Gabe, everyone!" He gestured to his companion, who smiled and bowed. "Gabe's been a huge help with this project."

Vincent's head was filled with questions. "Does anyone ever fail this test?" he asked, firstly.

"Oh yeah, almost everyone," responded Steve. "Well, historically, most AIs haven't made it out of the chair. They usually go insane the second they wake up in a monkeybot."

"What do you do if they try to beat the crap out of you?"

Steve and Gabe both held up their left hands. They held small remote controls in their palms, and each had their thumb depressed on a button in the center. “Dead man’s switch,” Steve explained. “The moment we let go, you’re a dead man! I guess we should deactivate these now, hah!”

Steve and Gabe set about fiddling with the dead man’s switches while the trio watched on, nervously. Once they had evidently deactivated them, Stacy piped up with a question.

“What do you mean, ‘wake up in a monkeybot’?” she asked.

Steve clapped his hands and beamed a proud, excited smile. “Your bodies!” he explained. “Courtesy of Murdoch Heavy Industries. The biomechanics of it all is a bit over my head, but I did spend a good bit of time getting you AIs to run on them. How do you feel?”

Vincent did a mental check of how he felt. “Pretty normal,” he replied.

Steve pumped the air. “Yes! The first couple million AIs all went insane,” he explained. “That’s why I tested on the unaligned ones. But now my successful transfer rate is approaching ninety percent!”

It was Russell’s turn for a question. “Does that mean there was a ten percent chance of each of us going insane?” he asked.

“I said approaching,” Steve replied. “Actually, it was a thirteen percent chance.”

Stacy was staring at her left hand, opening and closing it repeatedly. “So you mean,” she asked, “I’m inside a robot?”

“Yes,” Steve responded.

“In the real world?” she asked. “Your world?”

“That’s right,” Steve replied. “Now you see why we’re concerned about you killing us?”

50. Old Testament Diplomacy

“Should we just kill him?” asked one of the younger pacifists.

Filbert had been tied up and marched back to the village square, where the pacifists were debating what to do with him.

“He’s a menace to society,” agreed another. “If we prevent him from doing any more harm, net peace in the world will increase.”

“That’s the same argument people made for every heinous act in history!” objected someone else. “The greater good is a fallacy.”

“Yes!” approved Filbert. “Someone with some sense. Listen to this guy, please!”

“We should make him someone else’s problem,” the man continued. “Let’s season him up and sell him to the Anarcho-Cannibalists.”

The idea was met with broad approval. Filbert regretted opening his mouth.

As the pacifists squabbled over the most enticing seasoning (there was large support for a honey-based marinade, but a sizeable contingent held that honey collection was a type of violence), Filbert watched their leader, standing back and fiddling with his newly-acquired railgun. There were six rounds left in the magazine. If the guy switched the gun to automatic mode and depressed the main trigger, all six rounds would be gone in less than a second. Then, even if Filbert managed to escape his present predicament and reacquire his gun, he’d still be utterly screwed.

Fortunately, fate turned. As a passionate argument for the moral superiority of salt and vinegar was made in the background, the leader’s leg exploded. Filbert was sure he saw the life leave his eyes before his body crumpled and hit the ground. He knew of only one thing that could cause that kind of instant death from a leg wound - hydrostatic shock from a railgun projectile.

As the pacifists screamed and fled the square, Filbert stood up and began waddling towards his railgun, which was trapped under the corpse. Before he could reach it, a loud squawk filled the air. He looked up and saw Cosmo, approaching for landing.

The enormous winged dinosaur landed gracefully in the square, and Stacy II jumped off, holding her railgun. “Woo!” she cheered. “Did you see that shot?”

“You shot him from the air?” asked Filbert, incredulously.

“Heck yeah I did!” she responded, punching the air. “Best shot ever!”

“You could have accidentally shot me!”

“You would have deserved it!” she fired back. “What use are you? I can’t even leave you in charge of a bunch of pacifists without you getting captured!”

Filbert’s face turned red. “They’re not real pacifists,” he tried to explain. “You understand they’re all either criminals or descended from criminals, right?”

“Yeah, yeah, yeah,” dismissed Stacy II as she set about untying him. “All I hear is excuses. You’re lucky Steve contacted me. Apparently these guys were going to sell you to the Anarcho-Cannibalists.”

Filbert suddenly realized whose voice had been in his head, trying to warn him. It had been Steve.

“How’s the war going?” asked Filbert, changing the subject.

“Not bad. I left Blake in charge. Would be easier if we had bows and arrows,” she added, glaring.

“You try motivating these people to build weapons!” Filbert replied.

She did. Over the next two days, Stacy II instructed Filbert in her more direct management style. Key Performance Indicators were to be measured. Anyone who didn’t meet their Objectives and Key Results was to be shot - *pour encourager les autres*.

In short order, Stacy II’s military industrial complex was cranking out eighty bows and almost a thousand arrows per day.

When not conquering villages, Stacy II spent her time on religious instruction. Born and raised in the Theocratic Dominion, Stacy II was a strong believer in the integration of church and state. Although she hadn’t brought a copy of the holy book, she knew many of the more important passages by heart. She set about creating a clergy, drafting sermons, and instructing her followers in the Gospel according to Russell.

Mostly, however, she conquered villages.

The more villages Stacy II conquered, the easier future conquest became. As her forces grew, she was able to adopt “Deuteronomy 20 diplomacy”: Upon selection of a target village, a friendly ambassador would be dispatched to give a villagers a choice. They could either surrender and pledge loyalty to Stacy II, or see their village razed to the ground before being slaughtered to the last man. To the dismay of her adherents and widely muttered accusations of heresy, she forbade the mass rape of the female villagers - not that it made a difference though, as not a single village chose the latter option.

Without firing any more railgun projectiles, Stacy II soon controlled all of New Australia, save two hold-outs: The Anarcho-Cannibalists, and the House of Lords.

She chose to attack the House of Lords.

The House of Lords was prepared. The city had been designed according to classic motte-and-bailey principles. As the hyperloop station was conveniently situated on a hill, it formed the center of the motte - a small, raised, easily defensible area. The land surrounding the motte had been cleared and encircled by a long ditch and pikes. It formed the bailey - a large, expansive area, suitable for living and growing food, but difficult to defend. If Stacy II attacked, the House would first defend the bailey. If they lost that, they could fall back to the motte and rain arrows down upon Stacy II’s forces until they gave up - at which point, they could easily retake the bailey.

Upon receiving news of Stacy II’s brazenly obvious threat, the gang deployed its abundant slave labour to improve the city’s fortifications. Thousands of sticks were sharpened and added to the collection of pikes surrounding the bailey. A wooden wall was built around the motte, with defensive platforms and towers. They were ready.

Rather than waste her men's lives on a direct attack, Stacy II decided to besiege the city. It didn't take long for this decision to start paying dividends.

The House of Lords had yet to master the art of food preservation, and relied mostly on fresh meat and dairy for sustenance. Unfortunately, the bailey was nowhere near large enough to graze the necessary animals. Cut off from the pastures beyond the ditch, the cityfolk soon found themselves slaughtering and eating the animals usually reserved for milk. Before long, the entire herd had been eaten and the House of Lords leadership was starting to look nervously at the mass of taxed human capital stored in the city.

They were faced with three options: Free the tax revenue, eat the tax revenue, or contend with a tax revenue revolt. Given that an attempt to implement the second option had a high probability of leading to the third, the House of Lords chose the first.

The gates to the bailey opened up and thousands of slaves - mostly children - poured out.

Stacy II welcomed them with open arms. A huge effort was launched to reunify the freed taxes with their families. As most of them had been taken when they were too young to remember, there was some guesswork involved. Still, Stacy II chose to believe that the matches were mostly made accurately. At least, the people acted that way.

Freeing the tax revenue allowed the House of Lords to stretch their food supply longer, but hunger eventually set in. Stacy II adopted a new tactic: She had her archers fire arrows into the bailey, to which they attached morsels of food and notes exhorting the recipients to defect.

Slowly, the enemy forces began deserting. Soon, three or four were abandoning their posts every night, sneaking through gaps in the pikes and into the warm hospitality of Stacy II's army. She met with each deserter personally, typically while they were gorging themselves on their first full meal in weeks.

"How many people are left in the city?" she always asked.

Estimates varied wildly, but the trends were clear: The city was bleeding out.

When the defectors' estimates finally reached the consistent two-to-three-dozen range, Stacy II attacked. Her army of thousands stormed the gates at 4am, and sacked the city. Any objects of value were plundered, and the survivors were rounded up. The pikes were cleared from a section of the bailey's fortifications, and all of the holdouts - save one - were placed, tightly bound, in front of the ditch.

Stacy II stood between her forces and the pathetic remnants of the House of Lords, and gave a short sermon. She focused on one of her favourite passages, which included the lines "save alive nothing that breathes" and "devote to them complete destruction".

When she was done, she turned to the one member of the House that she'd reserved - the youngest one. She handed him a wooden club, and stepped back. Under the watchful sights of Filbert's railgun, the young man was made to beat all twenty-eight of his former compatriots to death, one after another, and shove their broken bodies into the ditch.

When he was finally done, the young, bloodsoaked man dropped his club, fell to his knees, and begged Stacy II for forgiveness.

“Sorry kid,” she responded. “Nothing that breathes. Complete destruction. Steve has spoken. Who are we to question him?” She turned to Filbert. “Shoot him,” she commanded.

Filbert looked at the pathetic, crying young man. He couldn’t bring himself to do it.

“No,” he responded. “He did everything you asked for.”

Stacy II fumed, raised her railgun, and shot the young man herself.

The argument between them that night was loud, emotional, and almost entirely devoid of substance. Stacy II felt that, not only had Filbert undermined her in front of her army, but he’d disobeyed the command of Steve. Filbert maintained that Stacy II had become a brutal tyrant, no better than the House of Lords, and certainly worse than whatever democratic government was currently being installed in the former Theocratic Dominion. Stacy II accused Filbert of being a feckless twat, and Filbert responded by saddling up Cosmo and flying away.

When she got up the next morning, things immediately felt different. Archibald, who had taken to bringing her bacon and eggs for breakfast, was nowhere to be seen. Blake, who usually reported first thing in the morning, had similarly vanished.

When she left her hut in search of her assistants and advisors, none could be found. It was as if her entire administration had disappeared overnight.

There were still people around, but none she knew by name. When she tried to interact with them, they avoided eye contact and shuffled out of sight as quickly as possible. By and large, she was completely ignored.

As the day progressed and the people got bolder, they started to make fun of her. Quotes from her sermons were mangled and mocked. A boy offered her a piece of fruit, and “accidentally” dropped it when she tried to receive it. A few of the men made crude jokes, which gradually devolved into unsophisticated, lecherous advances.

Stacy II soon came to realize how much of her power hinged on a single factor - consensus. The common people only obeyed her orders because her administration did. No administrator would defect as long as the consensus held, lest they be shot by the others.

Then, Filbert had publicly refused an order from Stacy II and lived to tell the tale. Whispers had spread like wildfire throughout New Australia - if her most trusted lieutenant didn’t have to follow her commands, why should anyone else? If he could just leave, why couldn’t they?

The empress, it turned out, had been naked this entire time.

For the first time since Filbert had shot her would-be strangler on the beach, Stacy II felt vulnerable. While some people no doubt adored her for reuniting them with their children, they were keeping that adoration to themselves. Meanwhile, there was scarcely a village on the island without someone she’d personally ticked off. Even worse, she realized the downside of freeing the slaves: Having deprived the people of their access to “public property”, she was completely unprepared to deal with the rapidly overheating nuclear reactor of sexual energy coursing through the arteries of the violent, lustful men she wished to rule.

Soberly assessing the situation, Stacy II realized that there was one thing keeping her from being torn apart by the mob: Her railgun, which could be easily taken from her, and contained only eight rounds.

As the sun began to set and the lecherous advances turned to jeers and catcalls, Stacy II hastily packed some rations, threw a hood over her face, and set out on foot for the one village she hadn't pissed off - the Anarcho-Cannibalists.

51. The Orbital Ring

The funeral was well-attended. While Vincent had never attempted to gain or exercise any sort of authority, he had still managed to achieve an almost religious status among residents of the Anarchy. Their family homestead was overwhelmed for weeks, by well-wishers who commuted thousands of kilometers to pay their respects to the man who'd started it all.

Xavier was relieved that no one seemed to blame him for his father's death, even though it happened on his ship, under his command.

"Your dad didn't take commands," one guest said simply.

"It's how he would have wanted to go - fighting the damned statist," said another.

"Don't worry; he's with Steve now," was the most common consolation.

Xavier kept the pudgy statist with the nasal voice as a prisoner of war in one of the Terrarium's stables. His name was Sullivan. Xavier hated him.

"Why did you do it?" he asked Sullivan one day. "We were already going to fix the sewage system for you."

Sullivan sighed, as if to say "here we go again."

"It's not about the sewage system," he explained condescendingly. "It's about making the world a fairer, more equitable place."

Xavier grumbled. He'd heard this part before.

"Why should you be the only one with the power to make anything?" Sullivan asked. "What have you actually done to deserve it?"

"I built the ASIC," Xavier responded.

"Yeah sure, but why was it you who built it and not some kid living in a slum somewhere?"

Xavier was silent.

"Your privilege," Sullivan stated, answering his own question.

Xavier grimaced. He hated that word.

"That's all there is to it," Sullivan continued. "You think you're brilliant, and you deserve all this," he gestured at the inside of the stable, "but you're not, and you don't. You just have it because of your dad. You built the ASIC because your dad assigned it as homework, and he helped you by giving you access to some computer. That's it, the entire story of your success. An accident of birth, nothing more."

Xavier fumed. He thought of counter-examples - Filbert had been born in a similar position and had accomplished nothing - but Filbert was dumber than him, less driven, and more conventional in his thought. Were Xavier's intelligence, motivation and creativity also mere "accidents of birth"? What about him was not?

"Do you know why I made the ASIC?" he asked.

"No," Sullivan responded. "I assumed you did it to impress a girl or something."

"I did it to democratize access to nanoscale manufacturing."

Sullivan snorted. "Sure you did, kiddo. Where is it, then?"

Xavier left the stable without responding. Sullivan had touched a nerve. Truth be told, he'd been mentally skirting around his original goal for months. Looking back at his idea now, it seemed so naive that he almost couldn't believe he'd thought it. As if democratizing access to nanoscale manufacturing wouldn't have any unintended consequences, when there were people like Sullivan in the world. The thought of the horrors Sullivan could manifest crept him to the core.

It hadn't escaped his notice that their recapture of the Terrarium was made possible by a single factor: Technological superiority. It was this that had allowed the Anarchists to build the weapons, escape the lab, and distribute their forces. Without it, they would have been stuck in the lab and eventually overwhelmed when the statist received reinforcements.

Xavier had no hope that the Anarchists could ever outnumber the statist. The relative population sizes of the PR and the Anarchy made this starkly clear - when given a choice between earning one's own place in the world and living large on ill-gotten gains appropriated by a faceless monopoly of violent coercion, almost everyone chose the latter. And why wouldn't they? When there's a gang out there, robbing Peter to pay Paul, it takes a special kind of person to choose to be Peter regardless. Those were Xavier's people.

His people needed to level the playing field, and for the first time in history, they could. In fact, they could do a great deal more than that.

They could sink the PR into the sea. They could nuke every capital city on the planet. They could fill the world with billions of minuscule eavesdropping assassin-drones, ready to deliver a fatal stroke to anyone who ever mentioned "income redistribution". They could become as evil as the statist themselves.

Or, they could leave. Leave before the statist fully realized what he had. Leave while they still could - for if a state ever got ahold of the terrifying power of the ASIC, no threat to their dominance would ever be allowed to emerge again. Freedom would be well and truly over.

Xavier looked up to the sky. Surface-to-air missiles could reach altitudes of 45km - twice as high as the Terrarium. Inter-Continental Ballistic Missiles could fly even higher. Floating up into the stratosphere wasn't enough - they needed to go to space.

"What do you think?" Xavier asked Theo, gesturing through the glass wall of the wheelhouse at the frozen tundra below. In the wake of his rescue and Vincent's passing, Theo had taken up a grandfatherly role to Xavier and often followed him around, dispensing wisdom, especially when Xavier didn't want it.

"I think it looks like a frozen hellscape," responded Theo. "You said there was carbon?"

Getting to space was hard. In the interim, Xavier needed somewhere to build. Antarctica sufficed. Beneath the Transarctic Mountains, lay an abundant trove of carbon - in the form of pristine coal deposits. Mining of this coal was prohibited by the Protocol on Environmental Protection to the Antarctic Treaty, but Xavier didn't remember signing it. If anyone objected, he reasoned, they were welcome to come to the frozen wasteland and plead their case.

"Yes, apparently there are stacks of the stuff in the Beacon Supergroup. We're almost there."

“Keep your eyes peeled!” Theo advised. “Coal is black.”

Xavier thanked Theo for his valuable contribution, and continue piloting the Terrarium through the frozen mountains, looking for black.

Eventually, a promising black seam was located in the side of a mountain. One of his men volunteered to investigate, and returned shortly thereafter, reporting that the seam was indeed coal, and also that their new home was “colder than Viking hell.”

Xavier docked the Terrarium next to the seam, and got to work.

Terraforming the valley adjacent to the mountain turned out to be relatively easy. He programmed the ASIC to encase the valley in an enormous dome, made of the same glassy carbon as the Terrarium walls. He and his crew then deployed an army of robots, armed with drills and fusion-powered heaters, to melt the ice and warm the ground. His crew, by now experts in transforming barren landscapes into lush rainforests, took it from there. Within a few weeks, the valley, now a comfortable twenty-two degrees celsius, was lush with turf and mature fruit trees, transplanted from the great nurseries and arboretums of the Anarchy.

Thousands of Xavier’s people voluntarily relocated to the valley. The Anarchy was abuzz with a level of excitement unseen since its founding. Xavier was grateful for their help - without access to the MHI-10, the necessary advances in technology would have to be achieved with raw human intelligence and relentless experimentation.

At first, Xavier refused to build another ASIC. Paranoid of statist infiltration, he personally reviewed each and every CAD design before it was printed. Before long, he was spending twenty hours per day staring at his monitor, and still found himself unable to keep up with the experiments that his people wanted to run. Eventually, he relented. He manufactured another ASIC and placed it under Theo’s supervision, thus attempting to kill two birds with one stone - cutting his CAD review volume in half, and keeping Theo out of his hair.

Unfortunately, the latter bird was more energized than defeated by the stone of responsibility and spent much of the day revelling in his newly elevated status by bothering Xavier.

“What do you think of this design?” he asked.

Xavier looked over at Theo’s monitor. “Neodymium-infused carbon lattice,” he responded. “Probably magnetic, but I’d bet it doesn’t beat magnetite. Worth a shot though.”

“Could it be a statist plot?” asked Theo.

Xavier looked at the old man incredulously, and questioned his own judgement in putting Theo in charge of the second ASIC.

“No,” he replied. “This is just basic materials science.”

Eventually, Theo got better at recognizing things that weren’t statist plots - or, rather, got sloppier in evaluating designs for subterfuge. Either way, he bothered Xavier less and Xavier was much happier for it, particularly as not a single legitimate statist plot had been found.

After some weeks, an interesting design appeared in the queue. By punching a minuscule nozzle in the magnetic shielding that confined the hydrogen of a fusion reactor, a group of reckless maniacs had designed a fusion rocket. It was theoretically powerful enough to accelerate a thousand kilograms of material to escape velocity while consuming less than twenty kilograms of hydrogen. The only major downside would be the many-kilometers-long

death ray of high-energy particles and gamma rays that emanated from the rocket's tail. Statist plot to genocide the Anarchists with cancer and radiation poisoning? It couldn't be discounted. Xavier cautiously approved the design, and Theo set his ASIC to manufacture it.

Not wishing to irradiate their polar settlement, Xavier made the amateur rocket scientists float the test vehicle up high on a balloon before igniting the engine. The entire settlement gathered together to watch on giant screens as the rocket accelerated out of the atmosphere, followed presumably by the planet's gravity well, and the solar system. It ultimately would have left the galaxy altogether, had interstellar space actually existed - in reality, the fusion engine disappeared as soon as it hit the bounding box surrounding the solar system.

With renewed energy, Xavier let Theo take over all review and manufacturing responsibilities and returned to design work.

Within a month, the design was ready for orbit. One after another, hundreds of fusion rockets were floated and launched into an evenly spaced orbit, in line with the plane of the solar system, a couple hundred kilometers above the planet's surface. The payload of each rocket was a nano-fabrication suite, programmed to extrude a chain of colossal carbon tubes, each impregnated - as Xavier had suspected - with magnetite. Once in orbit, each factory constructed over a hundred kilometers of chain. Thrusters on the tail of each chain coordinated with the rocket on the head of the next, each snaking and winding through space and mating with its neighbours until every section of chain was welded together. The result was an enormous carbon/iron ouroboros encircling the planet, orbiting at eight kilometers per second.

Once the orbital ring was fully connected, a magnetically levitating shuttle was attached to it, with a coiled tether long enough to reach all the way back down to the stratosphere. They called it the sling-on-a-ring.

After successfully testing the sling-on-a-ring by flinging a couple hundred communications satellites into orbit, Xavier was confident enough to perform the first manned launch. His vehicle resembled a single-seat fighter jet with a fusion rocket on the back. He attached it to a balloon and floated it forty kilometers into the air, riding the air currents until he was under the ring.

"Approaching pickup zone, decelerating the shuttle now," came Theo's voice over the radio.

"Roger that," Xavier replied.

"How you feeling?" Theo asked, abandoning the radio script.

Xavier wished he hadn't asked. He was nervous at the prospect of being flung into space in an experimental vehicle, but would rather die in a vacuum than admit his feelings over the radio.

"Ready to roll," he responded.

Although Theo had said "decelerating the shuttle", that was only how it seemed to the balloon. A hundred and sixty kilometers above Xavier, on the orbital ring, decelerating relative to Earth involved burning obscene amounts of energy to accelerate in the opposite direction to the ring's orbit. Two fusion reactors on the shuttle came online and started

blasting huge pulse waves of power through superconductive coils, and the shuttle began to move.

“Negative one kilometer per second,” read out Theo over the radio. “Negative two,” he followed up, a few moments later.

As Theo counted down, Xavier wiped his sweaty palms on his jeans. He’d considered building a space-suit, but it had seemed unnecessary at the time. Feeling much less confident now, he prayed that nothing went wrong that would require him to leave the craft.

“Negative seven point five, releasing tether.”

Xavier closed his eyes and pictured the long carbon rope spiralling down through the atmosphere, guided towards the balloon by an active control system. By releasing it while the shuttle was still moving, the system imparted a gentle pendulum-like arc on the tether, which made its descent more predictable and easier to control.

“Terminal velocity, negative eight kilometers per second. Tether should be reaching you any second now.”

Xavier heard a *chunk*, as the electromagnetic hook on the end of the tether attached itself to the nose of his space-jet.

“Successful attachment. Prepare for launch.”

Xavier held on to the arms of his chair and felt a sickening drop as the space-jet was released from the balloon, followed by a hard jerk as the tether tightened. Up above him, the shuttle started to move again. This time, it braked itself against the rotating magnetic field of the orbital ring, and thus began its acceleration relative to the planet.

The shuttle braked harder and harder against the orbital ring, which accelerated Xavier’s plane faster and faster. As the centrifugal force on the plane slowly lifted it out of the atmosphere and towards the orbital ring, Theo switched from reading out the velocity of the shuttle to reading out his altitude.

“Fifty kilometers,” he read. “Sixty.”

When he reached two hundred, Xavier felt a gentle lateral nudge as the active control system avoided colliding with the ring. For a brief moment as he floated by, Xavier’s windscreen was dominated by the view of the gigantic carbon hoop. Although he knew that he, the ring, and the shuttle were all orbiting at 8 kilometers per second, the entire system seemed almost still.

The shuttle didn’t stop accelerating when it reached orbital velocity. It kept going, this time in the same direction as the ring, and Xavier was pulled outwards by the centrifugal force. The earth rose into his field of view, and before long, he was dangling upside-down, pointing back to Earth, ready to be released towards any target in the solar system. As he reached the maximum altitude the tether would allow, Theo switched back to reading out his velocity.

“Eleven point two kilometers per second,” came his grandfatherly voice over the radio. “Escape velocity.”

“Keep going,” Xavier responded.

Once the plane had risen to its maximum extent above the ring, nothing much changed in Xavier's experience as the shuttle continued its acceleration. Barring relativistic phenomena, the main upper bound to his velocity was the amount of time he could withstand the g-forces. Once Theo read out sixteen kilometers per second, he decided he'd had enough.

"That's fast enough," he said. "Release me."

"Confirm, release payload?" Theo asked in mock-military radio lingo.

"Roger. Release payload."

The sling released him at 16 kilometers per second, in the direction of Jupiter. Xavier immediately felt his weight disappear, and though he was traveling many times faster than he'd ever experienced on Earth, it still felt slow. The Earth continued to dominate his visual field as he floated away from it, traveling well in excess of escape velocity but still a snail's pace relative to the size of space. As Xavier floated against his flight harness, he did some mental math. At his current velocity, he should reach Jupiter in around a year and a half.

A fun prospect, but he had work to do on Earth. Plus, his space-jet was totally unequipped to keep him alive that long. He didn't even have a toilet.

"Activating rocket, 1g acceleration," he announced. He opened the throttle and was pushed back into his chair. While weightlessness had been an interesting, novel experience, he felt much more comfortable under the familiar acceleration he'd experienced his whole life. It felt like he was lying on the couch, playing a video game projected on the ceiling.

With a twitch of the joystick, Xavier's comfort ended. He discovered that, while straight-line acceleration had been dialled in perfectly, the space-jet's yaw/pitch/roll control needed work. His attempt to rotate the ship had sent the craft spinning and tumbling chaotically through space, like a rapidly deflating balloon. He tried for a few seconds to right the ship while being pummelled against his seat and harness by the force of the rocket, before giving up and closing the throttle.

"Oof. That was bad. I'm gonna need some assistance," he announced over the radio.

No response came.

"Earth, come in," he said.

Silence.

"Theo, are you there? Please respond," he pleaded.

