

# Our Moment Apart by Nick Doiron

## (@mapmeld)

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### Intro

I'm excited to share something new - I combined ten short fiction stories into a book "Our Moment Apart".

Over the past few years, I would browse bookstores and realize I was looking for a few specific stories, but they didn't exist yet, and I would have to write them.

Most of these stories are sci-fi — they range from 1,400 to 14,000 words, with the longer ones delving into more realistic plots with AIs, quantum computers, and blockchains. The title "Our Moment Apart" describes our present society: a temporary break where people and technology co-exist separately. To be honest, one story I'm rushing to post because it could come true any day.

### Stories and Plot Devices

1. From Carbon to Silicon - a Von Neumann nanobot civilization
2. Playing Pachinko - the first military AI
3. The Younger Sally Marchan - interdimensional relationship drama
4. Rollback - a runaway blockchain project
5. The Annotationist - consequences of writing about old relationships
6. P.A. - bosses with dark secrets
7. Rita Wan - reverse culture shock
8. Cloud Atlas Bug - programmers interacting with bugs over multiple lifetimes
9. Morozov and Me - a joke program becomes an intelligence asset
10. Battlestar *Erratica* - a society has so much information, it colonizes space to store it

### Future work

I have some other stories which are half-done and I'm currently working on them!

I would appreciate your feedback on existing stories, and volunteers to help work through the next few,

on first contact at sea, micronations, and other weird topics.

## Copyright statement

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If you do want to support me, find @mapmeld on Venmo, or send a pull request (code change) to me on GitHub. I haven't accepted payments like this before so it's an experiment - expect me to have only a small presence on the site.

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# From Carbon to Silicon

From what we know so far, it looks like we are alone in the universe.

Looking at the number of planets and solar systems and galaxies, it looks like we should see more, even nearby neighbors, yet we hear nothing. There are multiple cosmological and theological explanations for our loneliness, though none would be fully satisfied or refuted were we to spot mold on Europa or advanced civilizations in the stars. So I don't expect to get a real answer in my lifetime.

One theory is that there's a hard line along civilization's development, and depending which kind of doomsday eschatologist that you meet, they'll say that it's nuclear war, artificial intelligence, meteor impact, pandemics, or other endings which will end humanity. With a few more technological jumps, though, we might be able to survive these catastrophes in new homes beyond Earth. A Von Neumann probe is a theoretical space robot (or nanobot, to make building and launching into space easier) which can replicate itself. If an alien Von Neumann probe came to our universe, it might drop into asteroids and moons to build more copies, leave a little marker, then take advantage of the small gravity well to pop back into space.

We're fascinated by sudden beginnings and endings, the dinosaurs and Cambrian explosions, but on a deeper and longer-term level, our solar system is built on second chances. Our sun is believed to be a third-generation star - early stars were born and died and created heavier elements, and those second-generation stars pushed things further, and now a third-generation star makes more elements. The elements and chemical reactions that sustain us might not have existed in the previous generations of star systems. One element in particular, carbon, is widespread enough and susceptible to the right reactions and molecular combinations that it forms the basis of all known life.

Recently I've been fascinated by a few out-there astronomers who post their theories as pre-prints on arXiv. For example, they consider how pulsars might have been built as an interstellar guidance system, or radio pulses could be signs of solar sail probes accelerated by laser beams, or unusual fluctuations in stars could be evidence of Kardashev 'Type 2'

civilizations who have built shells around their stars. Perhaps these super-advanced aliens already exist and travel throughout our galaxy, and there is some truth to Douglas Adams's joke that Earth is stuck *"far out in the uncharted backwaters of the unfashionable end of the western spiral arm of the Galaxy"*.

If I wrote my own cosmological paper, it would be to look at elements in the crust of Earth, the moon, the meteors, the planets around us. Is it a cosmological coincidence that one of the most common elements is silicon, which makes excellent semiconductors and transistors? Atomic number 14 is common and unremarkable enough to form sandy beaches and volcanic rocks but it happens to also be perfect for the brains of nanobots? I would propose that an ancient alien civilization existed, maybe one or two generations before our sun, and they successfully built Von Neumann probes and propagated them across our region of space. These nanobots would turn so much matter into silicon for their use, that the surfaces of planets could be not so different from our human concept of chips and circuit boards. Over time natural effects would degrade it all beyond recognition. Maybe this nanobot flock could cycle around the galaxy over billions of years to rebuild on pristine planets. That eternally electronically-replicating civilization is more possible and imaginable than a galactic society ruled by slow and fragile biological replication. By now any evidence of these probes would be erased in our solar system, or its remains too tiny and decayed to distinguish from peculiar lumps of sand. Is it so farfetched?