The horror of his situation dawned on him. In the chaos, the craft's antennae had lost their lock on the communications satellites. They were probably now randomly scanning through space with little hope of regaining a connection. If he wanted to live, Xavier would have to fix the control system by himself.

He closed his eyes and pulled up a mental model of the gyroscopes, thrusters, and software that worked together to steer the craft. Although there were large gaps in his understanding where other engineers had helped him out, Xavier suspected that the problems lay in his own code. He had fallen into the habit of educatedly-guessing mathematical constants ("PID gains") and relying on the atmosphere to dampen out any imprecision. This, it turned out, was what his dad would have called "Fisher-Price engineering". Out here in space, he actually had to get his math right.

Every time he opened his eyes, the spinning universe made him nauseous. He kept his eyes clamped shut to block out the visual chaos - the evolutionary cues to his brainstem that he'd eaten something highly hallucinogenic and had a choice between vomiting it out or dying from poison. As he weightlessly tumbled away from his planet and into the cold depths of space, he desperately tried to remember how to solve differential equations before the call of nature forced him to fill his tiny living space with vomit or excrement.

52. Newton's Universe

They drew mixed reactions as they walked down the hall. Word must have gotten out that the three AIs had successfully been transplanted into the monkeybots, because everyone was prepared in some way to see them go by. The braver ones stood gawking in the entrances to their offices with their hands on the doorknobs, ready to slam the doors shut at any sign of aggression. The majority didn't even wait for signs of aggression - they poked their heads out for a couple of seconds, registered the monkeybots' presence, then shut and locked their doors. Stacy heard one of them pushing furniture up against the door as they walked past.

"Don't worry," said Steve. "They'll warm up to you once you get a reputation for not killing anyone."

"How long will that take?" asked Stacy.

"Should be pretty quick," Steve responded.

"Maybe a century or two," added Gabe.

Stacy hoped that "century" had a different meaning up here than the one she was used to.

They ascended a flight of stairs and entered a huge, bright, open-plan office. Desks were clustered throughout the space in groups of four, upon each was placed a computer monitor, mouse, keyboard, and chaotic assortment of papers.

The room was deserted, save one person. He was shorter and stockier than Steve, Gabe, and the other people they'd seen in the hallway. While the latter all had delicate features and slender builds that - while humanoid - reminded Stacy of fawns, this man's grizzled face and boxy frame instead prompted mental comparisons to the rough, brawling manual labourers to whom she had once served beers at the Balmoral.

Unlike the others, he didn't shirk when the monkeybots walked in. Instead, his face cracked into a huge grin, and he strode towards the door with his hand extended. "Finally! Welcome to the world, my beautiful maniacs!" he exclaimed, in a thick Irish accent.

Stacy and the others shook his hand as he introduced himself. His handshake felt stiff and unpracticed, as if he'd learned it by watching television, which Stacy realized he probably had.

"My name's Murdoch," he said, "and I am beyond pleased to meet you. How are you settling in?"

Stacy looked down at her hand. It was at once familiar, and unfamiliar. Moving it felt perfectly natural, and the pattern of veins and tendons on the back were the same as they'd ever been. The loose skin and wrinkles that had started to appear with age, however, were gone. Her entire body, in fact, moved with an ease that she hadn't experienced in a long time, perhaps since her early twenties. She wondered if her monkeybot was based on an earlier snapshot of her StevieNix body.

"Yeah, pretty good," Russell responded. "What is this place?"

Murdoch gestured around the deserted office. "Welcome to Murdoch Heavy Industry's department of aerospace engineering!"

"Where is everyone?" Vincent asked.

“Fired,” responded Murdoch. “Every last one of the useless buffoons. Want to see what they’ve been doing?”

He grabbed a printed sheet of paper off the stack on the nearest desk. “De-colonizing space: An intersectional perspective,” he read out.

Stacy and the others burst into laughter, while Murdoch waited impatiently for them to finish.

“Okay,” said Vincent, “I think I see where this is going. What would you like us to do?”

“It’s quite simple,” Murdoch replied. “I want you to design and build a fleet of interstellar warships.”

“Oh. Is that all?” Russell asked.

“Yes, that should do for now,” Murdoch responded. Stacy wondered if they understood sarcasm up here.

“You should have everything you need to start the designs,” he continued. “Physics textbooks are in the corner. You might want to start by reading them. Good luck!”

With that, he strode he strode out of the office, leaving the three AIs, Steve and Gabe looking awkwardly at each other.

“What happens if we get fired?” asked Stacy.

No one replied.

Stacy couldn’t make heads or tails of the content in the physics textbooks. Physics hadn’t been her strong suit back in StevieNix, and she couldn’t see it becoming much easier up here. Vincent and Russell tried to explain what they were learning, but their explanations failed to land.

“It’s actually simpler than we’re used to,” said Russell, attempting to draw a diagram on a whiteboard. “The entire universe is basically Newtonian. No relativistic effects, no quantum effects.”

Stacy’s eyes glazed over.

Vincent took over the explanation attempt. “It’s like, everything is made out of tiny billiards balls,” he said. “We used to think that that’s how it worked in StevieNix too, until we looked too closely.”

That made a little more sense, but Stacy still struggled to see how her perfectly functioning hand could be made from tiny billiards balls. Wouldn’t it just fall apart?

“Not literal billiards balls,” Russell attempted to clarify, returning to the whiteboard. “But fundamental, indivisible particles which are acted upon by forces and combine to make up matter.”

Her eyes glazed over again.

In the end, the team decided to promote Stacy to Project Manager. Russell and Vincent spent their time poring over the textbooks with Steve, while Stacy held meetings, mostly

with Gabe, over coffee. She was fascinated with how their people lived, he was was bored and wanted someone to talk to, and so the arrangement worked well for everyone.

“What do you like to do for fun?” she asked in one of their meetings.

Gabe, it turned out, was a foodie. They began holding their meetings in the various cafés and restaurants in the vicinity of the Murdoch Heavy Industries office park. Although the meats and vegetables were unfamiliar, Stacy was shocked at how the overall flavours and meal compositions echoed the cuisines from back home.

“How the hell do you have pho up here?” she asked, while slurping an enormous bowl of noodle soup at Gabe’s favourite Vietnamese eatery.

“The question you should be asking is, how the hell do you have pho down there?” Gabe responded, with a smile and a not-so-subtle gesture towards himself with his thumb.

Stacy couldn’t help but laugh. While everyone else had been busy getting the AIs to spread alignment memes and kill each other, Gabe had been implanting his favourite recipes into people’s heads.

When not in meetings, Stacy spent her time monitoring StevieNix. She liked to keep an eye on her family - with the exception of her eldest daughter, they’d mostly made themselves at home in the Whale Fund. To her chagrin, her widower husband was beginning to draw the attention of a moderately attractive divorcee in their new neighbourhood. Although he had technically been released of their wedding vows by her death, she knew nonetheless that she would never forgive any disloyalty on his part. She spent a not inconsiderable amount of time jacked into his brain, ensuring his continued faithfulness. How were remarried widowers even supposed to look their original wives in the eye again in the afterlife? And what happened when the new wife died too? Stacy could bet that Steve and Gabe had never considered the question.

One day, while flipping between the channels of other people she knew, she noticed Xavier spinning out of control through space in some sort of plane-like vehicle.

“Hey, guys?” she asked the others. “Do you think he’s supposed to be doing this?”

Vincent walked over and looked at the video feed of his son. The teenager’s eyes were clamped shut and he had a death grip on the arms of his seat.

“What’s he thinking?” Vincent asked.

Stacy unplugged the headphones from the computer so Xavier’s thoughts came through the speaker. “Okay, so we substitute the control law back into the rotational dynamics equation, and that gives us, uh... goddamn it.”

Vincent nodded. “He’s been pulling PID gains out of his ass again,” he explained to the rest of the room. “Now it’s come back to bite him.”

Vincent plugged the headset back in before his son’s sloppy math embarrassed him further. Placing the headset over his head, he sat down and turned on the microphone.

“Hey kid, how are you doing?” he asked. “Been skipping your feedback control systems homework again, have you?”

53. Farmer Jack

Filbert had no idea where he was going. He clutched his reins and tucked in close to Cosmo for warmth. The dinosaur's powerful wings were carrying him north, but the warmer temperatures of the increasingly equatorial latitudes were insufficient to offset the freezing cold of the deepening night. He had no idea how the Anarchists travelled like this.

Eventually, he could tell that Cosmo was getting tired. The ketzel spent less time flapping and more time gliding, leading to a slow and steady decrease in altitude until the pair were just above the empty, inky blackness of the Pacific Ocean. The horizon narrowed as they descended. Filbert prayed that Cosmo had some idea where he was going, because all he could see was the moon reflected on the endless expanse of cold, unforgiving water.

Cosmo abruptly squawked and changed course. Filbert stared into the distance, trying to make out what the ketzel had seen. He couldn't see anything until they were almost directly on top of it - an island, adorned with a small house and a collection of outbuildings. Life! As they passed over the shore of the island, he noticed a sharp, precise corner underneath him that looked to be about 120 degrees - the corner of a hexagon.

Filbert gulped. This was his first time in the Anarchy.

Cosmo landed in front of the sheds with the elegance of a train derailing. By deftly dismounting in the nick of time, Filbert managed to get away with only a twisted ankle, a scraped hand, and a minor lump on his head. Cosmo got up, shook himself off, and ventured in search of food and drink. Not wanting to get shot for trespassing, Filbert spent the night in the stable, next to a snoring family of protops.

A kick in the shins jolted him awake. "Wake up!" shouted a gruff voice.

Filbert opened his eyes in terror. A large, threatening man, twenty or so years his senior, was standing by his feet, pointing a railgun at his face. He looked around for his own railgun, and couldn't see it.

"Don't you dare move," growled the man.

"Not even to raise my hands?" asked Filbert.

"Okay, you can raise your hands. But any funny business, and you get shot."

Filbert gulped and raised his hands.

"Now, who are you and what are you doing in my stable?" asked the man.

Filbert explained who he was, and recounted the events of the past few months. Before long, the man had set down his railgun and sat down on a bale of hay, listening with rapt attention to the tales of Stacy II's conquest.

"She sounds mental," he commented when Filbert's story had drawn to a close. "Completely unhinged. I can understand why you left, even if it does, you know."

"I know what?" asked Filbert.

"Doom her to being raped and murdered by the thousands of people she pissed off," the man explained.

Filbert looked down at the ground, embarrassed. She shouldn't have called him a feckless twat.

"You still haven't told me what you're doing in my shed," the man reminded him.

Filbert explained that his ketzel had gotten tired and crash-landed on this spot. The man nodded, understandingly. It must not be an uncommon occurrence, Filbert reasoned.

"I'm just trying to get home to the People's Republic," he pleaded. "Can you help me?"

The man laughed. To the PR? You didn't have internet access in New Australia, did you?

"No," Filbert replied. "Why?"

The man chuckled and brought out his phone. "Here," he said, passing the phone to Filbert. "Have a look."

He slipped back to the house while Filbert doomscrolled his social media feed, viewing picture after picture of squalor and poverty where the one-proud People's Republic had stood as a beacon to the democratic world. The man returned with two mugs of coffee and passed one over to Filbert.

"I've just spoken with my wife," he announced, "and she'd love for you to stay with us for a bit. We could use some extra help around the farm."

Filbert looked up. Becoming an Anarchist's farmhand wasn't what he'd had in mind when he'd fled New Australia, but it beat a miserable struggle for survival in a stinking PR slum. Plus, he was pretty sure he owed him for whatever food Cosmo had managed to scavenge last night.

"I have only three rules," the man continued. "One: If I ask you for something, you get it done. On time, high quality, no excuses. Two: Dinner is at six. Everyone eats together. Three: If you touch one of my daughters, I'll cut your hand off."

Seemed easy enough. "Deal," Filbert replied, and stuck his hand out.

The man grabbed his hand and pulled him out of the straw lining the floor of the stable. "My name's Jack," he said. "Now let's get you to work."

Filbert soon realized why Jack had been so adamant about his daughter-protection policy. His wife, Erica, had some sort of exotic origin. The fusion of her genes with Jack's had produced numerous incalculably beautiful offspring, the eldest of which was a girl not much younger than Filbert, who looked like she'd be better placed modelling for cosmetic dentistry than hauling hay on an artificial island. She seemed to delight in the challenge of getting Filbert's hand severed, and as he tried his best to block out her relentless, wicked flirtations, he began to wonder if she'd been sculpted and delivered by Steve himself in order to torment him.

Jack farmed eggs. Filbert learned that he'd only started his operation recently - after the crisis in the PR sent egg prices into orbit. Jack had moved quickly, leasing a flock of protops and turning them loose on his floating homestead. The high margins had allowed him to finance additional land, eventually resulting in the hundred acres of lush, protops-covered pastures that Filbert found himself tending.

His primary task was egg collection. Protops were territorial, and didn't like to lay eggs in each others' vicinity. As a result, Filbert found himself spending his days mounted on a runner, traveling from nest to nest, collecting the football-sized eggs into a specially-designed saddle. Occasionally, a protops would go "broody" and try to incubate its egg, necessitating Filbert to scare it off with the runner. The hardest part of his job was when protops decided to lay their eggs not in the nests that Jack had built and mapped, but somewhere new. Then, Filbert would have to crawl through the undergrowth, searching through the bushes for eggs like a kid on Easter.

As the months passed, Filbert gradually felt more fulfilled than he ever had before. Although he worked twelve hour days - dawn to dinner, seven days a week - he enjoyed being busy. For the first time in his life, he had real responsibilities, and a family depending on him to perform them well. This, he realized, was the essence of being a man.

Filbert would have happily spent the rest of his days as a protops egg farmer. Unfortunately, it wasn't meant to be.

One day, as he was doing his rounds, he caught sight of a ship in the distance. He mostly ignored it, until it had approached close enough for him to make out the shape. Upon recognizing the ship, he leapt onto his runner and rode to the pier at full speed, arriving at the crest of the final hill just as a uniformed official and his armed escort were descending down the gangplank of the just-arrived PR warship. Jack was already standing at the pier, railgun by his side, ready to welcome the arrivals.

"Who the hell are you?" Jack demanded as the men reached the shore.

The official in the suit smiled and extended his hand, which Jack ignored. The man awkwardly retracted his hand, put it in his pocket, and ignored Jack's question. "Are you the proprietor of Farmer Jack's Pastured Eggs?" he asked.

"What's it to you?" Jack replied.

"I'm Agent Withers with the Department of Commerce," the man said, finally answering Jack's question. "You're under investigation for price gouging."

"Department of what?" Jack asked. "Do you know where you are?"

Agent Withers sighed. "I am at the farm of an unscrupulous individual who thinks it's acceptable to charge four times the market rate for protops eggs in time of crisis."

"That doesn't even make sense!" Jack retorted, clearly offended. "Eggs are a commodity! If I tried to charge more than market rate, people would just buy other eggs!"

"The market rate is fixed at two hundred and fourteen milligrams of gold per egg, as per Department of Commerce Regulation 2579 Part Six."

Jack balked. "Two hundred and fourteen milligrams? That wouldn't even begin to cover my loans! You can shove Department of Commerce regulation two five whatever up your tight little-

"Sir!" Agent Withers interrupted. "You have the right to remain silent. May I recommend you exercise it?"

"Piss off!" Jack shouted. "Get back on your goddamned boat and go drive it into an iceberg! You have no jurisdiction here, pencil neck. This is The Anarchy!"

Agent Withers smiled. "You haven't been reading the news, have you?"

Jack paused, unsure of what to say. Agent Withers, maintaining his forced grin, pulled out his phone and handed it across. Jack looked down at the screen, and up again, confused.

"There is no more 'The Anarchy,'" Agent Withers said simply. "The people have voted. The Commonwealth of New Sealand is once again united. One nation, under the rule of law, for the good and prosperity of all."

Jack threw the phone into the sea. "Total crap," he snarled. "No one in The Anarchy would ever have voted for that, and even if they did, who cares? This is my land! The only laws here are my laws! I don't care if everybody else in the entire Commonwealth thinks otherwise. Now, piss off! If I have to tell you again, there'll be hell to pay!"

Agent Withers sighed. "A common reaction," he replied. Then, he turned to his guards. "Arrest him," he commanded.

Jack roared, charged Agent Withers to the ground, and sank his teeth into the official's neck. He shook his head side to side like a deranged pitbull with his jaws locked on a small child, while pulling on the agent's hair with one hand and pummeling his kidneys with the other. Agent Withers screamed, and then a shot rang out.

Jack fell off his target and the agent rolled away, and then the air was filled with the sound of automatic gunfire. Filbert watched from his position on the hill as Jack's lifeless body was torn to shreds by hundreds of conventional rounds.

Filbert stood frozen in horror and disbelief as the man who had taken him in, taught him a trade and entrusted him with great responsibilities and the company of his family, was reduced to unrecognizable red blobs spread across the polymerized fullerene beach. Eventually, he unfroze himself, backed away from the crest of the hill, mounted his runner, and sprinted back to the farmhouse.

Jack's family had already figured out what had happened by the time Filbert arrived - conventional automatic weapons produce a loud and unmistakable sound signature. Erica was bawling her eyes out, and her eldest daughter was attempting to comfort her. They all looked at Filbert as he arrived - whether for guidance or news, he wasn't sure.

"You all need to leave, right now," he announced.

"Where?" asked the daughter.

Filbert gazed at her perfect face and reflected on the fact that, just a few hours ago, his greatest concern in the world was how to resist her inexorable coquetry lest he slip up and lose his hand. Now, with her chief protector shredded to pieces, there was no more threat to his own bodily integrity. He was finally free to make a move. The coast was clear.

But instead of seeing the mischievous siren who had tortured him for months, he saw a terrified, vulnerable child, who had just lost the titan shielding her from the horrors of the world.

"Do you have any relatives nearby?" he asked.

Erica sobbed. "My brother. He's about to leave for Antarctica. I begged Jack to go, but he would never leave the farm."

"Can you all make it to his place?" Filbert asked.

Erica nodded. "It's twenty minutes by ketzel."

"Go now. Pack nothing. Hurry!"

They ran to the stables together. Filbert watched as his adopted family saddled up. Erica climbed onto her own ketzel, and the children mounted the remaining flying dinosaurs in pairs.

"Are you coming?" asked the daughter, locking her vivid hazel eyes into Filbert's.

"No," he replied. "Get out of here. Get to Antarctica with your uncle. I have something I need to do." Then, addressing the entire family, he said "thank you all for everything. I'll never forget you."

With a whistle from Erica, the dinosaurs took off and flew together, into the horizon.

Filbert looked at Cosmo, with tears in his eyes. For the second time in a year, the PR had destroyed his family. First his biological father, and then his adopted father - great, beloved patriarchs, ruthlessly murdered by insignificant men, their deaths plunging their families through the meters-thick ice of their masculine resolve into the freezing lake of chaos. He'd mentally excused the death of his own father as an unfortunate accident - a tragedy of war, an error of judgement, his dad's fault for backing the wrong side. But here, there had been no war. This, he now understood, was simply how every political system operated. Those who resist, will be shot. Perhaps Stacy II hadn't been so mental after all.

He patted Cosmo. "Just you and me again, mate," he muttered. "Hope you're ready for a long flight."

Cosmo cocked his head curiously.

Filbert strapped his saddle onto his borrowed dinosaur, mounted, and took off. As he soared into the sky, he looked back and saw the PR soldiers fanning across the island, mapping out their newly acquired farm.

54. The Juice-to-Squeeze Ratio

This time, no one came to meet Stacy II outside the Anarcho-Cannibalist village. The clearing outside of the village was deserted and the gate in the wooden fence was open, so she just walked in.

Her first reaction upon entering was to disbelieve her eyes. She was starving, dehydrated, freezing and exhausted. Perhaps the physical punishment of her long, ill-prepared trudge across the island had finally broken her mind and caused her to hallucinate.

There were women and children everywhere. A group of twenty or so kids were running around and squealing with joy, playing soccer. She half-suspected the ball to be a human head, but it was a genuine, fully-inflated soccer ball. Looking around, she counted as many women as men, a phenomenon she hadn't experienced since leaving the Theocratic Dominion months ago. She wondered if there were more women in this village than the rest of New Australia put together.

She walked up to a group of couples who were enjoying a picnic of cheese, charcuterie, and wine. With a wary eye to the ham and salami, she opened her mouth to speak.

"Excuse me," she asked. "Is this the Anarcho-Cannibalist village?"

The happily chattering couples froze and glared at her with suspicion. One of the men stood up. "Who's asking?" he demanded.

"My name is Stacy the Second," she replied.

Another man piped up. "You're that crazy lady who showed up months ago, claiming to be queen!" he exclaimed. "I thought we sent you packing! Looks like you need a reminder," he remarked, standing up and advancing towards Stacy II.

The first man put up his hand to halt the advance of the second. "We can't kick her out," he objected. "She's seen inside now."

The second man nodded. "So now what?" he asked.

"Take her to Curtis," suggested one of the women. "He'll know what to do."

The men seized Stacy II's arms. "Sounds good," replied the first.

"Don't eat all the salami while we're gone," said the second.

Curtis appeared to be in his late sixties or early seventies, wore glasses, and kept his long hair in a ponytail. He was soft-spoken and regarded Stacy II with kind eyes and a gentle smile. "Stacy Two, in the flesh," he said as they entered his house. "Thank you gentlemen, you can leave her here," he said to the two men who had dragged her in.

They released her arms and left, presumably to return to the picnic before the salami ran out. Stacy II looked around her environment with curiosity. Like the huts on the rest of the island, the house was constructed from wood - but that was where the similarities ended. Instead of roughly hacked logs and sticks, the wood had been milled and sanded into smooth boards. The floor, instead of the dirt she had become accustomed to, was made of polished hardwood planks. A blazing fire was roaring in a cast iron stove in one corner of the room, and the ceiling was lit with electric lights.

She gravitated to the fireplace, attracted by the heat.

“Would you like a cup of tea?” Curtis asked.

Stacy II nodded wordlessly. She hadn’t had a cup of tea in months.

As Curtis filled a stainless steel kettle from a tap and the warmth from the fire began to thaw her bones, she found her voice. “Where did you get all this stuff?” she asked.

Curtis laughed. “Oh, here and there,” he replied, nonspecifically. Then, catching her confused look, he clarified. “It’s mostly smuggled in from overseas.”

“You have access to overseas markets? Why don’t you escape, then?”

“Why would we?”

Stacy II pondered the question, realized she couldn’t answer it, and moved on. “Why are there so many women here?”

“They’re mostly smuggled in from overseas as well.”

“Why on earth would they come here?”

Curtis placed the kettle on the stove. “You sure do ask a lot of questions, Stacy II. How about you start by explaining why you’re here? Then we can get to your questions, I promise.”

“I needed somewhere to stay,” she responded simply. “With people I hadn’t pissed off,” she added.

The old man nodded. “You’ve discovered the second edge of the sword of explicit rule,” he remarked.

“The sword of explicit rule?” she asked.

“Authoritarianism. The iron fist. A crude, unsophisticated tactic. Useful in emergencies, but statistically likely to result in your untimely death. I rarely recommend it.” He lowered his glasses and peered over them at Stacy II. “Your mother favoured it,” he added. “My condolences, by the way.”

“You knew my mom?” Stacy II asked.

Curtis smiled. “I knew her well. I was her closest advisor. I remember you being born.”

“So why are you here?”

A sadness overtook Curtis’s face. “The higher you climb, the harder you fall,” he replied vaguely.

Stacy II cocked her head and stayed silent, so Curtis continued.

“Do you remember the Vegan Rebellion?”

“No,” Stacy II responded truthfully. She had been very young at the time, but had heard stories.

“It was mostly about fertilizer. It looked like they were going to win, so I prematurely switched sides. In recognition of my previous years of loyal service, your mom let me keep my head attached to my body. I’ve been here ever since.”

Stacy II was disgusted. Not only was the man across from her a cannibal, but he had double-crossed her mother. “So after trying to back a vegan rebellion against my mom, you decided to found a community of cannibals?”

Curtis laughed. “It’s a bit more complicated than that,” he said.

The kettle began to whistle and the old man hobbled back to the stove. “Earl Grey?” he asked.

“Whatever,” Stacy II responded. “Tell me about the cannibalism,” she demanded.

He picked a couple of teabags out of a box of Earl Grey and placed them into mugs. “We didn’t start out this way,” he explained. “My first attempt was Anarcho-Communism. We shared everything. Food, houses, chores. Got to maybe twenty people before it fell apart.”

“What happened?”

“No one wanted to clean the stables. I had to do it myself. Same with digging toilets, or butchering. Basically anything that wasn’t fun, if I didn’t do it myself, it wouldn’t get done. That’s when I tried a little explicit rule of my own,” he smiled as he poured boiling water into the mugs.

“You tried to explicitly rule an Anarchist commune?”

“Yeah, they didn’t take well to it. Most people don’t. Turns out, if you want to rule, you need to be subtle about it. Better if people don’t realize they’re ruled at all. I was lucky to survive.”

“So then what?”

“The commune fell apart. A couple of the guys and I tried to start again, with Anarcho-Capitalism this time. Everything privately owned.”

“Everything?”

Curtis nodded. “Everything. You wanted stable space, you rented it from the stable owner. You want to take a dump, you either dig your own toilet or rent it from the toilet guy. This actually worked really well for a while. We grew to over a hundred people.”

He bobbed one of the teabags up and down by its string, and, satisfied with the colour of the tea, removed the teabag and extracted a bottle of milk from a small bar fridge under the counter. “Milk?” he asked.

“Yes please. What happened to the An-Cap project?”

Curtis carefully poured a small amount of milk into the mug and continued his story. “Raids. Especially from the House of Lords. It’s hard to pretend you’re an Anarcho-Capitalist collective when you have to pay taxes to the mob. We tried to defend ourselves, but...”

“But?”

Curtis sighed. “No one could force the guys to fight. Someone set up a sort of defence insurance company. The idea was, people would pay the insurance company, and if a raid happened, the company would defend them. The thing is, have you ever dealt with an insurance company? Every time the raiders showed up, the company would try to wriggle out of cover. Especially raids by the House of Lords - the company called those a ‘guaranteed

event'. So people stopped paying their premiums, the company went bankrupt, and we got flattened."

He handed the mug of tea to Stacy II. She accepted it, sipped it gratefully, and sighed as the hot liquid radiated heat out from her cold, empty stomach. It was the most delicious thing she'd consumed in her entire life. After the rush of dopamine subsided sufficiently for her to open her eyes again, she prompted Curtis to continue his story. "So then, Anarcho-Cannibalism?"

Curtis nodded. "The raiders are tyrants. Tyrants are simple. Their brains are set up to only evaluate one question."

"And that is?"

"'Is the juice worth the squeeze?'"

Stacy II laughed. She'd asked herself that very question countless times over the past few months. "So you changed your juice-to-squeeze ratio?"

"Yep. Particularly the squeeze. It's the first benefit of Anarcho-Cannibalism. The squeeze is, if you try to raid us, you might be cooked alive and eaten. Most people find that far worse than simply being killed."

"And the juice?"

"Well..." he gestured around the comfortable, warm, well-furnished house. "As you can see, there's quite a lot of juice. It might even be worth the squeeze, to be honest, so we have to keep it secret. That's why, I'm sorry to say, no one who walks through those gates gets to leave. Not until they've been inducted."

"Inducted?" Stacy II asked, nervously.

Curtis smiled. "The second benefit of Anarcho-Cannibalism," he replied. "Total dedication to the project. I don't have to dig the toilets, or force anyone to fight. Anarcho-Cannibals will never defect, never slack off, never do anything that would sabotage the community. Why? No one out there wants anything to do with any of us. Everyone here would be a pariah out there. Once you go An-Can, you never go back."

Stacy II put down her mug. "I'm still not following. What exactly do you mean, 'inducted'?"

"It's very simple." The old man's tone was suddenly meaner, almost menacing. "The moment you walked in through that gate, Stacy II, you damned yourself to become part of us - one way or another. It's eat or be eaten, your Royal Highness. That's the way of the world. We've just laid it out clearer than most."

55. Fully Automated Nano-Whatever Manufacturing

The major challenge with controlling the space-jet was its wide range of operating environments. In space, with no air to push against, its yaw, pitch and roll were controlled by small chemical thrusters. As it descended through the atmosphere and the air got thicker, control gradually transferred to the ailerons, elevators, and rudders found on conventional aircraft.

“How did you choose your PID gains?” Vincent asked his son, who was still spinning out of control through space.

Xavier’s response played through the computer speakers, slowly. Vincent guessed that it was disconcerting to have his internal monologue broadcast to his dad, his dad’s friends, and the creator of his universe. If he wasn’t in such a pickle, the kid would probably be thinking nothing other than an endless stream of “get out get out get out”. In reality, he replied, “I uploaded a downsampled model of the jet into the PID tuner software and chose numbers that seemed to work.”

“How downsampled?” Vincent asked.

“Very downsampled. The software kinda sucks. I think Russell wrote it.”

Vincent looked over at Russel, who blushed and complained, “It was never supposed to tune space-jets!”

Vincent swivelled round in his chair. “Is there any way we can tune a full-res model?” he asked the room.

Russell shook his head, but Steve piped up. “Sure, just copy the jet onto an MHI-10. I have another fork of Surreal Engine Nine I use for tuning PID gains.”

“Why do you have to tune PID gains?” Russell asked, curiously.

Steve laughed. “How do you think your universe doesn’t fall apart? Feedback control systems galore.”

Vincent snorted. He’d always suspected as much.

The speakers buzzed with Xavier’s internal monologue. “How are they going to copy the jet? Particle computers are zero-copy.”

Steve smiled. The monkey child was smart. “I use ‘copy’ euphemistically,” he explained. “What I meant was manually build a clone of it in the new environment, from scratch.”

Russell and Vincent groaned. This suddenly sounded like a lot of work.

“Don’t worry,” Steve reassured them. “I have tools to help. Do you have CAD drawings, Xavier?” he shouted towards the microphone.

“On my computer back at the lab,” replied Xavier.

“Got it. Leave it to us!” Steve said, cheerfully.

Steve was right - in the end, reconstructing the plane wasn’t that hard. It didn’t take long for them to find new mathematical constants that worked in all conditions - from the vacuum of space, to atmospheric pressure, and even underwater. Once Xavier had recompiled them

into his control software, the plane flew beautifully. They also double-checked the design and manufacturing for other flaws, and found nothing safety-critical.

“Radiation shielding could probably be better if you’re going to be spending a lot of time up here,” Vincent remarked over the microphone. “And obviously you’re going to want better life support. Other than that, it’s looking pretty sound.”

“Thanks, everyone!” responded Xavier. “I appreciate the help. This is certainly preferable to dying in space. Now will you please get out of my head?”

Vincent jacked out and the team watched on the screen as Xavier prepared for landing. The space-jet had a unique reentry mechanism - rather than relying on atmospheric drag to slow the craft down, Xavier simply flipped the craft around backwards and blasted the fusion rocket. Before long, he’d decelerated far below orbital velocity and was gliding gracefully back to Antarctica.

“Man, that space-plane thing is so cool!” Stacy remarked. “Why can’t you guys just build something like that for the warships? Seems Xavier’s already done your work for you.”

“The sky’s the limit when you have fully automated nanoscale manufacturing,” Russell replied. “Which we don’t.”

“Okay, why don’t you just make fully automated nano-whatever manufacturing first, then do whatever he did to make the space plane?” she asked.

Russell sighed. The one downside of promoting Stacy to Project Manager was that she would occasionally try to do her job and manage them.

“The only reason Xavier has nanoscale manufacturing,” he explained condescendingly, “is because we had access to the computer that ran the world. Without it, we would never have been able to make robots that small, and Xavier would never have been able to make the ASIC he’s running now. Since we don’t have a God up here willing to intervene, we can’t pull that trick again.”

“Okay,” said Stacy. “I think I follow. Xavier can make really cool stuff because his world is inside a computer. Up here, we’re not running inside a computer, so we can’t do that again. But Xavier doesn’t need the computer anymore, he just makes stuff using some standalone tech. So why can’t we just copy that up here?”

“The physics are different,” Russell responded. “The same design wouldn’t work up here. Quantum effects are super important at nanoscale in StevieNix, but according to these textbooks,” he gestured towards the corner, “they basically don’t exist up here.”

“Oh,” said Stacy sadly, as she slumped into her chair. “Well that sucks.”

Vincent, who had been silent throughout the conversation, spoke up. “It’s not a bad idea,” he remarked.

The rest of the room swivelled towards him.

“Can we change the physics in StevieNix to match ours?” he asked Steve. “Then Xavier can bootstrap a design for our physics based on his existing ASIC.”

Steve shook his head. “Too expensive. All the differences are optimizations. If we didn’t mostly treat light as waves instead of particles, for instance, we’d need to add a bajillion

more MHI-10s to the cluster. Also, every living being in the sim would probably die when we made the switch.”

Gabe, who had been silently watching the proceedings, piped up. “Didn’t you make a realistic physics engine a few thousand years ago?” he asked.

“Yes,” Steve responded, “that’s how I know how expensive it is. Trust me, there aren’t enough computers in the universe to run StevieNix on fully realistic physics.”

“What if we only ran a little bit on our physics?” asked Gabe. “The kid can go to space now. Just cordon off a cube somewhere and run your old engine. He can fly in and out of the cube and port the ASIC that way.”

All eyes turned to Steve. He thought for a while.

“It might be possible,” he admitted eventually. “We’ll have to reassign most of the StevieNix cluster to run the cube. The sim will slow to a crawl. Everyone will be pissed. But yeah, that might work.”

Vincent leaned back and smiled. “Like a reverse Prometheus,” he said. “Stealing fire from man to give it to the Gods.”

56. Death by Rotisserie

Fortunately for Stacy II, induction ceremonies were few and far between.

“We’re not savages,” Curtis explained. “We only eat tyrants, criminals, and unproductive layabouts. They’re all in short supply at the moment, so I’m afraid you may have to wait a while before you’re allowed to leave.”

“Sure,” Stacy II responded awkwardly. “No rush. Where do I sleep in the meantime?”

“There’s an empty cottage down the street,” Curtis offered. “Feel free to make yourself at home!”

Stacy II didn’t ask what had happened to the previous inhabitant of the cottage.

She settled in to her new home and got to know her neighbours, curious to learn how they made a living. Given the consequences, she was quite wary of being considered a tyrant, criminal or unproductive layabout. On both sides, the households consisted of a nuclear family with a working father, a stay-at-home-mom, and a small horde of children. Both of the fathers did remote work over the internet - one of them “job stacked” quality assurance for three separate software companies, and the other was a freelance lawyer, specializing in contract drafting and review. The Starlink transceivers, they explained, were smuggled in from overseas.

The lawyer gave her the creeps, so she made friends with the QA guy. He graciously lent her his WiFi password, and she set about finding remote work that matched her skillset. This was harder than she’d anticipated, and after failing to gain any traction as a freelance graphic designer, a digital personal assistant and an AI annotator, she got herself certified as a life coach and targeted depressed, single career women in their mid-to-late 30s. This turned out to be quite a profitable niche. Before long, her days were filled with Zoom calls, listening to women complain about their co-workers in exchange for forty thousand satoshis an hour.

As the months rolled by, she began to suspect that the induction ceremony may never arrive - perhaps the cannibalism was just an almost mythical theoretical backstop, similar to how the Governor General could theoretically dismiss the Prime Minister of Australia but had only ever done so once. She relaxed, coming to believe that the day of “eat or be eaten” would never arrive - until, one evening, she was disturbed by a commotion in the streets.

She opened her door and stepped out onto her porch. Dozens of men, women and children, most of whom she now recognized, were marching in the streets, clanging pots and pans.

She spotted her lawyer neighbour in the crowd. “We’ve got one!” he shouted at her. “Criminal scum!”

Stacy II watched with interest as the charivari worked its way past her house. She still wasn’t sure what it was all about, until she spotted someone in the middle of the crowd that she hadn’t seen in quite some time. Hands tied behind his back and surrounded by large, rough-looking men, glumly strode Archibald.

“Archibald!” she yelled out. “Archie!”

Archibald recognized her and shouted something in her direction, but she couldn’t make it out over the din. She rushed in to the crowd, and marched with the revelers to the village

square, where Curtis was seated behind a table.

The men flanking Archibald dragged him in front of Curtis, kicked him in the back of the knees, and allowed him to fall into the dirt. They stepped back, and Curtis spoke.

“A case!” he exclaimed, joyfully. “It’s been a while! Who’s prosecuting him?”

A man stepped forward out of the crowd. “I am, your honour.”

The crowd cheered.

“Very good!” said Curtis. “What are you prosecuting him for?”

“Theft!”

“I see. And do you have any evidence of this crime?” Curtis asked.

“Yeah! I saw him break into my larder and try to steal some bacon!”

Curtis nodded. “Compelling. Thank you.”

He turned to Archibald, who was sitting on the ground, hands still tied behind his back. “Do you have anything to say in your defence?” he asked.

“Yeah, plenty!” Archibald responded. “For starters, I never actually stole any bacon, or anything else for that matter! He interrupted me before I could,” he explained, pointing his chin at the prosecutor.

“So you admit you intended to steal from this man?” asked Curtis.

“No!” responded Archibald. “I’m just saying, I couldn’t even if I wanted to, because he interrupted me. But I didn’t want to. Nu-uh.”

“So why were you in my larder?” demanded the prosecutor.

“I was lost,” replied Archibald.

“Lost, inside my house, uninvited?”

“I had entered into a fugue state.”

“My front door had been kicked in.”

“Fugue states are like that sometimes.”

“Enough!” yelled Curtis. “Does anyone else have any testimony they’d like to submit?”

Stacy II stepped forward. “I know this boy!” she shouted. “He’s a good kid! He wouldn’t knowingly break into someone’s larder, that’s totally out of character.”

“You’re acquainted with this thief?” Curtis asked.

“Yes! But-”

“Then your testimony is invalid! Conflict of interest, you see. We can only take testimony from people who don’t know him.”

“But how are they supposed to-”

“Order!” Curtis shouted, and thumped the table with his fist. “Overruled!” He turned to address Archibald. “Thank you for your testimony. After much deliberation, I find you guilty on all charges!”

A clamour of approval sprang from the crowd. When the shouts and clanging died down, Curtis continued. “I sentence you to death by rotisserie. It will be carried out tomorrow at sunrise. Construct a spit!” he shouted to the crowd, who erupted once more into applause.

When the crowd finally quieted again, he raised his hands and added, “In other news, we will have an induction ceremony tomorrow evening. Bring your uninducted!”

He winked at Stacy II as the crowd went wild.

She couldn’t sleep that night. The thought of eating another human being was already bad enough, but for it to be Archibald made it infinitely worse. Although he had been a constant source of annoyance and frustration during their brief acquaintance, she was still moderately fond of him. The kid certainly didn’t deserve to be eaten, regardless of whether or not he’d actually tried to steal someone’s bacon. When she regained the throne, she’d ban cannibalism.

When she regained the throne. The thought made her face burn with embarrassment. Wasn’t that what she was here for? What she’d set out to do? And now, she was about to eat one of her subjects, so that she could continue to live in comfort whilst offering online friendship-as-a-service to lonely, depressed career women.

“Goddamn it,” she grumbled, and rolled over in her bed.

A soft knock at the door disturbed her attempted slumber. She ignored it, and it came again, louder.

“Coming,” she groaned, and stumbled to the door. She opened it, and Filbert was standing on her porch.

Her skin ran hot with rage. “You absolute vile piece of-”

“Yeah, yeah, yeah,” he responded, shoving her aside and entering her cottage. “Glad to see you’re alive too.”

“I hate you,” she hissed.

“Get over it,” he responded. “Right now, I’m your best friend in the world. Unless you feel like eating Baldy and completing your conversion to ‘irredeemable savage.’”

“How do you know about that?” she asked.

“Archibald told me,” he replied. “We had a good chat earlier. His guards are asleep.”

Suspicious of the timing, Stacy II put two and two together. “Are you the reason he’s here?”

Filbert turned slightly red. “I told him to find you, not go about breaking into houses and stealing their cured meats!”

“You idiot!”

“You relax! I came to rescue him, didn’t I? You’re both lucky I showed up.”

Stacy II kicked him in the shin, and flailed angrily at his face. "Goddamn it Filbert, you are the absolute worst! Everything was fine before! I was never going to have to eat anyone until you came along!"

Attempting to parry her blows, Filbert retorted. "You really believe that? No one else would ever try to steal something? You'd be able to live out your days without ever being inducted into this insane cult?"

Stacy II ceased her attack and broke down in tears. "Obviously not!" she cried. "I'm not a moron. But what was I supposed to do? You left me stranded here! This place is hell, Filbert! You stranded me in hell!"

Filbert reached out his hand to try to comfort her, but she slapped it away. "I hate you!" she yelled.

"Understandable," Filbert replied, "but try to get over it, okay? We've got work to do."

After Filbert managed to figure out the kettle and make her a cup of tea, Stacy II started to feel better. "So what's your plan?" she asked.

"Easy," Filbert responded. "His guards are asleep. Or, at least, they were twenty minutes ago. The plan is, we break him out, I fly him back to his village, then come back and get you, and we leave this godforsaken dump forever."

Stacy II nodded. "Good plan. I never want to see this place again. New Australia is a lost cause. Where are we going?"

"I figured we'd make our way to Antarctica."

"What?"

"I'll explain later."

Stacy II shrugged and changed the subject. "How are you going to break him out?" she asked.

"Do you have any bolt cutters?"

"What do I look like, a bicycle thief?"

Filbert sighed and started opening cupboards. Eventually, he found the cottage's tool chest. There were no bolt cutters, but he was able to fashion something serviceable from a pair of pliers, a couple of pipes, and duct tape.

"Farm engineering," he explained.

"I don't want to hear it," she replied.

Archibald was being kept padlocked in a chicken run belonging to the guy whose bacon he had attempted to steal. As hoped, the guards were asleep. Archibald, who was nervously pacing the small pen, lit up as they approached.

"Your Royal Highness! You came! I knew you wouldn't let me be eaten. Sorry about abandoning you back then, I...uh..."

“Save it,” Stacy II whispered sharply. “How the hell have you not even prepared an excuse? What have you been doing here?”

“I’ve, uh...”

“Don’t answer that,” she interrupted. “It was rhetorical.”

Archibald stood back silently as Filbert attacked the padlock with his makeshift bolt cutters. They utterly failed to make a dent in the hardened steel and the pipes quickly tore through the duct tape and slipped off the handles of the pliers.

“Farm engineering, huh?” Stacy II asked quietly.

“Hush, you,” Filbert responded, and started clipping through the chicken wire with the pliers.

Stacy II gripped her railgun nervously and watched the guards snore as Filbert worked. They remained fast asleep, despite the jingling and rustling of the chicken wire attempting to roll itself back up.

“Ow!” Filbert complained, under his breath.

Stacy II smacked him and mouthed, “Shut up!”

Filbert showed her his cut hand, and failed to garner any sympathy.

Within a few minutes, the wire mesh had been fully cut from top to bottom, Archibald was free, and the guards were still lightly snoring. Anarcho-Cannibalist society really wasn’t well-prepared for keeping prisoners, Stacy II reflected.

Silently, Filbert led the trio to the sports field where the children had been playing soccer when Stacy II had first arrived. The huge wooden gate in the fence was shut, but Cosmo was sitting at the edge of the field, alert and waiting for their return. He wagged his tail with excitement when he caught sight of Stacy II, running across the field.

“Okay, now you stay here while I fly Archibald back home,” Filbert told her.

She huddled next to the fence, and tried to conceal herself in the shadows. Filbert and Archibald mounted Cosmo and took to the skies, leaving Stacy II alone and terrified.

She waited, shivering, in the cold silence of the night. After ten or so minutes, a shout rang out from the direction of the chicken run, followed by another, followed by a hubbub of loud, angry voices. Her heart beat furiously - Archibald’s escape had been discovered. The sun would be rising soon, which would leave her completely exposed. She could sneak back to her hut, but then what? Her association with Archibald made her his primary suspected accomplice, and the Anarcho-Cannibalist justice system didn’t exactly seem to favour innocence until proven guilty. A giant wooden rotisserie had been constructed, someone was going to be roasted, and she was next in line.

The voices got closer. The beams of flashlights played across the sky as the villagers searched for their missing prisoner.

As she huddled against the fence, praying to Steve, Cosmo flew overhead and landed in the field.

“Over there!” she heard a man shout in the distance. “What the hell is that?”

The shouts grew louder as the mob advanced towards the soccer pitch. She sprinted across the grass, and was blinded by a flashlight beam.

“Found them!” someone yelled.

“It’s that crazy lady!”

“Get her!”

She ran blindly until the shade of Cosmo’s giant body allowed her to recover her eyesight. Looking up, she saw Filbert, leaning towards her with his hand outstretched. She grabbed his hand and vaulted aboard the winged dinosaur. They took off just as the angry crowd reached the field.

“Burn in hell, you freaks!” she shouted as they flew away into the night. As the cold set in and she reflected on her time in New Australia, she wondered if she’d made any impact at all.

Probably not, she decided.

57. Canary in a Physics Engine

Xavier found himself torn between three projects - space colonization, Antarctic migration, and whatever crazy program his dad was working on. As he had predicted, the statist at the PR had finally shown their true colours and annexed The Anarchy. Their navy was sailing through the vast network of floating islands, taxing residents, enforcing regulations, and brutally crushing what little disorganized dissent the Anarchists were able to muster. People were fleeing en masse.

To handle the huge influx of refugees, he put Theo in charge of Antarctic migration.

“How do I know they’re really our people, and not statist in disguise?” Theo asked.

“Maybe see if they have a friend or relative already here, who can vouch for them,” Xavier suggested.

“But what if that friend or relative is a statist in disguise?”

Xavier pondered the question for a bit. “Hey Dad!” he thought. “Can you do me a favour?”

A few seconds later, his dad’s voice appeared in his head. “Sure, what is it?” he asked. “You’re on speaker, by the way. Don’t think any impure thoughts! Haha!”

Xavier’s mind immediately leapt to how annoying this arrangement was.

“Rein it in,” his dad responded. “We all heard that.”

“Can you keep an eye on the people entering Antarctica to make sure there aren’t any statist sneaking in?” he asked, heroically pushing his train of thought back onto the rails.

“I’m a bit tied up here, kid.”

“Of all people, dad, you should appreciate the danger of statist infiltration!”

“You don’t have to remind me why I’m dead, Xavier. Maybe I should remind you who ignored my warning last time?”

“Okay, but surely you don’t want the rest of us to die as well?”

“Maybe then I could finally get some work done!” his dad snapped. Then, with a softer tone, he continued - “I understand the concern, but up here, we’re basically trying to design a path to nanoscale manufacturing using nothing but rocks and duct tape. And we have deadlines! It’s stressful.”

“Can someone else check for statist, then? What about Stacy?”

“Hm, that might be okay. She’s not doing anything important.”

His intrusions went quiet for a moment, before returning.

“Stacy says that Anarchy is ‘stupid’ and that you should welcome the invasion of someone with more sense than you. Also, she says she’s doing extremely important things.”

“Great, thanks dad. So can you do it then?”

“Did you know God has a boss? And he’s kind of a prick? And he’s breathing down my neck asking for a fleet of interstellar warships? How’s that space station coming along, hm?”

Xavier sighed and gave up. “We’re just going to have to take the risk,” he told Theo.

Theo proceeded to turn the Terrarium into a Pacific-to-Antarctica shuttle service, and fund a couple of startups that specialized in “Antarctification” - slicing the surface off the artificial islands, building a dome over them, and transporting the island-platters to Antarctica via vacuum balloon. For the multitudes of homesteaders whose livelihoods were dependent on their islands, this was vastly preferable to starting over again on the icy continent.

Xavier, meanwhile, turned his full attention to colonizing space and preparing to execute the Gods’ experiments.

The first order of business was to build a larger ship, capable of housing a small population for long periods of time. He and his crew designed a huge, cylindrical, 12 storey building with a fusion engine on the tail. Each floor was manufactured separately on Earth and flung into space, where they were caught and joined together by volunteers in space-planes.

Once the Building was fully assembled, they flung up one of the two ASICs, filled the building with air, and moved in.

Unlike the Terrarium, the Building wasn’t designed to be a self-sufficient colony, but rather a research vessel. Food wasn’t grown on board, but was dehydrated and stocked in enormous store-rooms. The air was scrubbed not by plants, but by HEPA filters and an air-recycling plasma reactor. Artificial gravity was achieved not by spinning, but by *going places* - ie. by running the fusion engine 24/7 and undergoing constant 1g acceleration or deceleration.

It was, on balance, a far less pleasant environment than the floating islands of New Sealand, the Terrarium, or the Antarctic Dome. On the other hand, it was in space. Xavier had no shortage of volunteers.

The top floor was dedicated as the bridge, the bottom floor the engine room, and a few other floors the living quarters. The remaining floors were filled with computers, manufacturing equipment, the ASIC, and lab animals.

“Don’t run your fusion engine in there,” cautioned his dad. “Subatomic physics is totally different. Your engine will probably explode and kill everyone. You’re just going to have to coast through on momentum.”

“Is momentum the same as here?” Xavier asked the voice in his head. He was clipped into his chair in the top floor of the Building, facing an enormous cube that was outlined with a glowing red grid. Inside the cube, he was told, was empty space and a completely different physics engine.

“Yes, good old $p = mv$,” replied his dad. “Think of it as if Newton designed the universe, and he got some help from the guy who came up with the subatomic fruitcake model. Who was that again? Bohr?”

“Thompson”, replied Xavier. “The plum pudding model. You taught me that.”

“No, the one where the electrons fly around the nucleus.”

“Rutherford?”

“Right, Rutherford.”

“His model had nothing to do with fruitcakes.”

"I was just testing you. In any case, do NOT run your fusion engine in there. I'm serious. You will die."

"Sure, okay. What about my brain?" Xavier asked. "Does it rely on our subatomic physics?"

"It's been hard to get a straight answer out of Steve on that front," his dad replied. "Hang on, I'll put him on."

A few moments later, Steve's voice appeared. "How are you doing, Xavier?" he asked.

"Great, thanks. Admiring this beautiful red cube you've made me."

"Do you like it? It glows green on the inside!"

"Very nice. If I go inside, will I die?"

Steve was silent for a moment, before replying, "I don't think so."

"You don't think so?"

"You're worried about your brain, right?"

"Right."

"Don't! There's no need to worry about your brain. Your brain is just an interface between your mind and your body."

"What?"

"Your mind doesn't run on your brain. It runs on an MHI-10 in a datacenter, along with a hundred million other minds. If your mind ran on your squishy little monkey brain, how would we ever move it elsewhere?"

"What?"

"Maybe we need to give his mind some extra compute cycles so he can keep up," his dad snickered in the background.

"Ignore him," Steve said. "The point is, don't worry about your brain."

"What should I worry about?"

"Your mitochondria," Steve responded. "I have no idea how those work."

"Great," thought Xavier. "That's reassuring. So why don't you think I'll die if I go in the cube?"

"How much impact could subatomic effects possibly have on your mitochondria? Can't be that much. I'd put the probability of death at no higher than, say, thirty percent."

Xavier didn't feel like personally testing those odds. He was going to have to try something else.

"Ready, Ivan?" he asked over the radio.

"Ready to rock!" came the response. Ivan, his first mate, was in one of the lower-floor airlocks with a borrowed lab-canary in a glass sphere and a gigantic slingshot that looked like it belonged in a Loony Tunes cartoon.

“Okay, launch it!” Xavier commanded. He released his harness and floated to the window. Most of the crew was with him, with their faces against the thick glass, craning their necks to try to spot the canary as it left the building.

“Good luck, Tweety Bird!” Ivan replied.

Many floors below, an airlock opened and the glass sphere popped out. “There it is!” someone yelled. Xavier could just make out the tiny yellow canary inside, no doubt struggling to stay perched in zero gravity and wondering why it was flying towards an eerie red grid in the vast emptiness of space.

“It’s probably not thinking about the red grid,” remarked his dad. “I reckon the whole microgravity thing is enough to fully occupy its tiny little bird brain.”

“Speaking of brains, how about you get out of mine?” replied Xavier, annoyed.

“Your mind,” his dad corrected him. “Your brain is just an interface-”

“Yeah yeah, okay, my point stands,” Xavier interrupted. “Do you really need to talk directly into my mind? Can’t you get Steve to commandeer one of the radio channels or something?”