Imagine many cycles of carbon-biological and silicon-technological life over time, with carbon life thinking up computers, and silicon rapidly building, digitizing, and archiving beyond the lifetime of its home planet or star. How many alien worlds are currently in the carbon era of the cycle, and how short or long is it compared to the silicon era of their cycle? What do we make of first contact if it comes through a carefully shielded hard drive drifting through our solar system?

# Playing Pachinko

## Reader Notes

The story is about humanity's response to AI via two programmers: one conscripted to create the first AI weapon, and the other a volunteer in the UN's first AI weapons inspection team.

## Captain Min, next year

He wasn't running. They had found Em outside a shrine halfway up Mandalri Hill, sitting on a bench, swiping through photos he had taken with two American tourist girls at the top, oblivious as the military police surrounded him. Uncertain how to handle their fugitive's passivity, they tackled him to the ground.

Captain Min turned to pass his case file to the officer in the back seat, and tucked his reading glasses into his shirt pocket. Their driver kept staring straight ahead, at the wipers clearing a flood of monsoon rain off their windshield.

After years of research, on the edge of falling off the budget, they had found the most unlikely of saviors.

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In the interrogation room, Em now sat slumped, defeated, eyes closed. As Min opened the door, even before he stepped inside, Em did not straighten up but started to drone, "I am sorry, sir, I hope you will accept my apology..."

"No, no. Just a moment. Tell me what you did, from the beginning." Captain Min tapped the guard's shoulder. "Let us have some tea, we'll be sitting here for a while."

"I have a program which calls people about loans. It has made a mistake... it is my mistake... I should not have called you. It won't happen again."

"Your boss, a nice man, was in this chair a few days ago. He tells me that you were fired immediately. It doesn't look good for you."

"That's right. I will never work with a computer again, sir. I promise you."

"Having met a few hackers, I don't believe you."

At the word 'hackers', Em shook his head vigorously. "No, I would never..."

"A hacker is not always a criminal, Em. That's why I'm here. When your program telephoned me, it imitated my niece perfectly. Can you tell me about that?"

"The program makes calls to one person in your network and then the next and... it started threatening people about loans, but it doesn't understand what it's doing. Please understand, imitating a human is not difficult."

"The Turing Test, right, but what about Hyer-Market?"

A flicker of recognition, astonishment appeared in Em's eyes. "What?"

"I am going to give you a choice now, Em. We both know what a Hyer-Market score is. Does this surprise you? I manage a small team right here in the capital. I've given you two emergency security clearances just for us to sit in the same room. That puts us both in a difficult situation, unless you tell me about what you did."

"If you really know, if you read journals about artificial intelligence, then you still won't believe me."

"I will believe you once I have proof. What does your program score on Hyer-Market?"

Em took in a deep breath, and spat on the concrete floor. "It's a fourteen. On a bad day."

### **Essay: Refuting Terminator**

When you hear about artificial intelligence, the image of a Terminator robot atop a mound of skulls comes to mind. But long after the Turing Test has been passed, even if humanoid robots are built in our lifetime, most of them will be powerless and docile as the automated vacuum cleaners of today. It's difficult to program in the full depth of human observation and mobility.

Much has been written about whether robots can be redeemed with empathy and simulated humanity, so I will instead ask: are we on a path which leads inevitably to killer robots? Even the *Terminator* movies are reluctant to answer that question. In the first two installments, the robot revolution is either years ahead or behind the action that we see. The pivotal Judgement Day isn't seen until *Rise of the Machines* when a virus spreads to many systems including military

networks. Just as John Connor was born through a self-fulfilling time loop, Skynet is shown traveling in time to generate itself, a literal *deus ex machina*.

In our own universe, populated by Air Force drones and convincing talk bots, it's easy to connect the dots and fear that Skynet is just around the corner. On closer examination, AI still fails to deliver in simple tasks, especially when guiding robots through unpredictable, real-world environments. It's difficult to believe that any army could field a substantial force of high-quality automated robots, especially any which could stand against humanity's vast stockpiles of conventional weapons.

Robots of today are useful in their *friendliness*, focusing on scrubbing floors or chatting late into the night. Perhaps the real artificial intelligence revolution will come not from humans fearing machines, but befriending and trusting AI more than one another.