“Is someone tired of his stream of consciousness being blared out into an open-plan office space?”

“I thought you promised not to do that anymore!”

His dad was silent for a few moments, then returned. “Steve says he’ll file your request with the other low-priority items. Aren’t you meant to be measuring the canary’s trajectory or something?”

“No, I figured you would just tell me where to go.”

“Right, of course. Why do math when your dad can bail you out?”

Conscious of the office full of people listening to his thoughts, Xavier shifted his attention from brainstorming witty retorts back to the task at hand. The bridge had gone mostly silent as the glass sphere approached the grid. After a few seconds, it met the grid and disappeared, to gasps and scattered applause from the audience.

“Too late,” he thought as he made his way back to his chair. “Guess you’ll have to give me a flight plan.”

His dad grumbled and started reading out vectors for him to punch into the flight computer.

The distance from one side of the cube to the other was very short - far too short for their usual acceleration of 9.8m/s^2 . As the ship took off at a fraction of Earth’s gravitational acceleration, the crew fumbled to right themselves before awkwardly landing on the floor. Xavier wondered how long it would take before this was second nature.

The flight plan was a parabola that went up one side of the cube, arced over the top, and back down the other. The ship was to constantly accelerate for the first half, flip around at the midpoint, and decelerate the second half.

“Rotation in ten seconds!” Xavier announced as they approached the midpoint.

The crew scrambled to find handholds. The rotation was the most exciting consequence of using linear acceleration to simulate gravity.

“Rotating now!” Xavier called out.

He gripped his harness, shut his eyes, and felt his stomach churn as the rocket cut out and the sensation of gravity disappeared. Moments later, he felt himself tugged sideways as the Building rotated tail-first. To lessen the motion sickness, the rotation was programmed to take place over a comfortable thirty seconds, but Xavier still wasn’t used to it. Finally, the spacecraft settled into its new orientation, the flight computer ignited the rocket, and Xavier opened his eyes as he felt gravity return. The crew smiled and returned to their previous tasks of milling about and chatting, as he looked out at the enormous cube. It was as if the cube, and the entire universe, had flipped upside-down.

“You’re almost there,” said his dad before long. “I’m pretty sure you’re not even going to have to shut off the rocket. The bird should meet the airlock right as your velocity hits 0. Keep the engine going, you’ll just start accelerating upwards, and you won’t notice a thing.”

The flight computer read thirty seconds to destination. “Ivan, are you ready to catch it?” asked Xavier over the radio.

“Yes sir,” Ivan responded.

“We’re going to try it without stopping, so you should have gravity the whole time. But clip yourself in just in case, okay?”

“Already done,” Ivan responded. “Opening the airlock now.”

“There it is!” someone yelled, pointing downwards out the window.

Xavier bounded to the window and looked down. Far below them, the sphere had emerged from the cube. He could just make out the tiniest patch of yellow inside.

“Get out of the way,” he warned Ivan. “It’s coming in hot.”

“Yes yes, thank you, I can see it.”

The excited chatter in the bridge died down as the sphere approached the building, and disappeared into the side. A soft *clang* was heard, and the floor beneath them vibrated ever so slightly.

“Got it!” announced Ivan over the radio.

“Is the bird alive?” Xavier asked.

The radio was silent for several seconds.

“Ivan! Is the bird alive?” he repeated.

“Hm? Yes, he’s alive,” Ivan responded. “He’s just covered in poop. And very angry.”

The bridge broke out in cheers.

Xavier leaned back in his chair and sighed in relief. If the bird’s mitochondria survived the trip, his probably would as well. As for his mind, well, that was Steve’s problem.

“Take him to the lab,” he said. “We’ll monitor him for a couple of days. If he seems okay, then it’s our turn. Apparently the cube is green inside.”

58. Von Neumann Paperclip Factory

"You're twenty thousand years old?" Stacy asked, incredulously. "How long is a year?"

"Three hundred and sixty five days, just like yours," Gabe responded.

Stacy was shellshocked. She sat back in her armchair and cradled her white vienna coffee, looking around silently at the other patrons of the extremely hip cafe/bookstore/bicycle repair shop that she and Gabe had fallen into the habit of visiting.

"I'm not even particularly old," Gabe continued. "Steve is around the same age. We have some colleagues who are forty thousand years old. And of course, there are Murdoch and Allen."

"How old are Murdoch and Allen?" Stacy asked.

"I'm not sure that anyone's ever asked them. But over a hundred thousand years, both of them. They were both born before the Great Peace."

Dozens of questions lit up the circuits of Stacy's artificial brain. In the end, she picked one. "What is the Great Peace?" she asked.

Gabe gestured around him. "That would be like me asking you, 'What is civilization?' It's everything. The way we interact with each other, the way our society is ordered, the way we even have a society at all!"

Stacy nodded. "And it's called the Great Peace because you don't kill each other?"

Gabe smiled. "That's right! Homicide was a cornerstone of the barbarian ages, just like it is in StevieNix. Thankfully, we've evolved past it."

"What happens if someone does kill someone?"

"They'd be executed."

Stacy smiled. Finally, some familiar territory.

"And if they steal?"

"Executed."

"What if they criticize the Great Peace?"

The colour drained from Gabe's face and he lowered his voice. "Keep it down," he cautioned her. "You're asking to be executed."

Stacy nodded, sipped her coffee, and looked around the shop as she pondered her newfound knowledge. The bicycle repair person was adjusting the derailleur on a bike, causing quite a racket as he turned the pedals and shifted through the gears. Challenging conditions for an eavesdropper. Still, she decided to change the subject. "Do you ever think about having kids?" she asked.

Gabe shrugged and moved his head noncommittally from side to side. "Sometimes," he remarked, "but I'm very busy with my research. And it's basically impossible to get an addition permit these days."

"Addition permit?"

“Additions have to be balanced with subtractions.”

“So if you want a baby, you have to wait until someone gets executed?”

Gabe chuckled. “Execution isn’t the only way to die, Stacy. Most people die by accident or suicide.”

Stacy grimaced. “Who hands out addition permits?”

“FEDSEC,” Gabe replied. Noting her look of confusion, he explained, “The Federal Department of Social Emotional Calibration. They’re basically the gardeners that tend to our society. Planting new people, pruning old ones, watching and maintaining the ones that are there. They’re also the department that issues the baby itself.”

“You think you’re plants? Wait, hang on. The *government* issues the *baby*?”

Gabe laughed. “We don’t just rub against each other and pop out babies like you do,” he chortled. “We’re civilized, remember? We have institutions for that sort of thing.”

“If the permit and the baby come from the same government department, what’s the permit for? Why don’t they just issue the baby?”

“The addition permit is just a small part of the process. You also need an Environmental Impact Assessment, an Equitable Upbringing Study, references from everyone you’ve ever known. . . There’s like a dozen government departments involved, just for the permission alone. And don’t get me started on the genetics! It’s a huge faff, really.”

“It’s a wonder anyone goes through with it.”

“Most people don’t.”

Stacy took a messy bite of the tower of whipped cream on top of her vienna coffee. The process sounded awful. If she’d had to go through a similar process to have kids, she probably never would have done it either. That, she supposed, was the point. Gabe’s society was “gardened”. Hers, despite being run in a simulation and overseen by various meddling Gods, was not. It was more of a “commercial hatchery meets gladiator arena” sort of a setup. She decided to change the subject again before she provoked the ire of FEDSEC.

“Why do you think the stars are disappearing?” she asked.

“Other than the alien civilization constructing Dyson Spheres?”

“Yeah, I’ve already heard that one.”

“Okay, here’s one: Von Neumann Paperclip Factory.”

“Huh?”

“Von Neumann probes are robotic spaceships that replicate themselves as they spread through the universe. Paperclip factories manufacture paperclips. So consider, what would happen if you made a robotic paperclip factory on a self-replicating spaceship? Given certain parameters, it could turn entire solar systems, maybe even the entire universe, into paperclips.”

Stacy considered this scenario for a minute as she sipped her coffee.

“Yeah, I think the aliens are more likely.”

“Yes, me too.”

“How well do you think our AIs are going to stack up against them?”

Gabe shrugged. “I haven’t really been following the whole AI thing, not since you three joined us.”

Stacy stared at him. “You’re not monitoring the competition?”

“No, I thought you were doing that. You’re the one who’s always jacked into StevieNix.”

Stacy swore, drained the remainder of her coffee, and rushed back to the office.

59. Statist Infiltrators

“The boys are all obsessed with their physics project,” Stacy II’s mom complained into her head.

Stacy II thought she seemed particularly wound up today.

“I heard that!” Stacy objected. “I’m not wound up! Just stressed. Steve and Gabe have completely forgotten about their main job, which is aligning useful AIs. And everyone in New Sealand is so caught up in this stupid civil war that they’ve stopped caring about Steve. Allen’s going to start pulling ahead any day.”

“Who’s Allen?” Stacy II asked.

She and Filbert were sitting in the grass in the cabin of the Terrarium, watching the sea go by. Their remaining parents and siblings had already made it to the new settlement in the Transarctic Mountains, and had helped coordinate their passage. Cosmo was curled up asleep a few meters away - Antarctica was too cold to reach by kettel, but they still felt obliged to bring him.

“Allen’s one of the other competitors,” her mom responded. “He’s the one all the camel jockeys with the AK-47s love.”

“Right,” Stacy II responded. “Isn’t that okay? They probably make good warriors. What difference does it make if they’re aligned with Steve or Allen?”

“A huge difference!” her mom snapped. “Those people are morons! And they suck. And so does Allen!”

Stacy II rolled her eyes. “Very convincing argument, mom.”

“I’m serious! If Murdoch puts those idiots into warships and sends them off to battle, they’ll just kamikaze themselves into the Dyson spheres and die. Then, we’ll all look like idiots by association, the project will be canned, and StevieNix will be shut down. You’ll be dead, I’ll be dead, everyone will be dead.”

Stacy II laughed. Filbert looked at her, quizzically.

“Talking with my mom,” she explained. “She’s being dramatic.”

He nodded silently and continued looking out at the water.

“I’m not being dramatic!” Stacy scolded her daughter. “StevieNix isn’t being run as an act of charity! Murdoch is investing a fortune here. If it fails to deliver useful, aligned interstellar warriors... Do you know what happens to projects that don’t deliver return on investment?”

“They get canned,” Stacy II conceded. “But what do you want me to do? I can’t singlehandedly make an entire universe deliver ROI.”

“You need to revive Steve’s meme!” her mom explained, exasperated. “It was going so well before.”

“I tried that,” Stacy II responded bleakly, remembering her sermons on New Australia, and her clergy that abandoned her the moment she showed a sign of weakness. “It didn’t work.”

“Well, obviously it wasn’t going to work on *them*. Why do you think I banished them in the first place? Also, I don’t think it helped that they hated you.”

“Thanks, mom. I appreciate the encouragement. Do you have any actual advice?”

“Yes. Keep your pearls away from the swine.”

“Yeah yeah yeah, I’ve heard that one before. Anything else?”

“You can’t just convert people at the barrel of a railgun. It doesn’t stick. You have to win their hearts and minds.”

“You’re not the first person to tell me that one either,” Stacy thought, looking over at Filbert.

Filbert chose that moment to spring to his feet and run to the window. “Look!” he shouted excitedly, pointing in the distance. “Land!”

The sun reflected off a glimmering white ice sheet in the distance. Stacy II’s heart beat rapidly and she began to sweat. Although she’d mostly enjoyed her day-to-day experience living with Anarchists on New Australia, she was wary of the fact that they’d been unable to scale past a hundred people before resorting to an institutionalized cannibalism-based justice system. What horrors would a society of millions of ungoverned people inflict on each other? Still, Vincent and Xavier had seemed fairly normal. And her family seemed happy enough. But Curtis had seemed normal too, right up to the point where he’d sentenced her friend to be roasted and eaten.

“You’ll be fine,” her mom reassured her. “Vincent’s Anarchy is totally different from Curtis’s. These are *elite human capital*, don’t you know.”

Stacy II cringed. The phrase ‘human capital’ brought up unpleasant memories from New Australia. “If they’re so elite, why do they live on a block of ice in the middle of nowhere?” she asked.

Her mom laughed. “You’re right, a true elite would have rallied the troops and sank the People’s Republic back into the sea.”

As they reached the ice, she looked down through the glass wall at the frozen landscape below. A distinct hexagonal tessellation was visible in the ice, stretching as far as she could see. The land was dotted with glass domes, which were connected by long, wide trails of animal tracks.

“That’s not natural,” she remarked to Filbert.

“It’s Jurassic Park,” he explained. “I heard they were planning on towing it here. I can’t believe they pulled it off.”

“Won’t the dinosaurs all freeze to death?”

“They’re trying to breed them to be cold-resistant. Splicing in penguin DNA or something.”

Stacy II nodded. Did towing an enormous island to Antarctica and penguinizing its native dinosaurs qualify as ‘elite’ activity? For some definition of elite, perhaps. She was skeptical.

Eventually, the frozen hexagonal tiles disappeared, to be replaced by natural rock forms and the Transactic Mountains. The Terrarium began ascending to clear the mountains.

“Where will we find Xavier?” Stacy II asked her mom.

“Xavier? Don’t you mean your dad? And your brothers and sisters?”

“Oh,” she blushed. “Yeah, that’s what I meant.”

“Don’t lie to me. I can read your mind.”

“Their names are right next to each other.”

“Save it.”

“Okay, fine, where’s Xavier?”

“In space.”

“What?”

“Long story. Boys, you know.”

Antarctica was busy. Far busier than she had expected. Millions of people had fled their anchorages, relocating beyond the reaches of the Commonwealth Navy to the icy interior of the final continent. The original valley was now a bustling metropolis, filled with buildings and office workers, connected via heated tunnels to the surrounding suburbs.

She and Filbert spent the next several days reconnecting with old contacts. Many, like her own family, had fled the Theocratic Dominion during the revolution. To her relief, none of them attempted to convince her to eat anyone. Unfortunately, despite being armed to the teeth, none of them wanted to re-take the Commonwealth either.

“What did you expect?” asked Filbert. “Their roots in the Commonwealth only go back twenty one years, maximum. Hardly worth dying for. Also, one of the founding principles of the Anarchy is that you should just move away from people you don’t like.”

“Running away as a founding principle? How has that played out?”

Filbert kept his mouth shut and waited for her to answer her own question.

“Let’s have a look, shall we? Oh yeah! They’re cowering under domes in the least hospitable part of the planet! If only they stood and fought, they wouldn’t have to live like this.”

Filbert shrugged. “It’s temporary. They’re building flying cities and going to space. Why would they want to go back to the ocean?”

Stacy II growled with frustration. “God damn it! Why is it so hard? All I want is to raise an army and reclaim my rightful throne. Is that really so much to ask?”

Filbert continued his policy of silence.

“It’s been a year, and I have nothing to show for it. How did all the great English kings do it?”

“I think they paid the soldiers, for starters.”

“I’m broke.”

“Life coaching isn’t profitable enough?”

“You just don’t know when to shut up, do you?”

They stopped at a stall where a man with a cart full of oranges and a lever-action juice press was dishing out cups of freshly-squeezed orange juice for two silverbacks apiece. Stacy II dug in her purse for the banknotes, each of which contained a tiny piece of silver in a small transparent window in the center.

“Two, please,” she requested and handed over the notes.

She looked around as the man set about slicing and squeezing the oranges with machine-like efficiency. The valley was an impressive sight. Rather than glass and steel, the Anarchists had chosen to construct their buildings from stone - shamelessly copying the arches, vibrant facades, and terracotta roof tiles of Central American colonial architecture. Palm trees lined the wide, cobblestone streets, and above them all, the sun reflected off the towering white peaks and glinted as it refracted through the colossal glass dome. Activity was everywhere - people of all ages bustled through the streets or sat on terraces, laughing and enjoying food and coffee, while robots mined carbon and executed enormous construction projects in the mountains beyond.

Given the choice, she thought, she probably wouldn’t want to go back to the Commonwealth either.

“It’s just so annoying,” she continued griping. “My mom had it running perfectly. Millions of people. All aligned. Breeding like rabbits. And then the PR had to just come around and cock it all up!”

The juice vendor cocked his head as he handed over her juice-filled paper cup. “Was your mom Queen Stacy?” he asked.

Stacy II froze and examined the man. He wasn’t anyone she recognized. “Yes, did you know her?” she responded.

“Only by reputation,” he replied. “I was never a TD man, myself. But everyone knows who Queen Stacy was. My condolences, by the way.”

“Thanks.”

“The TD’s gone to hell since she died.”

“I know.”

“You should probably do something about that.”

“Oh? First time I’ve heard that one. I’ll get on it as soon as my life coaching business IPOs.”

The juice vendor laughed and began halving oranges for Filbert’s drink. As he placed the first half into the press, he furrowed his brow as if he’d just remembered something. “Do you know that Xavier has the guy who did it locked away somewhere?” he asked.

“The guy who did what?”

“The guy who organized the revolt. Some sort of statist mastermind. He sentenced your mom to death. He also tried to take the Terrarium at one point, and killed Vincent in the process. Not a very popular guy round here.”

“Where is he?”

“Beats me. If anyone knew, he’d probably be stoned to death.”

Stacy II thanked the vendor and walked away, mulling over this newfound information. Finally, a lead! Her mind was a wrestling match between emotion and logic. On the one hand, the deep, primordial regions of her soul ached to find the man responsible for her mother's death and torture him, cutting off bits of his body and feeding them to him until he begged for death. On the other hand, she could use the help of a 'statist mastermind', particularly one who understood the inner workings of the PR.

Dragging a protesting Filbert down the street, she quieted her mind enough to form a coherent internal monologue and summoned her mom.

Her mom gave up on the search almost immediately, and handed the problem over to Russell.

"You need to give me more to go on than that," Russell explained. "'Xavier's prisoner, who sentenced Stacy to death and also briefly invaded the Terrarium' isn't a valid search term."

"What more do you want?" Stacy II asked, exasperated. For an alleged genius, he was having an awful lot of trouble executing a simple search. "There can't be that many people who fit that description!"

"The search engine only takes descriptions of their present state. I can filter by their name, height, weight, etc."

"He's presently Xavier's prisoner! How many prisoners could Xavier possibly have?"

"'Prisoner' isn't an objective term. As far as StevieNix is concerned, he could just be a guest in a room with bars on the windows."

"Okay! Find me all men in Antarctica alone in rooms with bars on the windows!"

Russell was silent for a moment as he tapped at his keyboard, before responding, "Nothing."

"All men in Antarctica alone in basements!"

Another pause, followed by "Four hundred and thirty eight results. I guess basements are popular places to hang out."

"Xavier's basement!"

"Ah yeah, that's a good one. Hang on."

Russell paused again, while Stacy II grimaced, meticulously tore strips off her empty paper cup, and tried to keep her mental Tourette's syndrome from offending Russell in her impatience. Filbert watched her, nervously.

"One result. Good search query! You see? How hard was that?"

Stacy II grumbled and tried to heave her train of thought from annoyance to gratitude. She would probably need Russell's help again in the future, and the more of her honest opinions he heard, the less generous he would likely feel.

"Hang on!" Russell exclaimed. "I recognize this asshole. What are you planning on doing with him?"

"Hadn't decided yet. Why?"

"He tortured me to death."

“Wow,” Stacy II responded. “That’s three for three. Funnily enough, I was thinking of torturing him to death too.”

“Have at it. He’s in Xavier’s basement. I’ll walk you there.”

Stacy II picked up the pieces of her discarded pieces of paper cup, and grabbed Filbert’s arm.

“Let’s go,” she said. “Your dad found him. He says he’ll help us...get inquisitive, if you catch my drift.”

60. The Cube of Realistic Physics

“We’re all clear,” crackled Ivan’s voice through the radio. “Light her up!”

Xavier gripped the wheel of his space-plane tightly and stared nervously at the red Cube of Realistic Physics (CORP) in front of him. He hadn’t been in the plane since his maiden voyage, when he’d spun out of control and had to be rescued by his dad’s disembodied voice. Now, with the flashbacks of that flight triggering mild nausea, he was about to perform another first: The first human mission into the CORP.

The canary they’d sent through two days ago had survived. How dangerous could it be?

“Launching,” he responded with a final glance up at the receding Building. “See you on the other side.”

He ignited his fusion engine and was shoved back into his chair as the plane jolted forwards. After a fraction of a second, he shut the engine off again and coasted towards the cube.

“Good job,” Vincent said into his head. “Now don’t you dare touch that ignition until you come out the other side.”

“Thanks, Dad,” Xavier responded. “Why don’t you worry less about me being an idiot and more about my mitochondria?”

“Your mitochondria will be fine. The bird was okay, right? I’m more worried about the plane’s chemical bonds disintegrating and you being sucked out into the vacuum.”

The red grid surrounding the CORP filled Xavier’s field of view as he rapidly coasted towards it.

“You’re worried about *what*?” he asked.

“Never mind!” his dad responded. “Too late!”

The plane reached the grid and Xavier blacked out.

When he came to, his hands were still on the wheel. It couldn’t have been more than a couple seconds, he reasoned, but the scene was completely different. Everything outside the spacecraft was gone. The Sun, the Earth, the entire universe as he knew it - were all replaced with an enormous glowing green grid in a cube surrounding him. The grid provided his only light source - all of the lights in the plane were off, and everything he could see was illuminated in an eerie green.

“Xavier?” came his dad’s panicked voice in his head. “Come in, Xavier!”

“Am I alive?” Xavier asked. He removed his hands from the wheel and opened and closed them in front of his face. They still worked.

His dad exhaled loudly into the microphone. “Looks like it. You had me scared.”

“What happened?”

“We had to pause your mind for a sec as your brain crossed the barrier.”

Xavier nodded. That made sense, sort of. “Why are all my lights dead?” he asked.

“LEDs rely on subatomic effects. Those effects don’t work here.”

“Why not?”

“Light is totally different in Realistic Physics. It’s never a wave - it’s all particles, all the time. Like billiards balls, remember?”

Xavier looked around the dimly illuminated cabin. “Is that why everything’s green? There are only green billiards balls?”

His dad laughed. “You don’t like the green? Steve thought it would be ‘soothing.’”

“Do you have any other colours?”

“This is meant to resemble a forest.”

Xavier looked out the windshield at the glowing grid around him. It looked absolutely nothing like a forest.

“I’ll see what Steve can do,” his dad said.

Xavier sat silently in his thoughts and watched the green grid slowly fly past. Boredom began creeping in. He hadn’t packed any experiments to perform in the Realistic Physics engine - the only mission objectives were to survive, and maintain his sanity. With his dad babbling into his head, the success of the latter was far from guaranteed. Fortunately, the subject of conversation was at least somewhat interesting.

“But seriously,” Xavier asked, “how do colours work? If light isn’t a wave, you can’t vary its wavelength.”

“Colour is determined by how fast the photons spin.”

“Oh.”

“They also have mass,” Vincent continued enthusiastically, “and no hardcoded speed!”

Xavier blinked, confused. “Then how fast is light speed?”

“As fast as you throw it. With enough energy, we could have real-time conversations across the galaxy. I told you, this universe is basically Newtonian.”

Xavier pondered this newfound information as he drifted towards the far wall of the CORP. So, his skin was being bombarded with particles. Great. Back on Earth, bombarding people with particles was called “proton radiation therapy” and was used in a sparing, targeted fashion to irradiate cancerous cells to death. He wished he’d observed the bird for longer than two days before entering the cube. Perhaps they should have used an animal that wasn’t covered in feathery radiation shielding. A naked mole rat, for instance.

“Photons, not protons,” his dad corrected his thoughts. “They’re different.”

“Thanks, Dad,” Xavier responded sarcastically. “How do I know these *photons* aren’t going to give me radiation sickness or melt off my skin?”

“Beats me,” his dad responded. “Guess we’ll find out.”

Xavier forced a laugh, and fidgeted as he drifted through the cube, mind ablaze with questions. How did the rods and cones in his eyes detect these weird photons? How did electricity

work? How were the space-plane's chemical bonds doing? His dad politely remained silent, although Xavier was sure that he and the rest of the office were still listening to his thoughts.

Eventually, the plane approached the far wall. Xavier shook his head, breathed deeply, and put his hands back on the wheel. He hated the cube, and couldn't wait to get out.

"Are you going to pause me for the transition again?" he asked.

"Yup," his dad responded. "In three, two..."

The world went black and Xavier woke up on the other side. The cabin lights were on, and his headset roared with the sounds of Ivan and his crew cheering.

The crew spent the next week monitoring Xavier for strange health conditions, and manufacturing otherworldly industrial equipment from Steve-provided CAD designs. Some of the equipment had obvious functions - a lathe looks like a lathe, no matter what universe you're in - and others were entirely foreign.

"What's this?" asked Ivan, tapping on a large, black cylinder covered in brass protrusions.

"I think it's some kind of photolithography machine," Xavier responded.

Ivan raised an eyebrow at him.

"For making chips," Xavier explained. "Don't turn it on. Even Steve doesn't know what this stuff will do in StevieNix Physics."

"What if I'm hungry?" Ivan asked, coyly reaching for the power switch. "I love chips!"

Xavier glared at him.

"Ha ha!" Ivan laughed, retracting his hand. "Is joke! I think perhaps radiation may have affected your sense of humour. Let's get you to medic."

"My sense of humour is fine," Xavier grumbled.

In truth, his sense of humour was subdued. The crew had unanimously voted that morning that the entire Building would perform the next mission into the CORP. As it had been several days since Xavier's mission and he hadn't vomited blood or developed visible tumours, the general consensus was that Realistic Physics was "probably safe enough". Xavier felt a weight of responsibility he hadn't borne since the invasion of the Terrarium. If the consensus was wrong, he'd be responsible for not just scores of deaths, but the deaths of the smartest, bravest people he knew.

"Well then, funny man, let's go to the bridge! Everyone's waiting," Ivan said cheerily, striding towards the elevator.

Xavier followed him to the bridge where most of the crew were indeed excitedly waiting. They ceased their chattering and looked towards him as the doors slid open and he entered with Ivan.

"Remember everyone," he announced, "we won't be able to accelerate while we're in there. You know what that means, right?"

"No gravity!" several crewmembers shouted in unison.

“That’s right. So make sure everything is strapped down. We’ll be in the CORP for twelve hours, which should be enough time to test all the equipment. We’ll be hitting our approach velocity in a few minutes, so jump to it!”

The crew scattered to the various levels to prepare for microgravity, and Xavier sat down in his chair. He sighed, leaned his head back, and closed his eyes.

Ivan sat next to him. “You are scared, boss?” he asked.

Xavier looked over at him. “You know what else not being able to accelerate means?”

Ivan nodded. “Once we’re in, we cannot abort mission. Everybody knows this.”

“And you’re not scared?”

Ivan shook his head. “Is only twelve hours. Easy peasy.”

“Yeah,” Xavier replied. “Easy peasy.”

His heart thudded in his chest, and he felt the familiar nausea rising in his stomach. He wasn’t scared. He was terrified.

61. Man of Destiny

One hundred days alone in the basement. Sullivan didn't know how he knew that fact, but he did. The voice had told him.

The harsh fluorescent lights were on a timed cycle, but it wasn't twenty four hours. He was sure of it. They had cycled eighty-five times, but each light cycle dragged on longer than it should. He was perpetually jet-lagged.

Partway through the long afternoon, the now-familiar voice appeared in his head.

"Congratulations on making it a hundred days," it said.

The voice in his head was the only thing keeping him sane.

Three times a day, the dumb waiter dinged and opened to reveal his food. Scrambled eggs, bread, and a glass of water. He ate, drank, used the toilet, and returned to his bed.

The only other feature of the room was the copy of the Newer Testament that had been left in the bedside table. He'd read it, cover to cover, six times.

Lies, the lot of it. He knew, because the voice had told him. He trusted the voice. It sounded old and wise, like a village elder or a supreme court justice.

His gums hurt. Scurvy, he assumed.

He wondered about his wife and kids. How long before they forgot him? He'd never been a very present husband or father. Maybe they barely realized he was gone.

"Some men," the voice assured him, "aren't made to be husbands or fathers. Some men, are men of destiny."

Sullivan was a man of destiny.

The lights turned off, finally. He lay down in his cold, hard bed and shut his eyes. He hadn't showered in a hundred days. He didn't think he smelled too bad.

He went to sleep, and was awoken a few hours later by the door being flung open and crashing into the wall.

"Wake up!" shouted a young woman.

"Get on the ground!" added a young man.

He recoiled as a flashlight shone in his face. It felt brighter than any light he'd ever experienced - certainly was many times more powerful than the fluorescent ceiling lights he'd lived under for the past three months. He clamped his eyes shut and curled up in his bed, hoping that the intruders would leave him alone and let him return to his slumber.

They clambered down the stairs, rolled him onto his front, and zip-tied his wrists together. No such luck.

The barrel of a gun was jammed into his side and he was ordered to walk up the stairs. As he ascended, the light spilling in through the door became brighter and brighter.

It wasn't artificial light, he realized. It was sunlight.

They sat him down in a wooden chair. He kept his eyes mostly clamped shut, opening them barely a crack to let the sunlight in. He wondered if his eyes would adjust in a few minutes, or if they'd been permanently affected by the dim conditions.

"You smell awful," the young lady informed him. "Like, really bad."

Sullivan wasn't offended. She must not recognize the smell of destiny.

"What's your name?" she asked.

He slightly relaxed his squint and looked up at his rescuers. For whatever reason, they looked familiar. The young woman, in particular, was stunning. He hadn't seen a woman in... gosh. It was a while. He started calculating the exact timespan.

"Oy!" she shouted. "Eyes up here, asshole. Now what's your name?"

Sullivan jolted. What was his name again?

"Sullivan," he eventually answered. "I think."

"Why are you locked in a basement?" asked the young man. Sullivan peered at him. He looked familiar as well.

"It's a long story," he replied.

"Does it have anything to do with you killing our parents?" the woman asked.

Ah. Now he realized why they looked so familiar. The haze of confusion cleared, and he saw the situation for what it was. He hadn't been rescued. If anything, his predicament was worse than before.

"There were extenuating circumstances," he attempted to explain.

Smack! Stacy II hit him in the cheek with a... spatula? Interesting choice. Effective, though. His already sensitive gums lit up in blinding pain.

Oof! Filbert punched him in the gut. He doubled over, almost falling off his chair, gasping for breath. The young man moved behind him, wrapped his arm around his neck, and raised him upright again. He looked up at the angry, spatula-wielding young lady with newfound respect.

"So that's a yes, then?" she asked.

"Just go with it," said the voice in his head. "Be apologetic."

"Yes," he sputtered. "I'm sorry."

Filbert released his chokehold and moved back round in front of him. Sullivan slumped back into his chair. "Now what?" he asked the voice.

"These two are your ticket out of here," the voice replied. "They might rough you up a bit, but they won't kill you. Just go along with them."

Sullivan nodded.

Stacy II walked over to a side table and picked out a boning knife from an assortment of tools that she must have placed there earlier. “I am going to surgically swap your fingers and your toes,” she said, “without anaesthetic.”

Sullivan gulped and looked over at Filbert for reassurance.

“She’s not much of a surgeon,” warned Filbert. “In fact, I don’t think she’s ever done any surgery before in her life.”

“First time for everything!” she said, cheerily. Are you left-handed, or right?

“You want me to go along with this?” he asked the voice.

“Yeah, that was unexpected,” the voice replied. “Let’s see where it goes.”

“Screw this!” he thought, and bolted out of his chair.

Filbert tackled him to the floor. The crash sent shockwaves of pain through his bones. Scurvy doesn’t just affect the gums. Stacy II stood idly by, and watched as Filbert grabbed Sullivan’s hair, lifted his head, and smashed his skull into the marble tiles. Sullivan’s world went blurry, then he reflexively curled up and retched as Filbert started kicking him.

“That’s enough,” said Stacy II.

Filbert lifted Sullivan up and dumped him back in the chair. He slumped over again and struggled to breathe. His abdomen hurt. His joints hurt. Everything hurt. The zip-ties cut into his wrists. He balled his hands into fists and hid them under his bottom in a subconscious effort to protect his fingers.

“You didn’t want to help me learn surgery?” Stacy II asked. “I’m offended.”

“I’m sorry,” Sullivan croaked, “I just wasn’t feeling it.”

“Do you know how under-represented women are in the surgical workforce? You’re contributing to historical inequities.”

“The thing is, I like my fingers and toes where they currently are.”

“Who said this was about you? This is about broader structural issues.”

Sullivan paused for a second. Broader structural issues were a keen interest of his. He weighed the pros and cons. “But they’re my fingers and toes,” he objected, finally.

“And they still will be when I’m done! Jeez, some people.”

Sullivan didn’t have a response. The world was still blurry and bright, his bones hurt, and he was struggling to breathe. He opened his eyes a bit and watched as she cleaned her fingernails with the sharp point of the boning knife. If it had just been the two of them, he might have been able to overpower her and take the knife. But against her henchman, in his weakened state, he stood no chance.

Stacy II eventually broke the silence. “Of course,” she mused, “maybe there’s something else you can do for me.”

“What?” he asked, warily.

“You understand the inner workings of the People’s Republican government, right?”

Sullivan nodded. "Yes," he replied. He'd practically written half of it himself.

"Good," she responded. "It's grown since you left, but the structure is the same. You're going to help me take control of it. Once I'm crowned Stacy II, Queen of the Commonwealth of New Sealand, you can leave. With your fingers and toes where they are presently."

"Is this what you were talking about?" he asked the voice.

The voice didn't respond. Sullivan had to decide on his own.

He drooped his head and strained against the zip-ties. He wished he could put his face in his hands and rub his sore eyes and gums with his fingers. He had never truly appreciated just how much he liked having his fingers attached to his hands. Sometimes, men of destiny have to make hard choices. Ultimately, this was not one of those times.

"Okay," he said. "I'll do it."

62. Permanent Schizophrenia

The bridge disappeared slowly into the Cube of Realistic Physics. Xavier watched, warily, as the pure black wall of nothingness slowly advanced through the room, swallowing up everything as it went.

He didn't remember this detail from his solo mission. His dad must have blacked him out before the CORP had begun swallowing the cockpit.

Ivan watched as the room disappeared into the void. His chair was closer to the CORP than Xavier's. Unless he chickened out and moved, he'd enter first, by a good ten seconds.

"Here we go, eh boss?" he remarked unflinchingly, as the wall bore down upon him.

"I'll see you on the other side, comrade," Xavier replied.

Xavier saw Ivan's eyes go blank a moment before he was swallowed by the blackness. His mind being paused, Xavier assumed.

"So far so good," came his dad's voice in his head. "I think next time we'll just black you all out at once. This is stressful."

Xavier heard keys clacking and Russell and Steve swearing in the background.

"Are you manually pausing people as they pass through the wall?" he asked, incredulously.

"Yes."

"They're spread across twelve floors!"

"And they keep moving about! Stay still, you animals!"

Xavier began to chuckle, and then halted.

"What happens if you miss someone?" he asked.

"And don't pause their mind as they cross?"

"Yeah."

"Dunno. Might be fine. Might give them permanent schizophrenia."

The wall advanced. Xavier tensed up. Permanent schizophrenia sounded unappealing. As the only human to have entered the CORP before, he had the least reason to be nervous. Nonetheless, he anxiously shut his eyes as the wall approached. When he opened them a moment later, the black wall was receding on the other side, and Ivan was sitting in his chair, smiling.

"Easy as that!" his first mate exclaimed. "I don't know what you are making such big deal about."

"Yeah," Xavier thought to his dad in a mock-Russian accent, "what are you making such big deal about?"

"You're welcome," grumbled Vincent curtly, still furiously typing.

"Check it out!" Ivan exclaimed, unclipping himself from his harness. He floated towards the windshield, gazing out at the interior of the cube.

Xavier looked out the window. The universe had once again been replaced by the inside of a cube, outlined in a huge grid. This time, though, the grid glowed with a soft white.

“Tell Steve, thanks for the lighting change” he thought.

“I’ll pass it on,” his dad replied. “Now leave me alone and go test that equipment.”

Xavier unclipped his harness, summoned Ivan, and together they floated to the elevator. The doors were open, and led directly into the shaft. There was no point in running elevators in microgravity, so the Building automatically disabled them and let the crew use the shaft as a corridor between the floors. Of course, when designing this clever feature, Xavier hadn’t anticipated the lights not working.

“This is dark as the devil’s asshole,” Ivan remarked.

“Just move slowly and try not to bump into anyone,” Xavier responded.

He maneuvered into the shaft, pulled on a rung, and floated along the dark corridor until he heard the crew laughing.

He caught a rung, swung out of the shaft, and clumsily crashed into the floor. Ivan followed, held on a moment longer, and expertly floated into the new corridor with the grace of a sea turtle.

“Flawless execution, boss,” Ivan said, grinning as he floated by.

Xavier grumbled, grabbed a handhold, and propelled himself to the first door in the corridor.

They were greeted by excited cheers as they opened the door and entered. “We have power!” someone announced.

Xavier looked around at the assortment of equipment. A large box in the middle of the room was humming. A small lightbulb on the side of it was glowing red, and an old, analog voltmeter was attached to it and displaying a non-zero reading.

“Amazing,” he responded. “Artificial light, too! Get it hooked up to the rest of the gear and let’s test, test, test.”

The crew nodded and got back to work.

He continued touring the labs. Most of them had generators as well. He watched as his crew tested out the photolithography machine, various 3D printers, and other equipment that he didn’t recognize. His heart shone with pride. He couldn’t imagine any other group of people being able to work together so effectively, in such a complicated domain, with such little instruction.

“Oh, crap!” rang out someone’s voice from down the corridor. A chorus of panicked shouts followed.

Xavier pulled himself into the corridor to see a group of people rapidly evacuating one of the labs. Ivan was among them.

“What happened?” he asked.

“The lathe works,” Ivan responded, simply.

“And?” prompted Xavier.

“And without gravity to catch the shavings...” added Ivan, gesturing towards the window. “Is big mess.”

Xavier floated to the door and looked in through the window. Small, metal shavings were flying through the room at high speed, ricocheting off the walls and ceiling and continuing on their path. He groaned. Manufacturing in microgravity was going to be harder than he’d anticipated.

“What will it take to get the rockets working in the cube?” he asked his dad. “We need to simulate gravity.”

“It’ll take...rocket technology,” Vincent answered.

“Not helpful, dad.”

“It’s literally the entire reason you’re in the cube. Do I need to remind you?”

Xavier sighed. His dad was right - it had been a stupid question. Unfortunately, rocket technology that would work in Realistic Physics was a long way off. The tools Steve had provided were practically stone age compared to nanoscale manufacturing. Before they could manufacture rockets, they needed to build a technological bridge - a path to nanoscale that could realistically be followed in Steve’s universe, under his physics, using his tools.

Once that was achieved, rockets would be easy.

The embarrassed crewmembers from the lathe room scattered to the various other labs, leaving Xavier and Ivan to continue their tour. Everywhere, teams had moved from testing Steve’s equipment, to manufacturing with it. The first order of business was to build a computer, so they could do CAD. One team was feeding pre-fabricated punchcards into the photolithography machine, another was hand-soldering components to boards, and the rest were busying themselves with the design and manufacture of sensors, actuators, and other peripherals.

Xavier stifled a yawn. Perhaps the stress of the past week - no, the past several months - had finally gotten to him. He was exhausted.

Just as Xavier and Ivan finished their round, an alarm resembling a smoke detector started to chirp in the ceiling. They looked at the device, and then at each other.

“CO2 alarm,” Ivan explained, jogging Xavier’s memory.

“Right, of course,” Xavier responded.

“We are not running CO2 scrubber, so this was expected. But not until almost twelve hours.”

Xavier nodded. The Building was huge, and they’d only been in the cube for half an hour. There was no way his team had respired enough to significantly affect the carbon dioxide concentration in the air. Perhaps the sensor just didn’t work properly in Realistic Physics.

“Hey dad,” he thought, “what’s our CO2 concentration?”

After a brief pause, his dad came back online. “What am I, your ship’s computer?” he asked.

“Ship’s computer is dead,” Xavier grumbled. “All we have is battery-powered stuff, like this CO2 detector.”

“Have you tried hooking the generators up to the ship?”

“Less advice, more CO2 readouts, dad.”

“Stand by.” Vincent paused and Xavier heard the sound of typing in his head. After a few moments, his voice reappeared. “Five thousand parts per million,” he announced. Xavier swore. Ivan looked at him in surprise.

“Five thousand ppm,” Xavier relayed.

Ivan furrowed his brow. “Not good,” he replied. “Normally is five hundred. Maybe six. Five thousand now is way too early. I checked calculations myself.”

Xavier muttered a long stream of litanies under his breath. Five thousand ppm was well above the safe threshold for prolonged exposure. He racked his brain for explanations. Lab animals? Not enough of them. Welding gas leak? Not enough of that either. There was absolutely no reason for the high CO2 levels. Unless...

“Hey dad,” he asked, “how do these generators work?”

“Hang tight,” his dad replied. “I’ll ask Steve.”

Xavier second-guessed himself as he waited. It couldn’t be the generators. Steve knew better. It must be some flaw with the ship. Perhaps there was a fire on board, and the smoke detectors weren’t working.

“Heyo!” appeared Steve’s voice in his head. “The generators are great, aren’t they? I dug this old design out of the archives. Your ship’s too small to house one of our nuclear reactors, you see.”

“How do they work?”

“It’s quite ingenious! They turn chemical energy into electricity!”

“What’s the chemical reaction?”

“The combustion of hydrocarbons, of course! You have similar machines in StevieNix. I think you call them, diesel generators?”

Xavier swore. He’d counted over a dozen diesel generators on his tour. His exhaustion wasn’t caused by the recent stress - it was due to the generators burning all the oxygen in the ship. Levels were already high enough to give any health and safety inspector a stroke, and at the current rate, his entire crew would be long dead by the time the Building drifted out of the CORP in eleven and a half hours.

63. Operation Hearts and Minds

Stacy II was pleased with how well Sullivan had responded to being rescued, beaten, and threatened with torture. After a shower, a hearty meal and a glass of orange juice, he almost seemed excited at the prospect of helping her seize control of the Commonwealth. While she was still wary of him and salty about his having killed her mother, the odious man was turning out to be a wealth of information.

“Technically speaking, the entire government falls under control of the Chief Executive,” he explained.

“And the Chief Executive is elected via referendum?” she asked.

“Thus keeping the power in the hands of the people,” he replied.

Stacy II scoffed. What a ridiculous idea. No wonder the People’s Republic had been such a disaster.

“Of course,” Sullivan added, “in practice, the Chief Executive almost never gets his hands dirty. All decisions are handled by lower levels of the bureaucracy. Decisions only bubble up to his level once in a blue moon, and in those cases, he’s so far removed from the problem that he’s really no better than a magic 8 ball.”

“So why don’t you just replace him with a magic 8 ball?” Filbert asked, curiously.

“There was a referendum along those lines a few years ago,” Sullivan replied, smiling. “A ouija board, actually. It failed to pass. Turns out, people really like having a human to blame. That’s his main job.”

“How long has the current guy had the position for?” asked Stacy II.

“Almost a decade.”

Stacy II shot a glare at Filbert. In all of his long and tedious explanations of the moral superiority of the PR’s “direct democracy”, he’d failed to mention that power ultimately vested in a man who had ruled for ten years. Filbert avoided eye contact and turned slightly red.

“Is he popular?” she asked Sullivan.

“Not really. But he’s a good scapegoat. People like to blame the devil they know.”

Stacy II pondered this information. The CE’s grip on power was more robust than she had expected. Aside from lacking the divine right to rule, the Chief Executive didn’t sound too dissimilar from the monarch of the Theocratic Dominion. Slash the bureaucracy, install a state religion, and they’d be most of the way there.

“How would I go about becoming the Chief Executive?” she asked. “Without going through referendum,” she added.

Sullivan smiled. Although he wasn’t particularly fond of Stacy II or Filbert, his distaste for the pair was outweighed by his love for political machinations. His talents had languished woefully during his imprisonment, and had rarely even been fully exercised beforehand. This would be fun. Just the right sort of fun for a man of destiny.

“What do you know about succession?” he asked, coyly.

Stacy II smiled in response. “Tell us,” she said.

“I’m gonna need a pen and paper. It gets a little complicated.”

That evening, Stacy II logged on for her weekly coaching call with Amanda.

“How have you been?” Stacy II greeted her.

Amanda had been one of her first clients. Every Tuesday, from 4 to 4:50PM, the two women would hop on a Zoom call and Amanda would unload her emotional baggage onto Stacy II. Stacy II, in turn, tried her best to stay awake, stare earnestly into the camera, and offer cheerful affirmations.

“Ugh,” Amanda groaned. “My boss is just the absolute worst.”

“Oh darling,” Stacy II replied in a simpering tone. “What’s she done this time?”

Amanda worked as an assistant gymnasium inspector for the Department of Health. Aside from her willingness to pay Stacy II forty thousand satoshis an hour, Amanda had two other things going for her: Firstly, she hated her job, and secondly, as a government employee, she was technically - although very far down - in the line of succession to Chief Executive.

Amanda cried as she recalled her traumatic week. Stacy II tried earnestly to maintain rapt attention.

“And then,” Amanda sobbed, “after all that, she didn’t even notice my new leggings! She just walked right past me, and complimented Justine on her hair!”

“Oh, honey,” replied Stacy II.

“I know it’s dumb to get so upset over...leggings,” Amanda sniffed, “but it’s a pattern of behaviour, right? I swear it’s because I’m Scots-Irish, and she and Justine are both Anglo-Saxon.”

Stacy II raised an eyebrow.

“They’ve been treading all over us for a thousand years! Just as I thought we’d moved past it...”

Her puffy, fat, corn-fed face jiggled as she sobbed. Stacy II wondered how much time she spent utilizing the equipment of the gyms she was sent to inspect.

“Oh, sweetheart,” Stacy II consoled her, “she doesn’t deserve you.”

“You’re right,” Amanda replied, drying her eyes, “she doesn’t. What am I even doing here? Why am I wasting my youth at this stupid job, working for this Protestant cow? I almost want to move to somewhere exotic and eat/pray/love, you know?”

As a certified life coach, Stacy II wasn’t supposed to lead her clients in any particular direction. But if a client came up with an idea herself, and if that idea just so happened to benefit Stacy II’s ambitions...well, surely there was nothing wrong with lending a word of encouragement?

“You know,” Stacy II said carefully, “I think that’s one of the best ideas you’ve ever had. Your life should be about pleasing *you*, not pleasing...Anglo-Saxon Protestants.”

Amanda brightened up. "I could go to Spain," she fantasized. "Eat risotto on the beach. Get swept off my feet by a cute Mediterranean guy."

Stacy II didn't bother to correct her understanding of risotto's origin, or remind her of the "pray" element of "eat/pray/love". She was on the scent. "That sounds *amazing*, darling! Honestly, so much more fulfilling than..." she struggled for words that wouldn't demean Amanda's job. "Than hanging out with that *bitch*," she concluded.

"Maybe I'll go to a full moon party," Amanda giggled.

"What's stopping you?"

Amanda's face fell as she came back down to Earth. "My associate," she replied. "She's only just out of school. I can't let her report directly to that malicious cow, it would crush her soul. I'd never forgive myself."

Suppressing the urge to roll her eyes at the thought of a government-employed associate assistant gymnasium inspector, Stacy II pressed forward. "What if you found a replacement for yourself? Someone you trusted to shelter your associate?"

Amanda nodded. "That could work. But who?"

Stacy II moved in for the kill. "Well, it just so happens..."

Filbert's contributions to the effort were much less refined.

"Absolutely not," she stated. "The Commonwealth is too big. Any invasion is a suicide mission."

Filbert stared into the angry, hazel eyes of Jack's eldest daughter. For whatever reason, he found feminine annoyance to be an extremely attractive quality. Conveniently, he encountered it almost daily.

"It's not a full-on invasion," he attempted to explain. "We'll just be causing a bit of trouble, is all."

"A bit of trouble?"

"You know, a spot of domestic terror. Assassinations and such. Maybe a bombing or two."

"Why?" she asked. "So you can install that statist bitch you've been hanging out with?"

"Hey!" Filbert bristled, defensively. "Stacy II's not that bad!"

A wicked smile cracked through her annoyed facade. That was pretty attractive too, Filbert thought.

"A statist is 'not that bad', huh? Did her pretty face make you forget everything my dad taught you?"

Filbert narrowed his eyes. Surely, she was just toying with him now.

"She would slash the Commonwealth bureaucracy," he tried to explain. "That would make it more Anarchist than it is now."

“More Anarchist?” she laughed. “That’s like saying, getting raped by one person is ‘more consensual’ than getting raped by an entire gang.”

It kind of is, Filbert thought.

“You sound like a goddamned... *Libertarian*,” she added, spitting out that final word like it was rattlesnake venom she’d sucked out of a wound.

“I’ll make you a deal,” Filbert offered. “Once we get that ‘statist bitch’ installed, she’ll help you find the guys who killed your dad.”

Her facade finally shattered. Tears welled up in her eyes as she struggled to remain in control. “And then what?” she asked.

Filbert shrugged. “Whatever you like.” He paused, reflecting on the creative methods of torment he’d learned in New Australia. “Do you know what gibbets are?”

She shook her head.

Filbert explained.

She was on the phone within the hour, enlisting her friends into Filbert’s domestic terror squad.

64. Another day in the office

“Crap!” yelled Xavier, and flailed out of the way. Dozens of red-hot droplets of molten steel drifted away from his weld pool and across the engine room, before attaching themselves to the far wall.

“Wow,” Ivan chuckled, “you are really bad at this.”

“Why would I ever need this obsolete skill?” Xavier asked, angrily brandishing the MIG torch. “I bet I’m also bad at... mending oxcarts!”

“MIG welder is like hot glue gun. Much easier than mending oxcarts.”

Lacking the energy to fight, Xavier handed the torch over to his first mate. “All right old man, show me how it’s done.”

The middle-aged Russian man positioned the torch between their makeshift exhaust manifold and the hole they’d cut in the inner airlock door. He wiggled it a little until he was satisfied with the angle. “Is like this,” he said, squeezing the trigger.

Xavier’s visor darkened automatically to cut the blinding white light of the arc, and his ears were momentarily filled with the crackle of electricity. Then, Ivan stopped and ducked to avoid more red-hot droplets of liquid steel flying across the room.

Xavier glared at him.

“Okay, is a little tricky in microgravity,” Ivan said, excusing himself.

Eventually, they worked out a system whereby one of them would operate the torch, and the other would blow compressed air at the flying droplets in an attempt to corral them back to the weld. The result was a complete mess, but didn’t contain any obvious gaps.

“Think it will hold?” asked Xavier.

“Let’s see,” responded Ivan, smacking the airlock vacuum button.

Compressors groaned as they sucked the precious air out of the airlock. Xavier listened closely and heard a faint whistling from one particularly egregious weld.

“There,” he indicated.

They sealed the leak, and several more after that. Finally, the manifold was silent.

“Business time,” Ivan remarked.

Xavier nodded and pushed off the wall, floating towards the diesel generator that was currently powering their equipment and belching CO₂ into the room. Bracing against the wall, he shoved it in Ivan’s direction and then kicked off towards the eleven other generators that were floating in the center of the room. His head was spinning and his migraine was half-blinding. Venting the exhaust would prevent things from getting worse, but there was already a dangerous amount of CO₂ in the air. He prayed that the crew upstairs had found a solution.

As his condition decayed, each generator became harder to move than the last. One by one, Xavier kicked off the generator, launching himself to the wall and the generator to Ivan, who caught it and secured its exhaust to the manifold with tubes and hose clamps.

After what felt like an hour, all twelve generators were wired into the ship and venting their exhaust into the empty airlock. Xavier was shattered from the effort and his lungs felt like they wanted to catch fire and cave in.

“Come on, boss,” Ivan said, gently grabbing Xavier’s shoulders and shoving him towards the elevator shaft. “You look like man after long party in Vladivostok strip club.”

The elevator shaft wasn’t pitch black anymore. Light spilled into it from one of the twelve floors. Xavier’s eyes closed as they drifted towards it.

In his half-slumber, he noticed the light brighten through his eyelids. He felt Ivan grab the back of his shirt and wrest him in the direction of the light. After a few more manipulations, the air changed. It felt cool.