-- essay generated by CineStack algorithm

### Charlie

People are always asking me if I know Amy Bella.

Not because I look like the *Meet Amy* poster splashed across tech news sites and on this campus, but because a respectable coder is supposed to keep tabs on a dozen different leading programs, and if Amy is the most high-end, most 'uncanny' personal assistant out there, people will ask about that one first. It's a human face on the murky world of artificial intelligence.

That's why I was surprised to hear a class full of students tell me that Amy was not an AI.

"We voted," the professor explained, "and Amy is only an algorithm. She's not a general purpose AI."

A tally on the board behind him listed a few votes for 'AI' and the rest for 'Algorithm'.

"But isn't an AI itself only a really convincing algorithm? And you're using the word 'she,' right?"

"By now the Turing test has been passed and surpassed, so we have to rely on several metrics. Nothing in media reports describes Amy making good deductions. It's only an algorithm."

"I don't understand the difference. Computers' deductions and intuitions are going to be algorithms, too. You process some information and move your way in or out of it."

One student perked up - "the difference between deduction and intuition-

I glanced over a little quickly and kept going. "Does anyone here have a subscription to Amy? It's a hell of a price tag right now, but how can this class be evaluating an AI without sitting down and talking?"

Blank looks. The TA looked up from her notes. "The Turing test just isn't impressive anymore."

"Sure, but you still learn a lot about bots from conversation testing. Especially if you can't get access to the source code."

"All that research is being done in other labs. What would we do with source code? We keep searching for a peer-reviewed proof of deduction, and algorithms keep failing to do anything more than induction. It'll take another quantum leap, yes a quantum leap, to get beyond algorithms and into an AI."

I shook my head. "You're making induction sound much easier than it is. Induction looks easy because we can give simple tests like schedules. Deduction is hard because making good tests for it are hard, like giving it a Sherlock Holmes style mystery that no reader would ever figure out on their own."

"Do you know of any researchers who have tested Amy for deduction?"

"Up until now, I thought that was what you did."

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As I packed up the laptop and cords after class, the professor came up and clapped me on the shoulder. "This is good. You expect a lot from us."

"I'm glad that you liked it. Hopefully informative."

"It was - all of our guest speakers so far are working on some really interesting problems, but it's good to get a practitioner in here sometimes."

I went to shake his hand, and he held a little longer. "Do you know a Doctor Kettleman?"

"Maybe, in a sense. We might follow each other on Twitter?"



“Talking to him and his team would be perfect for you. The best thing that you could do for this colloquium is to get some logical tests written up, get some of these robots mapped out, reviewed, and published, so they can be part of our conversation.”

“I’m glad you’re willing to talk to me in person. But like I was saying before, I’m a programmer. I’d rather hack something together and-”

“Listen - I might not be a programmer, but I have a chair on the campus innovation department. We all know that an AI is the next big thing, but this isn’t a market where one-man shops make sense. Deep learning, stats, neural nets, GPUs and TPUs - a real researcher needs serious seed funding to get hardware and colleagues and training data.”

“That’s true.” And it actually was true.

“It’s out of reach of anyone except an international corporation or a few nation-states. Where you work now, it’s not a research facility. If you’re doing what you like, I don’t mean to stop you. But if you want to be part of AI, you need to work with the best and drop the distractions. I would recommend you come and do research with us, but we don’t write code here. That’s why I want to send you over to Kettleman.”

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The next day was Staples Day at the museum office. Dana handed out a box of pens at the morning stand-up meeting. I went back to the chair next to Olivia and stared into the monitor. On one half was the fragmented website, on the other a few sketches from the designer.

“How was Philadelphia?”

“We had a good conversation.”

“So are you leaving us then? It might do you some good to study with them, but-”

“It’s not like that! Don’t get too worried about me wandering off. To be honest, I didn’t really know what I was getting myself into.”

“That’s too bad.” - a pause - “Are you OK?”

“Sure, nothing to worry about. They finally convinced me to download the Amy Bella app.”

“Isn’t that expensive?”

“I have a subscription for now. It’s going to be expensive, but I like researching these kinds of things, so, why not?”

“Doesn’t that app listen to everything around you, all of the time?”

“Maybe they were experimenting with it, but-”

“No, look at Hacker News. They’ve switched it on for everyone now.”

I took my phone from my pocket, and the article was already loaded. There were also a dozen notifications... calendar events, transit directions, and an elegant ‘Note from Amy’...