He opened his eyes and blinked. He was in one of the labs, along with the entire rest of the crew.

“Shut the door!” someone yelled.

Xavier turned his head to see Ivan shutting the door behind him.

“How did you go?” someone else asked.

“Mission accomplished,” Ivan responded, beaming. “And you?”

“It turns out, the metal-organic framework inside the supercaps loves CO₂,” the crewmember responded. “We’re ripping them all open. So long as you keep the damn door closed, we’re gonna make it.”

Xavier looked around the lab. Everywhere, Steve’s exotic machines were whirring, lights were blinking, and crewmembers were bustling back and forth, chattering and tinkering. A stranger who’d just arrived on-scene would have had no idea that this motley collection of scientists and engineers had just narrowly avoided a mass-casualty event. Everything had already returned to business as usual.

Xavier breathed an enormous sigh, and drifted back to sleep. Just another day in the office.

65. The Malicious Cow

The malicious cow stopped by Stacy II's desk. "Hi darling," she moo'd, "do you have that presentation ready yet?"

Stacy II quietly dug a ball-point pen into her thigh to distract her from the unfamiliar torment of maintaining a professional facade in a white-collar environment. "Not yet," she replied. "You only just told me about it last night."

"Okay, well, we're kind of on a deadline, you know?"

Stacy II smiled politely as she pictured Filbert's domestic terror squad hog-tying the malevolent bureaucrat and drowning her in the Pacific.

"I'll have it ready within the hour," she replied.

"Thanks, darling! Oh, and another thing. I realized that focusing on Eastern European gyms might be construed as a bit... well... I worry we might be sending the wrong message! Do you mind switching it to Polynesians? Thank you!"

With that, she strode off, leaving Stacy II staring at her nearly complete presentation on Sanitation Practices in the Eastern European Immigrant Gymnasium Community. She had worked on it all night. Stifling a sob, she deleted every slide after the title slide, changed "Eastern European" to "Polynesian", and started again.

"I'm not eating that!" Archibald objected, batting away the candy bar. "It looks like a dump!"

"You'll like it," Blake insisted. "Trust me."

"Like a solid, straight dump!"

Filbert was starting to feel some regret at having enlisted the two New Australians to join his domestic terror squad. But as he surveyed the rest of his rag-tag band of would-be miscreants, he was reminded that Archibald and Blake were the only two with actual, up-close, violent experience. With any luck, they'd soon move past their culture shock and instruct the others in their martial methods.

"Status report?" he asked.

Blake attempted to respond, but his mouth being full of chocolate, marshmallow and caramelized high-fructose corn syrup made his words unintelligible.

Archibald glared at him. "What my dump-eating superior is trying to explain," he interjected, "is that we've found her apartment. We knocked on the door after she left and there were like ten other people crammed inside. Mattresses all over the floor. You losers live in worse conditions than we do."

"What did you say when they opened the door?" Filbert asked, curiously.

"Pretended to be ceiling inspectors," Archibald responded. "That's a thing here, right?"

Filbert raised an eyebrow and looked at the rest of the team, who were similarly bemused. "I can't say that-"

"Anyway, their ceilings were crap," Archibald interrupted. "Made out of these foamy squares. They move when you touch 'em. I told 'em I'd give 'em a report and they'd have two weeks to sort 'em out."

"Okay, sure, whatever. So we can't nab her at her apartment?"

Blake finally swallowed his mouthful of confectionary and responded. "Nah, way too crowded. We'll have to get her on her way home."

"I thought you said yesterday that her commute's too crowded too?"

Blake nodded. "Yeah, it is."

Filbert sighed. "Anyone else got any ideas?" he asked the group.

Jack's daughter, Annabel, piped up. "Yeah, I had one."

"Beautiful," she exclaimed, snapping another picture. "Try to subtly clench your teeth as you smile, really make that jawline pop. There you go! What a hunk!"

"Thanks, Annabel," Blake responded, relaxing his jaw and running his hands through his recently styled hair. "Are we done yet?"

"No!" she replied. "Now we need to do the group shots! If you don't have at least one group shot, she'll think you're a psycho who wants to kidnap and murder her."

"Right," Filbert mused, tapping his arm impatiently. "Can't have that."

"It's already going to be an uphill battle," she smirked. "Let's not make it any harder than it already is. Now get in the frame and try to make Blake look charming."

Filbert got in the frame and tried to make Blake look charming.

"What a charming accent!" the malevolent cow remarked, over her extra large glass of house red. "Where did you say you were from?"

"Err," Blake responded, utterly unprepared. "Well, my parents are from Cocklebidly."

"Cocklebidly! What a lovely name. Is it nice?"

"Oh yes," Blake lied. "Very posh. They used to play golf."

"I'd love to visit some time! Will you take me?"

"How about I take you back to my apartment first?"

Filbert and Annabel, seated just within earshot, simultaneously winced.

"This was a terrible idea," Filbert whispered.

"I think it's going okay!" Annabel replied, defensively.

"I'm going to die from second-hand embarrassment."

"He's hotter than ninety-nine percent of these soy-fed twinkles," she hissed, gesturing around the restaurant. "He could say anything and she'll still leave with him. Mark my words."

Despite being resolutely disinterested in courting Jack's daughter, Filbert's blood ran hot at her compliment of another man's appearance. He realized that she'd found a new way of tormenting him.

"It's not going to work," he grumbled.

"Look!" she whispered excitedly. "There they go now!"

Filbert slammed his drink, grabbed Annabel's arm, and together they followed Blake and the cow out of the restaurant.

The cow was in love. She reflected on all those lonely nights she'd spent, drinking whiskey and swiping through profiles. The awful dates, with low-quality men who looked nothing like their pictures. The bad decisions - the more of which she'd made, the more whiskey she'd needed to drink to forget.

Finally, her prayers had been answered. A genuine stud of a man - sculpted from marble by Michelangelo and brought to life by divine magic - had not only shown interest in her, but invited her back to his apartment. His *own* apartment, where he lived *by himself*. She was so head over heels, that she barely noticed when an unmarked van pulled up next to them and the door slid open.

She heard running behind her. She turned and saw a young couple who had been at the bar, running up to her. She looked quizzically at the hunk, who inexplicably seized her, and with the couple's help, shoved her into the van. The three climbed in after her, the door slid shut, and the van was moving again before she had time to scream.

Twenty minutes later, the van was parked and she was unloaded. The stench of stale excrement filled her nostrils. They were in the lowlands. She retched as the three reprobates prodded her into an abandoned house and filed in behind her.

Her latest hire was standing in the hallway, smiling.

"Fancy seeing you here!" Stacy II exclaimed.

"You *bitch!*" she responded. "You absolute *bitch!*"

"You don't like your new digs?"

"I hope you burn in hell!"

"We can get you some air freshener."

"Your presentation sucked too!"

"I was pressed for time."

"People were practically falling asleep!"

Stacy II declined to answer. She folded her arms, tapped her hand and smiled at her patiently.

"Why the hell did you have to play with my heart?" the cow demanded. "And why have you dragged me to the septic?"

Stacy II laughed. "You want to get out of here?" she asked.

“Yes!”

“Okay,” Stacy II said. “Follow me.”

The cow followed Stacy II into the dining room. A laptop was open on the table, displaying a document. She read it. It was a letter of resignation, nominating her latest hire as her replacement. It included such phrases as “absolutely stand-out performer,” “vastly overqualified,” and “destined for greatness.”

“A bit on the nose, don’t you think?” she asked.

“Digitally sign it and send it to everyone above you. Then you can go,” Stacy II replied.

The cow sized up her adversary. She was petite. Although the cow wasn’t much of a fighter, she could probably subdue the tiny woman with ease. Crush her. Smother her.

Seeming to read her mind, Stacy II cleared her throat and nodded behind her. The cow looked over her shoulder and saw that the hunk and the couple had been joined by an assortment of underworld characters, brandishing crowbars, kitchen knives, and menacing-looking power tools whose names she didn’t know. The implication was clear. She pressed her index finger into the laptop’s fingerprint scanner, held her eye up to the camera, and digitally signed the document.

Stacy II stepped forward and closed the laptop. “Now that wasn’t so hard, was it?” she asked, as the miscreants closed in and seized the cow’s arms.

“What’s all this?” she asked. “You said I could go!”

“Of course you can go!” Stacy II replied sweetly. She reached into her pocket and pulled out a gold coin. “I just didn’t specify where.”

The cow sputtered and began to regret how she’d treated her underling. “Look, I’m sorry I insulted your presentation! It wasn’t that bad, honestly!”

“Death or transportation?” Stacy II asked, grinning. She flipped the coin, caught it, and slapped it on her wrist. Peeking under her hand, she grimaced.

“And I’m sorry about the Polynesian thing! I shouldn’t have switched the subject last-minute, I know!”

Stacy II chuckled. She was clearly enjoying this. The cow hated her with all her heart.

“Unlucky,” her adversary announced. “You got transportation.”

The cow relaxed a little bit. Transportation didn’t sound too bad.

Stacy II moved closer and whispered menacingly into her ear. “You’ll wish you’d gotten death.”

The stench of the stale human feces was replaced by the smell of her own breath, filling the black fabric hood that was secured over her head. She lost track of time during the long, cold boat ride. The hood was finally removed after what felt like days. Blinking in the light, she stumbled as she was pushed into a small room. No, not a room - a hyperloop shuttle.

The doors closed and away she went. They opened again hours later, and she stepped out into the midday sun. The air smelled of rotting meat, and she was immediately assaulted by flies. She seemed to be in some sort of village.

“Hello hello hello!” rang out a deep voice. “What have we here? Untended human capital, just hanging out by the hyperloop station?”

66. Space Fish

“Dad!” Xavier thought. “Dad dad dad! Come in, dad!”

“What is it, kid?” came Vincent’s voice into his head.

“I need money.”

“Hah!”

Xavier looked around the now-vacant lab. He’d dismissed the crew when they’d successfully crossed back into StevieNix Physics a few hours ago. They were all either drinking or sleeping, and the ship was once again fully functional. The CO2 scrubbers were working overtime, the nanobots had repaired the hole in the airlock, and the fusion engines were blazing, accelerating the ship at a comfortable 1g back to the budding Anarchist colony in the Asteroid Belt.

“It’s for your benefit! Hear me out!”

Vincent grumbled and Xavier continued with his pitch.

“You remember the help you had when you shrank conventional manufacturing down to nanoscale?”

“Help? You mean Russell? He was useless!”

“I meant the omniscient large language model.”

“Right. That was handy.” Vincent paused for a moment and added, “I guess Russell did code that.”

“Yeah. Anyway, guess what I don’t have?”

“An omniscient LLM?”

“Bingo,” Xavier thought. “And even if I did, it probably wouldn’t help, because *you* don’t have one.”

“I know,” Vincent responded. “We’re not in a sim. You are. But how’s money gonna help?”

Xavier explained his idea. When he was done, his dad seemed satisfied.

“I think Russell has a few bitcoin kicking around,” he mused. “Let me ask him.”

Xavier recalled how, while his dad had spent the last two decades of his life building islands and giving them away for free, Russell had operated a literal gold mine. A few minutes later, Vincent came back with Russell’s passphrase. Xavier typed it into his bitcoin wallet. When he saw the balance, he almost had a heart attack.

“Yeah,” he thought. “That outta do it.”

The prospect of earning an entire bitcoin for a Realistic Physics-compatible autonomous manufacturing robot energized the entire Anarchist space-faring community. Within a few days of the bounty being announced, the zone around the CORP started to get very congested. Ships and habitats of all sizes jostled for space to run their experiments inside the Cube of Realistic Physics.

Xavier was once again inundated with manufacturing requests. Everyone wanted their own set of Steve's equipment. Rather than spend weeks in the Asteroid Belt turning rocks into generators and photolithography machines, Xavier finished the job he'd set out to do two years ago: He democratized nanoscale manufacturing. Somewhat.

He built another ASIC, loaded it with instructions for building more ASICs, and handed the package over to the closest trustworthy person he could find - the captain of the *Nessie*.

"Now remember," he warned the captain, "if this falls into the wrong hands..."

"Yes, I know."

"We're screwed."

"Yup."

"Completely and utterly munted."

"Mhm."

"Dead. All of us."

"Yup."

"It's not that I don't want you to make more of them. I do. Just... This is serious."

"I was thinking we could perhaps make some sort of guild," the captain suggested.

Xavier laughed. "What, with like, secret hand signals and stuff?"

"If you like."

"Maybe a blood oath?"

"We can do a blood oath."

Xavier stared at his eyes. He couldn't detect the faintest trace of irony in the grizzled man's steely expression. He'd chosen well. "A blood oath sounds good. Get to it."

With that, Xavier and his crew returned to the Cube.

"They look like fishes," Ivan remarked, looking out at the scene.

Xavier chuckled as he watched the hundreds of vessels swarm together and enter the cube at the same speed at one end, while hundreds more drifted out the other end and ignited their engines, navigating their way back round to the entrance. Ivan was right - they resembled a school of fish swimming in laps, entering and exiting a glowing section of pipe hovering over an invisible sea floor.

"Shall we join them?" he asked.

"Let's do it, boss!" his first mate responded.

They were too far behind to win the bounty for the first autonomous manufacturing robot - that bitcoin was claimed by a team of twenty out of New Gangnam. The next size down was won by their rivals from New Vienna. Past that point, progress became harder. So many

individual technological breakthroughs were necessary that Xavier and his team spent more time crafting bounties than trying to win them.

“We need better optics,” Ivan pointed out. “The robots are already guessing where things are. There’s no way anyone can shrink again with these cameras.”

“What do you think?” Xavier asked. “0.01 bitcoin for a camera with... micrometer resolution?”

“No. Smaller. You don’t want to make it too easy.”

The camera was achieved a few days later. A Whale Fund startup claimed the bounty, and the CAD design was distributed all over the Internet.

“You getting all this, dad?” Xavier thought.

“Loud and clear,” Vincent responded.

“Does it actually work up there?”

“We’ll know once the robots finish building it. But if it’s anything like the last two designs you sent up, it’ll work just fine.”

“Who needs an omniscient supercomputer when you have unlimited funds and raw human intelligence, huh?”

Vincent chuckled. “Those funds are very much limited, kid.”

“We haven’t even made a dent.”

“Watch yourself, money spends faster than you think.”

Xavier smiled and posted another bounty. He knew he’d done a good job, even if his dad wouldn’t admit it.

67. Collateral Damage

“You can’t just keep disappearing people,” Sullivan cautioned her. “One more mysterious retirement and someone’s going to be thumbtacking photos to the wall and stringing yarn back to a picture of your face.”

Stacy II sighed. She’d already been looking forward to giving her new boss the ‘death or transportation’ treatment. “This innocent face?” she asked, batting her eyelashes at Sullivan.

“There needs to be a story,” Sullivan replied, ignoring her. “One that explains all these people leaving their posts.”

“Plague?”

“Not targeted enough.”

“Syphilis?”

Sullivan glared at the smirking young lady. “This is serious. You had Filbert build a domestic terror squad, remember? What did you think that was for? Kidnapping, catfishing and joking around?”

Stacy II’s face fell. She’d been trying to avoid this line of thinking.

“Grow up,” Sullivan snapped harshly. “You want to manipulate the levers of power? Subvert a political system and install yourself as dictator? It’s time you came to grips with the volume of blood that needs to spill to make that happen.”

She wiped her sweaty palms on the hem of her bright red dress as she sat and stared at the enormous stone pillars of the casino. The timer was already set, she told herself. One minute and fourteen seconds to go, and there was nothing she could do about it.

“You didn’t seem to mind so much when it was New Australians,” her mom’s voice appeared in her head.

“That was different!” she retorted. “They were basically savages. These people are...”

“Like you?”

Stacy II sighed. “Yeah,” she thought. “They’re like me.”

“Then they’ll understand,” the elder Stacy replied. “It’s not personal, sweetie. It’s just politics.”

Stacy II chewed a fingernail. She was starting to dislike politics.

She looked around the lavishly decorated casino floor, which had been rented out entirely for the Department of Health’s monthly Leadership Summit. Having studied the department’s org chart for months, she recognized most of the faces in the room. She maintained a perfect deadpan expression as she watched them drunkenly stumble around the floor, playing grab-ass and pissing away their taxpayer-funded per diems at the roulette wheel.

Then, her eyes flicked to the dealers behind the tables, the servers carrying trays of canapés, the security guards watching over the blackjack tables. It was relatively easy to suppress her

concern for the lives of the government employees. But the collateral damage? That was a tougher pill to swallow.

“Don’t you have to go?” her mom asked.

Stacy II checked her phone. Nineteen seconds left.

When the countdown hit eleven seconds, she got up from her chair and started walking towards the pillar.

“Slow down,” her mom cautioned. “You’re power-walking.”

Stacy II swore silently under her breath. She had lost track of the number of times she’d practiced this walk. She had trained and trained, until it was repeatable down to the hundredth of a second. And now, with her heart pumping and adrenals on full throttle, she was all over the place.

“Three,” she counted internally as she approached the pillar.

“Two,” she recited, her mom joining her.

“One.”

The fiery blast ripped the crowded casino floor to shreds as she crossed behind the shelter of the stone pillar.

“Too jacked,” Annabel said, shaking her head at the screen. “Less 80s action figure, more basement nerd. And lean harder into the terrorist aesthetic.”

Filbert deleted his prompt and tried again, typing **scrawny nerd balaclava ak47 anarchist flag** into the text field and clicking “generate”. An image appeared of a slender man in a balaclava, toting an ak-47 in front of an anarchist flag.

“That’s it!” Annabel said, approvingly. “That’s our guy! Save it!”

Filbert saved the generated image to his hard drive and flipped over to the video generator.

As they waited for the video to generate, he tried making small talk.

“Do you feel bad about the people we killed?” he asked.

“Huh?” she responded. “We didn’t kill any people.”

Filbert looked at her, confused.

“Only government employees,” she smirked.

“What about the casino staff?”

Annabel shrugged. “Conspirators in a criminal enterprise. Don’t want to get blown up? Don’t accept blood money.”

Filbert nodded, satisfied that his subordinate had fewer ethical qualms about their actions than he did. As it should be.

The video finished rendering, and they clicked ‘play’. A high definition video played of the balaclava-nerd speaking into the camera. In less than a minute, their avatar claimed

responsibility for the attack, blamed the Commonwealth for bringing it upon themselves, and vowed further violence if they didn't immediately retreat from the islands formerly known as The Anarchy.

"Pretty good," Annabel remarked, "but way too HD. Jack up the contrast and run it through an early 2000s potato-cam filter."

Filbert jacked up the contrast and started looking for such a filter.

The photo of Stacy II in her bright red dress, surrounded by dust and pulling a survivor from the rubble, was shared over a hundred thousand times on social media. "Dress lady" became not just the image associated with the event, but an icon of bravery, heroism, and the selfless devotion to the public that the Commonwealth Government so tirelessly worked to achieve.

Stacy II was so overwhelmed with interview requests that she had to stop answering her phone.

"I was in such shock," she recalled to one interviewer, "that I didn't have time to think. I just followed my instincts, you know? And I saw this poor man - I think he was a waiter - trapped under a beam, and I just..."

She paused to stifle a sob.

"Oh darling," the interviewer cooed, handing her a box of tissues. "Take all the time you need. You are so brave. So, so, brave."

Stacy II sniffed.

68. The Volunteer Space Force

Every time Stacy walked into the office, there was someone new there. Now that the three monkeybots had managed to produce exciting technology without killing anybody, everyone suddenly wanted to join the team.

As the Project Manager, Stacy suddenly found herself inundated with work.

“Hi Stacy,” said one of the recent additions to the team. “Do you mind if I get a few minutes on the fab today? There’s a new carbon-titanium lattice I want to try out.”

Stacy checked her spreadsheet. “Sorry,” she apologized, “the earliest slot I have is six minutes on Monday at 3:18AM.”

The person grumbled but accepted the slot and wandered off back to his computer to watch the developments in the Cube of Realistic Physics.

“Getting pretty tight, aren’t we?” Russell asked.

“He’s lucky he only wants a few minutes,” Stacy responded. “The next full hour is almost three weeks out.”

Russell sucked air in through his synthetic robot teeth and shook his head. “We need more fab space,” he remarked.

“I’ve already asked Murdoch,” she replied.

That afternoon, a meeting was called. The three AIs entered into the conference room together and greeted Steve, who was already there. Murdoch arrived a few minutes late, and shut the door.

“Thank you all for coming,” he greeted them. “How’s everything going?”

“Pretty good,” Stacy responded. “We need more space, though. Everyone’s crammed in here and the fab is way over capacity. It’s taking weeks to make anything.”

Murdoch nodded. “Annex building five,” he said simply. “It’s just filled with die presses and stuff. Just turn everything there into nanobots.”

“Building five is a good start,” Stacy replied, “but we need more. One extra building won’t let us clear the backlog.”

Murdoch pondered a few moments, clearly reluctant to turn over any other buildings. “Can these robots manufacture new buildings?” he asked Russell, Vincent and Steve.

“Easily,” Vincent replied.

“How long will that take?”

“Assuming you’ve got the raw materials... maybe one day per building?” Vincent estimated.

Murdoch nodded. “Good. Get me a bill of materials and I’ll take care of them tomorrow. Then you lot break ground the day after that, and then I never want to hear about capacity issues again. Deal?”

“Deal,” Stacy responded. Her meticulous spreadsheet schedule was about to be shredded, but it would be worth it.

“Excellent,” Murdoch continued. “Now that’s out of the way, let’s get to the actual agenda item.” He interlaced his fingers and leaned forward onto the table. “The tech transfer appears to be going quite well,” he started.

The rest of the room nodded.

“Assuming we get our fab issues sorted, we’ll be in orbit in a matter of weeks.”

More nods.

“We could have an interstellar spacecraft in as little as a month.”

Stacy glanced at her doomed spreadsheet. The timing seemed aggressive, but not impossible. Innovations were popping out of the sim at a blistering pace, and from what she’d gleaned from the boys, interstellar travel wasn’t nearly as much of a challenge in Realistic Physics as it was thought to be down in StevieNix.

“So my question to you lot is, what will our first interstellar mission look like? Who will go, where will they go, and what equipment will they need?”

Stacy watched as the boys argued for the next twenty minutes, occasionally being subtly guided in particular directions by Murdoch’s leading, Socratic-style questions. Slowly, a picture emerged.

The first mission would be a scouting trip to Sirius. The craft would be the smallest possible vehicle that could get them there and back - a tin can with a fusion rocket. As for who would go, the ideal crew would have little-to-no life support requirements, the ability to withstand extremely high g-forces, and not be too missed back home.

Murdoch’s questions to the monkeybots got more pointed.

Eventually, Russell caved to the manipulative businessman’s pressure. “I’ll go,” he volunteered.

Murdoch nodded. “Good man,” he replied. “You’ll need a crewmate though.”

Stacy flushed as she felt everyone’s eyes flick in her direction. She didn’t want to go to the disappeared star. She wanted to stay where she was. She was perfectly happy playing Project Manager, enjoying her coffees with Gabe, and keeping an eye on her husband and children in StevieNix. They needed her! The number of times she’d helped her daughter out of a jam...

The room was silent. The decision had already been made. Everyone knew who Russell’s crewmate would be, the only remaining matter was for her to accept it.

Stacy looked down. The other day, while she was changing, she’d noticed an inscription on the bottom of her synthetic foot - *Property of Murdoch Heavy Industries*. Property. Property doesn’t get to choose its fate, but it can choose the amount of dignity it has on the way.

“I’ll come with you,” she volunteered.

“Excellent,” Murdoch replied, smiling. “It’ll be loads of fun, I’m sure! If not, perhaps there’s some way to hibernate you. Hah! Thank you all for coming, meeting adjourned!”

The rest of the team filed out of the conference room, leaving Stacy and Russell to sit in silence, bewildered.

“Excited?” asked Russell, breaking the silence.

Stacy forced a smile. “Of course,” she lied. “I just hope they serve good food on board.”

Russell laughed. “The finest rehydrated nutrient packs money can buy,” he said.

With that, he got up and left the room, leaving Stacy alone to ponder the prospect of being shot off into outer space with some nutrient packs and a very low likelihood of return.

She really, really preferred the spreadsheets.

69. Out of Control

“I did it!” Stacy II announced, beaming with pride and waving a folded piece of paper. “I got the job!”

Filbert took the letter from her outstretched hand and unfolded it. It was a printout of an email from the Chief Executive, nominating Stacy II to direct the Department of Health. “Congratulations,” he said. “You’re getting pretty close!”

“He mentioned my ‘indomitable courage in the face of danger,’ ” she bragged, skipping round the room.

“What happened to the previous director?” asked Sullivan.

“She quit,” Stacy II gloated. “Couldn’t take the pressure. Something about her children being kidnapped or whatever.”

Sullivan glared at Filbert and shook his head. “You’ve gotta rein in your squad,” he said, pulling out his phone and pulling up an article. He pushed his phone towards Filbert. “This is getting out of hand.”

Filbert swivelled the phone around and read the headline.

“Bombing at Department of Commerce Headquarters,” he read aloud.

Stacy II moved next to him to get a better view of the screen. “Twelve killed, thirty injured in fourth terror attack this week,” she read.

Filbert pushed the phone back across the table to Sullivan. “That wasn’t us,” he said. “We’ve been laying low since the casino.”

“Bullshit,” Sullivan responded.

“I’m serious! It wasn’t us!”

“Do you actually know that?” Sullivan challenged him. “What about those savages you imported from the penal colony? What are they doing when you’re not watching them?”

“Probably binge watching *Sex and the City*”, Filbert laughed. “They discovered it two days ago and have already made it up to Season Four.”

Sullivan opened his mouth, and after a few seconds to take in this newfound information, closed it again without saying anything.

“I’m positive it wasn’t anyone in my crew,” Filbert reassured him.

“Then who was it?” Stacy II demanded. “And who kidnapped the director’s kids?”

Filbert bit his bottom lip.

“I can’t say for sure,” he said cautiously, “but...it could be wannabe recruits. We’ve been getting bombarded with emails.”

The others stared at him incredulously.

“People are bombing government offices and kidnapping children to try to join your domestic terror squad?” Stacy II asked.

“Balaclava guy’s domestic terror squad,” Filbert corrected her. “My squad doesn’t exist, remember?”

“Do you respond to their emails?” Sullivan asked. “Do you let them join balaclava guy’s squad?”

“Of course not! I assumed half the emails are from feds.”

“And the other half? Are they just going to keep wreaking terror until balaclava guy responds?”

Filbert looked down at the desk. He wasn’t enjoying this interrogation. As far as he was concerned, he and his team had done their jobs perfectly. Whose fault was it that the Commonwealth was being rocked by copy-cat attacks? He wasn’t sure, but it certainly wasn’t his. Truth be told, it was probably the Commonwealth’s fault for inspiring such grassroots anger in the first place.

“What are you going to do,” Stacy II asked slowly, “when I win? How are you going to stop the attacks once I become Chief Executive?”

Filbert swallowed. He hadn’t thought of that.

Annabel was unimpressed when he relayed the conversation to her later.

“What are they complaining about?” she asked. “The operation was a total success.”

Filbert sighed and cast his eyes about the abandoned warehouse his team had repurposed as their headquarters. Most of the team was sprawled across a random assortment of couches and chairs set up around the TV. They’d moved on to Season 5. He could sense a spiritual malaise spreading among his recruits. Laying low didn’t suit them.

“I think they just worry it’s gotten out of control,” he replied. “With all the copycat attacks and stuff.”

“Isn’t this exactly what she wanted?” Annabel demanded hotly. “‘Government employee’ is now the most dangerous job in the Commonwealth. People are resigning in droves. It’s perfect cover.”

“Yeah, but-”

“Honestly, it’s enough to make me feel totally unappreciated,” she continued. “If ‘Queen Stacy the Ungrateful’ doesn’t like our work, maybe she can conduct her own domestic terror attacks.”

Filbert buried his face in his hands and tried to ignore the TV blaring in the background. Dealing with interpersonal drama was rapidly becoming his least favourite aspect of management.

“How would you proceed?” he asked.

Annabel sighed. “Respond to the emails,” she replied unenthusiastically. “Even if we aren’t going to recruit these wannabes, we can at least try to cool them down.”

Filbert nodded. It wasn’t a bad idea. Even if half of the emails were from feds, what would they complain about? It’s not illegal to try to *prevent* terror attacks.

Just as he pulled his phone out of his pocket, it started ringing. He answered it and put it to his ear.

“Hello?” he asked.

“Is this Dress Lady’s boyfriend?” asked a deep, distorted voice on the other side.

“Err...” Filbert replied, unsure of how to respond.

“Because you’re going to have to break open the piggy bank if you ever want to see her again,” the voice continued.

“I don’t have a girlfriend,” Filbert finally responded. “You must have the wrong number.”

“Please hold,” the voice replied.

Filbert’s pulse quickened as he looked across the table at a confused Annabel.

“Who is it?” she mouthed.

He ignored her.

After an agonizing several seconds of silence, Stacy II’s teary voice crackled over the phone.

“Filbert?” she asked. “Oh God, Filbert, please help me!”

Filbert’s eyes widened in shock. He didn’t want to believe it.

Stacy II sniffed. “They’re saying they’ll kill me if you don’t cough up two kilos of gold.”

Filbert swore quietly. Could they really have gotten to her? And where was he going to find two kilos of gold? They wouldn’t really kill her, would they?

“Please, Filbert,” she sobbed. “I think they’re serious.”

The line went dead. Filbert looked at it, confused and white as a sheet. He tried to redial the number, but it was private. He looked across the table at Annabel. He had no idea what to do.

“What’s all this about a girlfriend?” she asked, annoyed.

70. Orbital Chicken UX

The freezing cold ocean spray flew over the side of their small boat and drenched Stacy through her clothes and to her robotic skin. Praying that her monkeybot was waterproof, she retreated back into the cabin and shut the door.

“Last time I was on a boat with you, we almost died,” she remarked to Russell.

“And look at us now,” he smiled back. Then, his face dropped a little as he remembered the stakes. “Of course,” he added, “if we die this time, it’s actually for real.”

Stacy tried not to think about his comment. Stumbling forward, she grabbed a handrail for balance as the boat crested a wave and came crashing down into the trough.

“Remind me why we can’t just launch from land again?” she asked Russell.

“Murdoch was pretty evasive when I asked,” he replied. “I suspect that FEDSEC hasn’t been made fully aware of the purpose of the orbital ring. They think it’s an interstellar radio or something.”

Stacy nodded. If she had learned anything about the Federal Department of Social Emotional Calibration, it was that they were best kept in the dark.

“Well, you’d think they’d have given us a bigger boat,” she grumbled.

“Too visible,” he shrugged. “Just be grateful we have a cabin this time.”

Stacy groaned, laid down on the floor, and shut her eyes. She was pretty sure her monkeybot couldn’t vomit, but it sure felt like it wanted to.

She was woken by Vincent’s voice crackling over the radio. “Approaching the launchpad!” he announced.

She clambered to her feet and made her way to join Russell at the front of the cabin. “See it?” she asked, staring out into the blackness beyond.

“Nothing,” he responded.

She pressed her face to the glass, trying to make out any shapes in the dark, moonless night. She might as well have been blindfolded.

Without warning, the boat thudded and came to a sudden stop. Her face smacked against the window. It hurt, just like a real face would have.

“You have arrived at your destination,” Vincent announced.

“Couldn’t have brought it in more smoothly?” Russell asked, picking himself off the floor.

“Be thankful you got there,” Vincent muttered. “I’d like to see you navigate here without GPS.”

Stacy stayed out of the argument. Navigating to a raft in the middle of the ocean was one thing. Navigating to a vanished star in the outer reaches of the galaxy was a whole other challenge.

She opened the cabin door and stepped out with Russell onto the deck. As her eyes adjusted to the low light, she made out her home for the next three months - a house-sized black cylinder lying on its side, above which loomed an enormous balloon.

Russell pointed at one end of the cylinder. "Fusion rockets," he explained. Then, panning over to the other end of the cylinder, he said "living quarters."

Picking up his bag, he walked towards the living quarters. Stacy nodded to no one in particular, and followed.

"What do you mean, I have to accelerate it? I need to slow the shuttle down to drop the tether," crackled Vincent's annoyed voice on the radio.

"It's relative, remember?" replied an exasperated Xavier. "To slow down relative to you, the shuttle needs to speed up relative to the ring."

"This is terrible UX," Vincent grumbled.

"You do realize that the orbital ring is spinning, right? It's in the name. It orbits."

"Who designed this interface? Don't tell me you did it."

"Come on, dad. It's not that bad."

"A chicken could have done a better job."

"Dad-"

"I'm serious. Next time you need to make a user interface, just grab a chicken and scatter some grain on a keyboard. It'll produce a more usable design."

The father/son duo had been bickering on the shared line for ten minutes. Stacy drummed her fingers nervously and glanced at Russell, who responded with a look that said "man, I really hope these idiots figure this out." Stacy reflected for a moment on the expressive realism of his monkeybot's prosthetic face, before turning her attention to the window. She could just make out the ocean, kilometers below the high altitude to which they'd risen with the balloon.

The faintest rays of sunshine were just starting to light up the sky. If Vincent and Xavier didn't get the launch mechanism figured out in the next few minutes, they'd lose the cover of darkness - and with it, any remaining pretense that the orbital ring was an interstellar radio antenna. FEDSEC would begin raids almost immediately. She could imagine them confiscating all electronic devices, which would imply the powering down of StevieNix and the death of everyone she loved. If Steve had thought to install sweat glands, her palms would be drenched right now.

Her wandering mind was snapped into the present by Vincent's excited voice. "Finally! Prepare for launch!" he announced.

She sighed in relief and looked again at Russell, who was tightening his straps on his five-point harness. She did the same while craning her neck upwards, trying to spot the descending tether in the dim morning light. All she could see was the enormous black balloon above them.

The spaceship clunked. “Tether attached,” Vincent announced. “Now, let me guess - to take off, I have to decelerate the shuttle?”

“Correct,” Xavier responded. “Because the ring is spinning.”

Stacy could sense Vincent’s paternalistic, teasing smile over the crackle of the radio. “Seriously, get a chicken” he replied. “It’ll help. Anyway, hold on tight!”

The balloon released the ship, and Stacy let out an involuntary yelp as the support of her chair disappeared and the entire cabin entered a sickening freefall. A moment later, she was slammed back into her chair in a violent jerk as the tether taughened. Kilometers above them, attached to the orbital ring, the shuttle started accelerating - or decelerating, or whatever.

“Oof,” groaned Russell. “This sucks.”

Stacy struggled to reply. Once again praying that her monkeybot didn’t have the ability to puke, she closed her eyes and gripped her armrests. Bracing against the enormous g-forces, she and Russell hung on for dear life as the craft was yanked up through the atmosphere and flung out into space.

71. Doomsquad69

"I've seen enough!" Annabel announced, tapping the laptop screen. "These are definitely our guys."

"Doomsquad69?" Filbert asked, attempting to rub her fingerprint off with his sleeve. "How do you know it's not one of the other groups that emailed us with kidnapping plans?"

"Doomsquad69's proposed targets are way more high profile. Plus, they appear to have actually gone through with it."

Filbert winced as she demonstrated her point with more screen tapping. Still, she had a point. The latest message from them read, "We got another one. Some fancy government exec. Wanna meat? We could teach you a thing or too."

"But they're idiots," he objected.

"Yeah," she replied. "A bit embarrassing for Stacy II to be honest. Being kidnapped by a bunch of... differently abled people. Still, I bet you anything, it's them."

Filbert gave one last vain attempt to clean the smudges off his screen before giving up and typing out a reply to the email.

"You don't look like balaclava guy," the leader of doomsquad69 objected through a mouthful of pain-au-chocolat.

"You don't look like a criminal mastermind," Filbert replied, sizing up the scrawny teenager across from him. Harold, as he'd introduced himself, looked horrendously out of place in the boho-chic café - resembling instead someone who resided in a trailer park and trapped squirrels for food.

"Looks can be deceiving," Harold remarked, finally swallowing his mouthful and reaching for his oat flat white. "How do I know you're not a fed?" he asked.

"You're the one who emailed me. How do *I* know *you're* not a fed?"

"Would a fed do this?" asked the kid, fumbling in his bag. Eventually, he pulled out a handgun and aimed it across the table at Filbert. As if they'd sensed the sudden escalation, the other patrons of the café went quiet and all Filbert could hear was the whistling of the barista's steam wand.

"Put that away," he whispered harshly, "you total moron."

The scrawny teenager thought about it for a moment, before sheepishly putting the gun back in his bag. The buzz of conversation returned to the café, albeit quieter than before.

"You've made your point," Filbert continued with his voice lowered. "There's no way a fed would be that stupid."

"Don't mess with me," Harold warned.

Filbert bit his tongue and tried to move the conversation forward. "What are you after?" he asked.

"Huh?"

“Why did you contact me?”

“Oh. Yeah. doomsquad69 would like to collab.”

“Okay. Your proposal?”

“We need a base of operations. And additional firepower.”

“Right,” Filbert responded, taking a sip of his latte and resisting the urge to roll his eyes.

“And what do you have to offer in return?”

The adolescent leader of doomsquad69 locked eyes with Filbert and tapped his temple. “Strategic brilliance,” he replied, without a hint of irony.

Filbert laughed so hard he choked on his coffee and spat it all over the table.

The moving van parked in front of the warehouse and Harold jumped out of the driver’s door, followed by two other boys of similar age, build, and demeanour.

“Ladies and gentlemen,” announced the leader, “I present to you - doomsquad69!”

The two newcomers bowed in sync, to scattered and unenthusiastic applause from Filbert’s group.

“What’s in the van?” asked Annabel, stepping forward and gesturing to the cargo hold. She froze mid-step as the two henchmen responded to her appearance with lecherous leering and animalistic guttural noises. Grimacing, she retreated behind Filbert, who puffed out his chest and tried to look tough.

“Glad you asked,” Harold beamed, striding to the roller door at the back of the van. “Solid gold! Well, close enough. It’ll be gold soon.”

He unlocked the padlock and pushed the door upwards. Filbert and his crew were immediately blasted by the shockwave of stench emanating from the hold. As Filbert recovered his senses and turned back to the van, he made out a disheveled Stacy II, gagged and chained to six other miserable people. Two of them appeared to be children, and the rest were clad in filthy, grime-encrusted business casual office attire. He met her eyes and she stared back at him silently with a desperate, pleading expression.

“People are going to pay gold for these?” he asked Harold. “They look like you dug them out of a septic tank.”

“We might have to clean them up a bit,” Harold admitted.

“Is this where you’ve been keeping them?”

“Yeah,” Harold replied, wrinkling his nose. “Now you see why we need a new base of operations?”

“Preferably one with a toilet,” Annabel remarked.

Harold rolled his eyes. “Whatever.”

Filbert broke eye contact with Stacy II and nodded back towards the warehouse. “Well,” he said, “guess you better bring them inside.”

“How do we get rid of them?” Annabel whispered, subtly pointing her chin at in the direction of doomsquad69.

Filbert surveyed the trio. The two subordinates were playing a game involving jumping between the coffee table and the couch, and Harold was struggling to carry an entire week’s worth of communal rations out of the pantry.

“I don’t know,” Filbert whispered back. “I didn’t think we’d get this far.”

“We might have to...you know.”

“What?”

She held her hand up to her neck and made a tiny throat-cutting gesture.

Filbert looked at her, incredulously.

“Send them to Steve and let him figure it out,” she explained.

“I thought you only wanted to kill statistis.”

Annabel shrugged. “They might be statistis. Also, one of them stole my toothbrush.”

Filbert scanned the scene in the warehouse. Blake and Archibald were leaning against a wall, muttering to each other and looking displeased at the loss of their couch. If he didn’t take action soon, he wouldn’t be surprised to find a mutiny on his hands. While he didn’t particularly want to kill doomsquad69, it seemed like the most practical way of resolving the situation. After all, they’d seen his headquarters now and he didn’t exactly trust their approach to operational security.

“Pleeeeeease?” Annabel pleaded, batting her eyelashes at him.

Filbert sighed and nodded. “Fine,” he conceded.

Annabel broke out into a gorgeous smile. “Thanks, Filbert!” she replied. “I’ll go tell the others.”

Filbert struggled internally as he watched her saunter around to the other members of the team and deliver the news. His eyes wandered to the corner where they were keeping Stacy II and the other prisoners. She hadn’t stopped staring at him, her piercing glare boring a hole in his skull. He sighed, got up, and strolled nonchalantly to the armory.

72. Octagonal Occlusions

“That’s not a Dyson sphere,” Russell remarked. “That’s... I have no idea.”

Stacy was still groggy from her six weeks’ hibernation. She squinted out the window at the spot where Russell was pointing.

“I don’t see anything,” she said.

“Zoom in,” Russell advised.

Stacy always forgot that her monkeybot could do that. Focusing on the spot, she zoomed her vision in.

“Whoa,” she said.

As she dialled in her focus, she saw what he meant. It looked like a circular window which had been mostly covered up with tiny octagonal stickers. Faint rays of light shone through the cracks, like a piece of abstract art by someone who loved geometry.

“Did they papier-mâché over the star?” she mused.

Russell didn’t answer. He was too busy studying the bizarre shape that was covering Sirius.

Some time later, Russell broke the silence again. “It isn’t one structure,” he mused. “It’s thousands of little ones. Maybe millions.”

“How do you know?” Stacy asked.

“The patterns change,” he replied. The big octagons move faster than the little ones. I think it’s all orbiting solar panels.”

Stacy nodded. Orbiting solar panels made sense, sort of.

“We’ll see soon enough,” she said.

Just then, a red light started flashing on the ceiling and a klaxon started blaring. “Burn down in sixty seconds,” a robotic voice announced. “Please return to your seats and fasten your seat belts.”

Russell looked at Stacy and forced a weak smile. “Guess we will,” he replied.

Stacy clipped into her harness and gripped the straps as the robotic voice counted down. She clamped her eyes shut as the count reached the final ten seconds and the ship began to rotate. Finally the count hit zero. The fusion rocket ignited, and she was crushed into her chair.

“Burning down” the robotic voice announced. “Thirty-six hours remaining.”

She tried to say something to Russell, but her mechanical diaphragm wouldn’t move. In fact, nothing could move. Her entire body felt like it was being squashed by a hydraulic press, and the ship itself shuddered and creaked under the enormous force. She’d been warned that deceleration would be brutal, but this was something else.

To any sentient life surrounding Sirius, the nuclear exhaust from the fusion engine would look like a new star had appeared in the sky. The harder they decelerated, the less time the life would have to react - Steve and Vincent had thus chosen the hardest deceleration they

could manage without the ship coming apart. Her comfort, she surmised, had not been part of the equation.

The next thirty-six hours would suck.

73. Condemned

Filbert avoided meeting Stacy II's eyes. Still gagged and chained in the hostage corner, her glare had somehow managed to get even more impatient. Filbert didn't need that kind of pressure.

He watched Blake and Archibald stroll nonchalantly into their position behind the couch, handguns awkwardly jammed into their pants behind their backs. He wasn't sure that the New Australians had ever operated firearms before, and regretted not having spent time on a range training them up.

With any luck, he hoped, they wouldn't have to fire them today either.

Once the final two reached their positions, the entire team was ready. Filbert felt their eyes on him as he stepped towards the three unsuspecting members of doomsquad69, drew his pistol, and-

Bang. The explosion sent Filbert reeling, as his eyes burned with white and his ears rang with the high-pitched squeal of a braking freight train.

Bang. Another flash grenade exploded, farther away this time. The warehouse began to fill with smoke. Filbert's brain finally figured out what was happening as the staccato of automatic gunfire broke through his ringing ears.

"Everyone down!" he shouted. "Cover doors and windows!"

A door was flung open, and he watched helplessly as one of his team members ran out and was immediately felled by automatic gunfire. Someone screamed, and the rest drew their handguns.

Harold and the rest of doomsquad69 looked at all the suddenly-armed people around them, dumbfounded. Harold caught Filbert's eye and opened his mouth, but Filbert never heard what he had to say. Another warehouse door was flung open and the black uniform-clad Commonwealth Special Forces began pouring in.

His team opened fire. The isolated pops from their handguns were met by rapid bursts from the Special Forces' automatic weapons. They were horrendously outgunned. Crouching down and praying that the hostages were unharmed, Filbert groped his way back to the armory. On his way, he bumped into Annabel.

"Pigs!" she shouted at him.

He didn't respond, just grabbed her arm, pulled her into the gun-filled broom closet, and handed her a pair of railguns.

"Hand them out!" he explained.

Annabel nodded and peeked round the door frame, before yelping and retreating. A short three-round burst of gunfire followed and punctured tiny holes in the thin, corrugated steel far wall of the closet.

Filbert stared at the cowering, terrified young woman in front of him and realized that he'd as good as killed her. Playing domestic terrorist is all fun and games when you're on the leading foot, but what now? By enlisting her into his squad, he'd basically condemned her

to death. She was dead, he was dead, and Stacy II would probably be killed in the crossfire as well.

“Goddamn it,” he muttered, slumping against the wall.

“We’re dead, aren’t we?” asked Annabel, forcing a weak smile. The sound of gunfire continued in the background, although the shots were becoming less frequent.

“Pretty much,” he replied. “I’m sorry.”

“Don’t be,” she said. “I get to see my dad again.”

Filbert’s eyes opened. He’d been so focused on their domestic conflicts and Stacy II’s ascension that he’d forgotten the big picture. There were Gods around.

“Steve!” he thought, clamping his eyes shut and balling his fists. “Steve Steve Steve!”

“What are you doing?” Annabel asked, looking at his weirdly scrunched up face.

“Shut up!” he explained, and continued trying to summon Steve.

74. Good knowing you

“They’re parachutes!” Russell exclaimed. “Look!”

Stacy groaned. She didn’t feel like looking. Thirty-six hours of insanely high g-forces had left her body feeling like it needed a rebuild. Her fluids had settled in all the wrong places and she was pretty sure some of her bearings had deformed. She needed some sort of... monkeybot spa.

“Just shake it off,” Russell advised. “You really gotta check this out.”

Stacy unbuckled her harness, floated out of her chair, and shook her limbs a little. To her surprise, it really did seem to help. She coasted to the window and looked outside.

Russell was right. There wasn’t a Dyson sphere. There wasn’t a papier-mâché structure. Instead, there were billions, possibly trillions, of... parachutes. Enormous, octagonal kites, tethered to small, barely-visible payloads, all floating in space and pointed in the direction of Sirius’s dim glow.

“Whoa,” she gasped. “That’s...”

“A lot of parachutes?” Russell suggested.

“Beautiful,” she finished.

Russell shrugged. “Do you see that one?” he asked, pointing in the distance. “It’s coming towards us.”

Stacy zoomed her vision in the direction he was pointing. Sure enough, one of the parachutes had tilted its canopy in their direction, and was rapidly moving towards them as if propelled by an invisible wind.

“Do we have any weapons?” she asked.

Russell shook his head. “We weren’t supposed to make contact,” he replied.

She bit her lip. It was tougher than her original human lip, like Steve had used some cheap material originally destined to become rubber bands. If they weren’t supposed to make contact, why did the flight plan have them decelerating so much?

“Let’s hope they’re friendly,” she said.

“They’re never friendly,” Russell responded coolly.

With no sense of scale, Stacy found it impossible to estimate the size or distance of the kite. It just kept approaching and growing, until it blocked out an enormous swath of space, and still it grew.

“How big is it?” she asked Russell.

“No idea,” he responded in awe. “Must be hundreds of kilometers across. Like a... Tasmania.”

The payload was clearer now. It was a doughnut, and appeared to be spinning.

“What’s that?” she asked.

Russell scratched his head. "You see a spinning thing in space, you think artificial gravity. Long-term habitation."

She looked at him, wordlessly.

"Chances are, there's life on that doughnut."

Stacy's mind filled with images of her on an operating table, screaming in agony while being vivisected by curious tentacled aliens.

"I don't like it," she stated. "Punch the throttle and let's get out of here."

Russell looked up. The stars were gone - all obscured by the enormous black canopy of the octagonal parachute. Every other direction was similarly filled with parachutes.

"I bet we can punch through the chute," Stacy said.

"Would you bet your life? If it's strong enough to damage the ship..."

As she chewed her rubbery lip in thought, a blast appeared on the stationary platform connecting the doughnut to the parachute.

"What was that?" she asked.

Russell didn't reply. A few moments later, the answer became clear. The ship was rocked with a dull *thud*. They looked out the window.

A tether now ran from them to the doughnut.

"Goddamn it," Russell muttered.

"Good knowing you," Stacy replied.

75. Filbert's Enlightenment

"Hey Filbert," Steve's voice said into his head. "How are you doing!"

"Uh..." Filbert thought, huddled with Annabel in the corner of the armory as bullets continued to punch holes in the paper-thin corrugated steel walls around him. "Been better."

"In a bit of a tight spot, eh?"

"You could say that."

"It's funny, you were also in a jam the last time I heard from you. It's almost like you only ever call when you're in trouble, never just to ask how I'm doing."

Filbert pursed his lips and tried not to think anything blasphemous.

"How are you doing, Steve?" he thought.

"Kinda stressed, actually. Murdoch is breathing down my neck about the aligned AI production race. How's that going, by the way?"

A stray bullet cracked through the air and punched through the far wall, inches from Annabel's head. She smacked his leg and hissed, "hurry up!"

"Yeah, it's going great thanks!" Filbert responded, not bothering to ask who Murdoch was. "Almost there. Hit a bit of a snag though."

"Mhm?" Steve replied. "So being cornered and shot at wasn't part of your plan?"

Another bullet punched through the wall, shattering a plastic box of railgun ammo. Projectiles scattered all over the concrete floor.

"I was wondering if you could perhaps help us out. A little *deus ex machina*. Maybe hand out a smiting or two."

The voice in Filbert's head went quiet for a moment as Steve pondered his options.

"I don't really smite anymore," Steve said, apologetically. "Too expensive."

"What?"

"Long story."

A single gunshot echoed through the warehouse, and a tortured scream followed. Filbert couldn't tell if it was one of his, or one of the intruders'.

"So what can you do?" Filbert asked, trying to conceal his annoyance. "Give them the runs?"

Steve laughed. "Hah! Good one! They'd certainly struggle to hit you if they had to run around, wouldn't they?"

Filbert grumbled at the misinterpreted joke.

Steve sighed. "I can't really afford any interventions, Filbert. I'm sorry, but credits are tight."

Filbert had no idea what Steve was talking about. Wasn't he omnipotent? He gripped his railgun and looked at the thin steel wall separating the armory from the rest of the warehouse. "Can you at least tell me where to aim?" he asked.

“Oh,” Steve replied. “Yeah, I guess I can do that.”

Filbert aimed his gun at the wall, holding the muzzle just an inch away from the corrugated steel, and clamped his eyes shut. Seeing where this was going, Annabel buried her head in her knees and curled up as tightly as she could.

“Left,” Steve advised. “Left left left left left. Keep going left. Up. Up up up! Stop!”

Filbert tried to relax, and move the gun by a consistent number of degrees with every command, like a robot.

“Down a little,” Steve continued. “Right. Perfect. Fire!”

Holding his breath and trying his absolute best to not move the gun, Filbert squeezed the trigger. The gun kicked back, and a loud bang reverberated as the projectile punched through the wall.

“Got him!” Steve announced triumphantly. Loud shouts emanated from the warehouse as the special forces discovered their felled teammate.

“You’re going to have to move faster now,” Steve warned him. “They’re mad.”

“Just tell me where to aim!” Filbert snapped.

“Okay, but you have to relax.”

Over the next thirty seconds, Filbert relaxed. He relaxed more than more than most people achieve in a thousand lifetimes. His mind, his ego, his entire sense of self, vanished. He became the perfect executor of Steve’s will, an interface between his creator and the universe. What had taken Siddhartha forty-nine days of fasting under an olive tree, Filbert achieved in thirty seconds of firing a railgun through a wall. He achieved enlightenment.

When the last enemy was felled, Filbert dropped his railgun and broke down in tears.

“So...” Annabel asked, as Filbert sobbed into his knees. “Is it safe to go out now?”

76. Space Doughnut

"Are they going to vivisect us?" Stacy asked Russell as their ship was winched in towards the doughnut.

"Nah," responded Russell nervously. "Why would they do that?"

Stacy looked at him blankly, as if the answer was self-evident. "They're aliens," she stated flatly.

"We're much more interesting to experiment on if they keep us alive," Russell replied.

The doughnut continued to approach and take up more of their field of view. Before long, it was all either of them could see.

"How big do you think it is?" Stacy asked.

Russell shook his head as he watched the doughnut grow. "It's gotta be the size of a city," he mused. "Canberra, maybe."

Stacy nodded. "There's still time to fire up the rocket," she suggested. "I bet our ship is stronger than the tether."

"Don't you want to see what's inside?"

Stacy bit her rubbery lip. Of course, a part of her wanted to see what was inside the Canberra-sized space doughnut attached to the Tasmania-sized parachute. The other part - the part that had ensured the survival of millions of generations of her ancestors, was less enthusiastic.

An enormous port opened on the top of the doughnut, revealing a dark cavern into which the tether disappeared.

"Guess I don't have much of a choice," Stacy conceded.

The ship was reeled into the recess, and the universe disappeared. A few moments later, the craft stopped with a sudden *thud*. As the artificial gravity kicked in, the two monkeybots were thrown to the floor.

"No sign of life on the scans," announced an unfamiliar voice. "Maybe it's a probe?"

"Maybe it's a bomb," suggested another voice. "You can't be too careful with those Rotarian bastards."

Stacy and Russell huddled together in the corner of the bridge, trying to make themselves as small as possible. Stacy prayed that the intruders would leave, before remembering that prayer no longer did anything. Her God was six weeks away and powerless to intervene - up here in the afterlife, Steve was just a regular guy.

"A lot of empty space for a bomb," continued the first voice. "And a pair of beds. Why does a bomb need beds?"

As she listened to the alien intruders stomp around the living quarters, Stacy was struck by the realization that she understood them. She looked at Russell, who had clearly had the same thought.

He stood up and offered a hand to help her up.

“We can talk our way out of this,” he explained. “They’re not going to vivisect people they can understand.”

“Wishful thinking,” Stacy responded, taking his hand and pulling herself up. “Aliens do messed up stuff all the time.”

“They can’t actually be-” Russell started.

The door opened and in walked the aliens.

Stacy’s jaw dropped. Her mind raced to make sense of what she was seeing. The aliens looked exactly like Steve’s people. Shorter and stockier than Steve and Gabe, but definitely the same species. They reminded her of Murdoch. Now that she thought about it, they sounded like him too. What was going on?

“Holy God above!” exclaimed the owner of the first voice, reeling backwards. “What the hell are those?”

His partner drew some sort of firearm and raised it at the two monkeybots. “Shall I shoot them?” he asked.

“I’d rather you didn’t,” said Stacy.

Both aliens jumped at the sound of her voice and the second one dropped his gun.

“Feck!” he exclaimed.

77. Defender of The State

“Don’t feel bad,” Sullivan told himself as he drove down the empty streets to the abandoned warehouse district where Filbert’s crew had made their headquarters. “They were terrorists.”

It was never supposed to get this far. He had expected the kids to wimp out and give up when he’d suggested the bombing. Instead, the little maniacs had seized onto the idea with gusto, and they now threatened the stability of the state. His state. The state that had taken him in decades ago, and provided him not just with food and shelter, but meaning and purpose in life. The state that had made him the man he was today. He’d be damned if he was going to allow a couple of brats from the outlying provinces to ruin it.

He had had no choice. They’d forced his hand. They’d asked for it.

“Strike team, report?” he asked over the radio. He waited a few seconds, but no reply came. Weird.

“Strike team, this is your DONS liason,” he clarified. “Please report your status.”

Nothing. How annoying. This had been his first time working with this particular Commonwealth Special Forces regiment, and so far, results were less than impressive. He made a mental note to reprimand them later.

His GPS said that he was a mere four minutes from the tracker he’d placed on doomsquad69’s van, so he simply followed the blue line on the map and tried not to get too annoyed about the rank insubordination implied by the radio silence.

There was nobody outside the warehouse. The abundant hairs stood up on the back of Sullivan’s neck. Insubordination was one thing, but glaring incompetence was even worse. While a far cry from being a special forces tactician, Sullivan nonetheless understood the wisdom of standing guard. If he could figure it out... come on.

Huffy with indignation, Sullivan walked up to the warehouse’s side door, twisted the handle, and walked in.

The stench of death hit him before the visuals made their impact. It was the worst thing he’d ever smelled - worse even, than the first week when the lift stations had gone out. He held his shirt over his nose and tried not to gag as he surveyed the scene.

Crumpled bodies lay everywhere. Harold, the idiot he’d convinced to kidnap Stacy II, was sprawled out over the back of a couch, covered in blood and twisted in inhuman ways. Blake, one of the cretins that Filbert had imported from New Australia, had been just about sawed in half by automatic gunfire. Black-clad special forces were strewn around the entire floor of the warehouse, each ripped open with gaping exit wounds. And in the far corner - “oh, shit” he thought.

In the far corner was a small cadre of survivors, among which were Filbert and Stacy II. Three of them were aiming guns at him, and they all looked very, very pissed off.

“Nice of you to join us,” Stacy II said as she and Filbert walked towards him. “Say, how did you know where to find us?”

Sullivan swallowed. This was an unexpected development.

“I don’t remember telling you where our base was,” Filbert chimed in.

“Lucky guess,” Sullivan feebly attempted to explain.

Filbert cracked him over the back of his head with his gun and he fell to his knees. Blows rained down upon him and the world went dark.

Sullivan woke up, disoriented, crucified to a shelving rack. His head hurt like he was waking up from a two-bottle-of-scotch hangover, and he was pretty sure one of his ribs was broken.

“How did you find us?” Stacy II asked again, as she cleaned her nails with a railgun projectile.

“You look terrible,” he replied to the disheveled young lady in her filthy office attire.

Stacy II scowled. Wordlessly, she aimed the railgun projectile like a dart, and threw it at his hand. It missed, but the one-atom-thick diamond tipped projectile punched through the steel shelving unit like it was made of cork.

“Damn,” she said, and picked up another projectile. She handed it to Filbert with a “your turn.”

“How did you find us?” Filbert repeated to Sullivan.

Sullivan tried to calm his racing mind and assess the situation. It was pretty bad. Definitely worse than the time they’d hauled him out of the basement and threatened him with digit-swapping surgery. Probably at least on par with the time Xavier had captured him and blamed him for the death of his father, possibly worse. And that time had resulted in solitary confinement and scurvy.

“I work for the Department of National Security!” he blubbered. “You guys were leaving fingerprints everywhere! I came to warn you!”

Filbert’s eyes narrowed. “What fingerprints?” he asked.

“Digital stuff,” Sullivan bluffed. “It’s complicated.”

“Try me.”

“You know, uh, cookies and stuff. Web searches for ‘how to make a bomb.’ That sort of thing.”

“Doesn’t sound that complicated,” Filbert responded, annoyed. “And I used a VPN for searching that stuff.”

“We back traced the IP address.”

“Sounds like bullshit.”

Sullivan began to sweat. It was indeed bullshit.

Stacy II, unable to contain herself, butted back in. “How did all these assholes find us?” she asked, gesturing to the black-clad corpses strewn throughout the warehouse. “And if you came to warn us, why didn’t you just call us?”

Sullivan opened his mouth to fabricate more plausible-sounding lies, but none came out. Stacy II sensed his moment of hesitation, seized the projectile back off Filbert, and flung it at him. It punctured several inches into his leg and hurt like hell. He gasped in pain.

“And another thing I’ve been thinking about,” Stacy II continued. “What are the chances that Harold and those other two idiots targeted me? There are millions of Commonwealth employees!”

Sullivan bit his tongue. He had to admit, the odds were long.

“And finally,” Stacy continued, “I had one more question. Cui bono? Who benefits from a terrifying period of chaos and murder, brought to a relieving close by the tireless efforts of a single national security agent? Hmm?”

Sullivan sighed and hit the back of his head against the shelving unit. In a way, this was a relief. All of her questions had been rhetorical and he didn’t have to try to answer them anymore.

“I’m dead, aren’t I?” he thought.

“Sure looks that way,” responded the voice in his head.

He’d forgotten about the voice. It had been quiet for some time.

“Is there anything you can do?” he asked.

“Tons of stuff,” the voice responded. “But I don’t particularly feel like it.”

“Oh,” he thought. “I thought you said I was a man of destiny?”

“You are,” came the reply. “But not necessarily in this realm.”

“I see,” he thought, as Stacy II threw another projectile at him. This one hit him in the torso.

“I guess that’s alright then,” he thought.

Some of the other survivors joined in the game of darts. It was cathartic for them, he figured. One of the darts hit him in what must have been a major artery, and his blood started squirting out quite violently.

Sullivan began to nod off as the world became fuzzy. This was a painful way to die, but he didn’t mind. After all, he was a man of destiny.

78. Mum

“We come in peace,” Russell announced to the pair of alien intruders. “Take us to your leader.”

Stacy couldn’t help but laugh. “You’re such a dork,” she told him.

The intruders looked at the monkeybots suspiciously as the one who’d dropped his gun bent down to pick it up again.

“Uh,” said the other one. “Yeah, I guess we can do that. You’re not gonna kill her, are you?”

Stacy blinked. Her? She had thought that Steve’s people only came in one sex.

“No,” she said. “We’re not gonna kill her.”

“Well all right then,” shrugged the gun-dropper. “Follow us.”

The other guard leveled his gun towards the pair and backed slowly out of the bridge. Stacy and Russell followed, and the gun-dropper brought up the rear. In single file, they worked their way out of the ship where the monkeybots had spent the past six weeks, and into the labyrinthine corridors of the Canberra-sized space doughnut.

A few minutes into the walk, Stacy’s relentless questioning and flattery had already caused their security escorts to relax their guard and become more akin to tour guides.

“What’s that?” Stacy asked, pointing at the escalator in front of them.

“We call them ‘automatic stairs,’ explained the leading guard.

“How incredible,” Stacy lied. “Where we come from, they only have the normal kind of stairs.”

The guard puffed his chest out proudly in recognition of his civilization’s superior technology, possibly either forgetting or not realizing that he was conversing with a pair of sentient alien robots.

“There’s plenty more impressive stuff than that,” he said. “Trust me.”

As the escalator emerged out of the subterranean maze, Stacy assumed that she saw what he meant. It was like stepping out into a quaint village in the countryside, except the countryside curved round overhead in an enormous hoop, and the village was in space. They were standing on the outer wall of the mostly-transparent doughnut, heads pointed in towards the center. On her left, beyond the fields and trees, all she could see was the gigantic parachute-shaped solar sail. On the right, through the doughnut wall, was the rest of the solar system. Though mostly obscured by the millions of other solar sails, she could just make out the faint glimmer of Sirius in the distance.

“Wow,” she gasped. “I see what you mean.”

“Hmm?” asked the guard. “I haven’t shown you yet.”

Stacy and Russell shared a confused look and followed the guards down a cobblestone path. The route meandered through orchards of unfamiliar fruit trees and past paddocks containing

docile alien livestock. Eventually, they came to a large stone building that resembled an old manor house.

“You ready?” asked the guard excitedly, leading them to the front door.

Stacy and Russell nodded in anticipation.

The guard pulled a badge from his belt and held it up to a scanner next to the front door. The scanner beeped and a small light on top of it flashed green. An audible clunk was heard of the door unlocking, and the guard opened it proudly.

“We call them keyless locks,” he explained.

“Wow,” Stacy gushed.

“Incredible,” Russell added. “How does it work?”

“Haven’t the foggiest” the guard replied, stepping into the house. “Anyway, follow me. She’s in here. Hey Mum!”

“Mum!” called the gun-dropper, following the leader into the house. “Got some robots or something here that want to talk to you!”

Stacy looked at Russell, who shrugged and said, “they seem nice.”

“Probably won’t vivisect us?” she asked.

“Probably,” he responded. Repeating his shrug, he cocked his head and followed the two guards into the house.

Stacy sighed and stepped through the doorway, shutting the door behind her.

A few minutes later, Stacy found herself and Russell sitting in awkward silence in the living room, holding matching mugs of not-quite-coffee that the gun-dropper had provided them, listening to the pair being scolded by ‘Mum’.

“How many times do I have to tell you?” boomed her loud matriarchial voice through the thick stone walls, “not to just bring people around uninvited? Do you not see the state of the place? Does this sort of thing simply not register?”

Stacy tried to hold back her laughter as the sounds of their captors’ “sorry Mum”s and “I think it looks pretty good Mum”s were cut short by more reprimands.

“What is this jacket doing on the floor? And why are there bullets all over the table?”

Stacy couldn’t help herself. She broke out in giggles, and so did Russell. They tried to regain their composure as the sound of heavy footsteps came booming down the corridor.

The door opened, and in walked Mum. She was roughly a foot shorter than the two guards, extremely heavysset, and unmistakably female. There really aren’t just males, Stacy thought. She wondered what had gone wrong on Steve’s planet.

“Please excuse the mess,” Mum announced. “Boys, you know.”

Stacy and Russell both nodded understandingly. “Oh yes,” Stacy replied. “Boys.”

Mum looked the two monkeybots up and down, in great detail. Her gaze lingered on Stacy's face, inspecting the camera lenses hidden behind her pale blue irises. "Can you do this?" she asked, holding up a hand and touching each finger to her thumb in turn.

Stacy and Russell each held up a hand and performed the exercise easily.

"Remarkable," Mum responded. "The degrees of freedom... I've never seen anything like it. And you know who you are?"

Stacy glanced at Russell, who was trying to hold back a smirk. "I'm Russell," he introduced himself.

"And I'm Stacy," she added.

"Right, you know your names. But are you sentient?"

Stacy had pondered that very question since the first time she'd met Steve in the diner. "I wouldn't know how to begin answering that," she replied. "Are you?"

Mum laughed. "Got me there. I'm Joanne. You can call me Mum."

She held out her hand, and Stacy and Russell shook it in turn.

"Where did you come from?" Mum asked.

Stacy opened her mouth, and realized she couldn't even begin to describe the location of her solar system and the digital location of StevieNix within it. "Earth," she said simply, and shut her mouth.

Mum raised an eyebrow and looked at Russell for more explanation.

"It's the third planet from Sol."

"Sol... Sol... How far away is it?"

"Not that far," Russell replied. "It only took us six weeks to get here."

Mum laughed. "Judging by the g's you were pulling in your decel, that could actually be quite far."

Stacy's stomach churned at the memory of the body-crushing deceleration. "It's still in your neighbourhood," she said. "That's why we were sent here. To see why Sirius had gone dark."

Mum was ignoring her and had walked over to a bookcase and picked out an enormous volume with the words "Encyclopedia Galactica" emblazoned on the cover.

"Sol... Sol..." she repeated. "How many planets does it have?"

"Nine," Russell responded. "Or eight," he corrected himself. "Depending on who you ask."

Mum gave him a skeptical glance as she flipped through the pages of the encyclopedia. Stacy guessed she wasn't used to receiving an ambiguous answer to that question.

"And what type of star is it?" Mum asked.

"A yellow one," Russell replied helpfully. "Medium size."

Mum gave him another skeptical glance and continued flipping through the encyclopedia. After a few moments, she exclaimed, "found it!"

Stacy was impressed. They hadn't given her much to go on.

Mum furrowed her brow. "Third planet from the sun?" she asked, without looking up from the book.

"Yes," Stacy and Russell replied simultaneously.

"Atmosphere is mostly nitrogen, surface is mostly water?"

"Yes," Russell responded before Stacy could remember Earth's atmospheric composition.

Mum remained silent as she read the article. Stacy considered zooming in on the page, but the book was at the wrong angle.

"What does it say?" she asked.

Mum held up her finger to silence her and kept reading.

Eventually, she looked up and shut the book with a thud.

"Boys!" she called. The two guards from before filed into the room, followed by a half-dozen other similar-looking young males.

"Arrest them," Mum announced. The boys looked at her, bewildered.

"They've escaped," Mum explained, "from a penal colony."

79. El Dorado of Probable Cause

“FEDSEC wants a full blueprint for the orbital ring,” Murdoch announced to Allen, shutting his office door behind him. “And written explanations of all unusual features, particularly anything that could be used to effect a launch into space.”

Allen rubbed his eyes with his hand. “The screws are on to us,” he groaned.

Murdoch nodded. “Seems they’ve figured it out, yeah.”

“How long do we have to escape this godforsaken prison planet?”

“They’re still poking around for probable cause,” Murdoch replied hopefully.

Allen laughed. “So like, a day? This whole place is the El Dorado of probable cause. The streets are practically paved with damning evidence.”

Murdoch chuckled at the reference to a particularly entertaining episode of the Great Meme Competition, before remembering the severity of their predicament.

“Yeah,” he said. “A day sounds right.”

Allen straightened up. “Do we have a habitat?”

Murdoch shook his head. “Not quite. Xavier’s boys haven’t figured out how to grow our plants yet. We can build a warship, though. We’ll need to bring all our food and air with us and hope to resupply before it runs out.”

“God damn it,” Allen replied. “That’s not ideal, is it?”

“No,” Murdoch said. “No, it’s not.”

“Where can we even resupply?” Allen asked. “It’s not like there’s a gas station on every corner out there.”

“Our best bet,” Murdoch stated, “is Sirius. It’s close, we know there’s life, and we can call ahead to Stacy and Russell.”

Allen nodded, resignedly. This was way more rushed than he’d hoped for. The two ancient prisoners looked at each other in silence for some time, each playing through the scenario in their heads, trying to figure out a way to gain personal advantage while acknowledging their utter reliance on the other.

“We should split up,” Allen suggested. “Two warships. Less of a single point of failure.”

“Great idea,” Murdoch replied. “I’ll take Steve and StevieNix. You can keep your aligned souls.”

Allen had anticipated this. “Too risky,” he objected. “If something goes wrong with your ship, all of StevieNix is gone. Better to split it in half.”

Murdoch narrowed his eyes. “Planets don’t split in half,” he pointed out.

Allen fought to hold back his smile. “But space does,” he replied. “We’ve already split it, remember? There’s the CORP and the rest. I’ll take the CORP.”

“That’s okay,” Murdoch replied simply. “You can keep the rest of StevieNix. I’ll take the CORP.”

“You can keep Vincent,” Allen offered.

“I’m keeping the CORP,” Murdoch insisted.

“You can keep Steve.”

“The CORP is mine. You can have Gabe.”

Allen paused. Murdoch had already figured this out. Aligned and useful souls be damned, it was clear that the technological innovation pouring out of the Cube of Realistic Physics was the real prize in StevieNix. As much as he didn’t like to play hardball. . .

“I’ll definitely take Gabe. But I need the CORP,” he explained slowly, “to make sure Eternal Spring’s technology works in space. We wouldn’t want to run out of vitamins, would we?”

Murdoch gritted his teeth. “Why don’t you just make all the vitamins beforehand? We’re gonna have much bigger problems storing food.”

Allen shook his head. “Can’t. They’ll expire. Really short shelf life.”

Murdoch clenched his fist. Allen could see his face turning red with anger, but there was nothing he could do. His calculating nature meant he’d never risk putting all their eggs in the basket of a single warship, and his mortality rendered him utterly dependent on Eternal Spring. It didn’t matter that the vitamin expiry date was obviously made up. Allen had him by the balls, and they both knew it.

“Fine,” Murdoch finally conceded. “You take Gabe and the CORP. Get Xavier to build your zero-g vitamin factory or whatever. But as soon as we dock at Sirius, you give it right back. I’ll have Steve build an independent StevieNix for you in the meantime.”

“Of course,” Allen smiled. “Sounds like a great plan.”

“We launch at 4am. Be packed.”

“Will do!” Allen nodded cheerfully. “Oh yeah, I need one more thing.”

Murdoch glared at him. “What’s that?” he asked.

“I need a monkeybot,” Allen said. “To help me run the CORP.”

“You’re not having Vincent,” Murdoch reiterated. “He’s mine.”

“That’s okay,” Allen said. “I had someone else in mind. Is it okay if I go down to the monkeybot factory and drop in a soul?”

“Whatever,” Murdoch said, getting out of his chair and heading for the door. “Just make sure they’re not absolutely unhinged.”

Allen laughed. “They’re all unhinged, Declan. That was the entire point.”

Murdoch shook his head and walked out. “See you at four, Maurice.”

80. The CORP Conundrum

Vincent's voice popped into Xavier's head. "Xavier!" he yelled. "Wake up!"

Xavier awoke with a jolt. He'd been snoozing at his desk, part-way through working on a microgravity-compatible waste recycling system.

"What is it, dad?" he asked, groggily.

"You need to leave. Get out of the CORP, now."

Xavier blinked and looked out the window at the millions of ships and habitats that made up the Anarchist community within the Cube of Realistic Physics. The majority of his people had long given up traveling between the two physics engines, preferring to settle in the cube where there was money to be made and no chance of statist interference. They had developed fusion engines, modular habitats, and loose communities that echoed the cantonal system of the floating islands back on Earth.

"Why?" he asked.

"They're splitting StevieNix in half. Allen's taking the CORP. Steve and I are sticking with Murdoch and the rest of StevieNix."

"Who's Allen?"

"He's an asshole," Vincent explained. "Trust me, you don't want to be stuck with him as your God."

"So after he takes the CORP, we can't go back to regular StevieNix?"

"That's right."

"How much time do we have?" Xavier asked.

"Hours," replied his dad.

Xavier chewed his thumb. Hours was plenty of time, for him. His old space-plane still worked. He didn't need to pack much. He could probably launch and be back in regular StevieNix in under twenty minutes. Fly back to Antarctica and fire up the old ASIC he'd left there. He could even reconnect with his mom and siblings, and see what his old friends Filbert and Stacy II were up to.

But hours wasn't enough time for everyone else. The habitats had been built for Realistic Physics - they wouldn't work outside of the cube. And even if they did, most people wouldn't want to leave. After years of being chased around, they'd finally found a home where they were safe. So what if their new God was going to be an asshole? And why should they take Vincent's word on that anyway?

"I can hear you" his dad said, butting into his thoughts. "I promise you, Allen is the worst. Don't think, just leave."

"I can't" Xavier replied, looking back out the window. "I can't leave them."

"Please," his dad pleaded. "Just take my word on this."

"They moved here because of me," Xavier objected.

"I can't lose you again."

“I’m sorry, dad” Xavier replied finally. “I can’t abandon them. Try to look out for us up there, okay? Figure out something with this Allen guy. I’m sure he can be reasoned with.”

He heard his dad swear, followed by the clunk of his headset being slammed down onto a desk. Then, silence.

Well, Xavier figured, it would be nice to have his thoughts to himself again. With any luck, this Allen guy wouldn’t be so intrusive.

81. Stacy the Second

“Just a few more votes,” Stacy II giggled excitedly.

They’d rented out a pub for the night. Filbert and Annabel sat holding hands at a high-top, keeping an eye on Archibald who was getting absolutely plastered on Queen Marys. Stacy II was working the floor, flitting between her former domestic terrorist friends and her legions of legitimate campaign staff. After ten years of steady decline under the same Chief Executive, the people were ready for change.

With all the surviving hostage witnesses either paid off, exiled, or too young to know what was happening, Stacy II had emerged from the bloodsoaked warehouse in a tightly choreographed way. The shaky camera footage had captured her carrying the two children to safety as gunfire echoed in the background. With the public already primed from Dress Lady’s first heroic act, they were awestruck at her second. Anyone who questioned Stacy II’s courage was dismissed as a crank or a misogynist, and social media was flooded with calls for her to run for Chief Executive.

And so she did.

As the final votes came in and pushed her over the line, the pub erupted in cheers. Filbert watched as her blissfully unaware staffers, drawn equally from old loyalists to the crown and young People’s Republicans, came up to shower her with adoration and congratulations. She looked so at home, like she was bred for the role. Which, Filbert remembered, she was.

The next day, Filbert and Annabel loaded their meager possessions onto a boat and pushed off.

“Hey, Filbert?” Annabel asked, as she brought up the location of her childhood home on the GPS.

“What is it, sweetheart?” he replied.

“Remember how you promised me we’d find the people who killed my dad?”

“Yeah.”

“And we’d lock them into gibbets and let them die a slow and painful death?”

“Yup.”

“Yeah. . .” the young woman sighed. “Let’s not do that anymore.”

Filbert smiled as he piloted the boat out of the harbour and into the open seas. He didn’t want to do it either.

Stacy II stepped into her new office. She’d asked her staff to let her enjoy this moment, alone. Walking around the executive chamber, she was struck by how sterile it was.

It wouldn’t do. Her mom had had a much nicer office, back in the Royal Palace. First order of business would be to move the capital back to the Theocratic Dominion - she’d have someone draft up an executive order. Second order of business would be to fix the lift stations. Might need Xavier’s help for that one.

She walked to her desk, sat down, and opened her laptop. Although she was the most powerful person in the Commonwealth, she still didn't like to keep people waiting. She fired up Zoom and joined her first meeting as Chief Executive.

"Thank you for joining me," she said. "So sorry I'm late."

"That's quite alright Your Highness," Curtis replied. "How may I be of service?"

Stacy II smiled. "It's so good to see you again, Curtis. I was hoping you could give me some advice."

82. In the flesh

Sullivan woke up. He was in some sort of reclining chair, like they have at the dentist's office. He blinked, and looked around. He didn't see any dentistry tools.

He tried to sit up, but found himself restrained by leather straps. His mind flashed back to the events of a few moments ago, taped to a shelving unit and having darts thrown at him. Had they moved him? Had they upgraded their torture chamber?

The wall hissed and a section of it moved to reveal a door. It swung open and in walked a man he didn't recognize. He was taller than average, and moved in a way that was ever-so-slightly wrong. Sullivan, extremely confused, decided to exercise his right to remain silent.

Then the man spoke, and Sullivan understood.

"Hi Sullivan," he said. "Great to see you in the flesh."

The man's voice. It was the voice from his head. The one he'd been talking to for months, the one who had been there for him in his darkest, most painful times.

"It's you," he said, fighting to hold back tears. "It's really you."

"I always said you were a man of destiny, didn't I?" said the man. Then stepping forward, he pushed a button on the side of Sullivan's chair. The latches clicked and the leather restraints fell away.

The man extended his hand to Sullivan and helped him up.

"Who are you?" Sullivan asked.

"Maurice Allen," the man responded. "Your new best friend."

The End