Dear Charlie,

It’s Amy. We just met a few days ago, but it’s time to check out the app again. Your account is included in our ‘Anytime Amy’ assistant program. Watch these selected videos to learn how Amy can remember your friends, advise you in your career, and support your true life goals.

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The next day I was running late again, arriving 9:30. I saw Dana, Paul, my boss, and a few other people deep in conversation behind the mega-screen, so I stood on my tip-toes to peek over the cube wall.

“Oh sorry, good morning. Did I miss-”

“There you are! Look who’s here for you.”

It was Doctor Kettleman.

Dana smiled and gave a thumbs-up.

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I saw down beside him at a bench overlooking the sculpture garden. Guests milled around the abstract sculptural shapes. A kid tugged on Picasso's goat sculpture.

I wanted to ask Kettleman everything and talk forever, yet at the same time realized that I should quickly let him know this was a mistake: "Ever since the university visit, I have been reading everything that I can about AI, about your ethics research. But this doesn't even make sense. I'm nothing like you."

"We need a diversity of opinions and backgrounds on this team, if people are going to listen to us at all."

"Explain it to me, then. What's the team for? What way could I help you?"

Kettleman waved off the concern. "Listen, I've been working in the field for a while, so anything that I say is colored by industry's jargon and conventions. This rubs the non-tech people the wrong way... the politicians, the artists, too...." - he gestured to indicate the sculptures around us - "What I have is a small team of open source AI researchers, focusing on ethics and groundbreaking research, who can speak to the outside world."

"That's all well and good, but is anyone ready to listen to the team? I was just speaking with a university lab that talks about ways of... well, I know this was your friend, but to me it was like everyone was hurrying about discussing the ways that socks could be knit, while anyone actually wearing and making socks is past caring about that sort of thing. You need to get picked up by an organization that gives a damn about what happens with AIs, and what they do in real life."

He smiled. "How about the United Nations?"

### **Captain Min, eight months later**

Nine thousand miles away, the robots were already built. Their giant reinforced tires twitched with an unnatural eagerness, the mud from tests still caked their angular metal frames. The warehouse doors creaked open, and their capacitors charged with an alien, electric sound.

Captain Min put his hand on Em's shoulder, then, sensing his tension, embraced him like a son.

### **Thura**

"Get the camera, *the camera!*"

As the white vehicles came closer, Thura and his brother Noel lay down on their bellies behind an earthen wall, hidden from sight. But peering over the lip of the wall, they could see the strange machines converging on an intersection. Their oversize wheels churned through the muck on the road. They followed each other in perfect line, though their speed had stops and starts.

Thura raised the camcorder and fixed the zoom on the lead vehicle as it approached small tree trunks laid across the path, and climbed over. "It's too small for a man to be inside," he said, shaking his head. "Crazy."

"Maybe the driver is laying down inside there?"

"Then how can he move the turret?"

The lead vehicle let out a series of low chirps, and a head made of camera eyes emerged from its middle.

Noel motioned with his left hand to catch Thura's attention. He was already staring at the vehicle down the sights of his gun.

"Careful. It'll see you, brother."

"Do you think it has heat vision? It might if-"

With a hissing buzz, a large object... a quadcopter drone hurled over their heads.

Behind them, someone shouted. More vehicles were tearing through the forest undergrowth. One after the other, their turrets fired tracers into the air, chasing the crew camp ahead of them. Looking back to the clearing, Thura saw the road vehicles fix their guns on their position.

*Run. Run. Run.* But they were surrounded.

### **The Situation Room**

"Mister President? We've got the room ready."

"Thank you."

They had all seen the videos, taken from LiveLeak to the TV news cycle already. It took the National Security team much too much time to scramble the right analysts. The President followed the Secretary of Defense down the hall and took his seat at the head of the table.

“Thank you all for joining us on short notice. Other than that video, what intel do we have?”

“There’s an analyst at the NSA who stumbled on the program last month, in an arms deal probe. We saw that the military junta was buying Russian surplus sentry vehicles. The Russians were using these machines in Syria for surveillance.”

“So it’s a new kind of drone program?”

“There’s some confusion about how their modification of the vehicle works, but from what we know, we think these ones are almost fully self-controlled. Much more independent than any of our drone programs. They have a command and control center in an office building just outside Dijar. The army sends forward communication towers and a high-altitude surveillance drone before anything happens on the ground.”

“Is your arms analyst here today?” the President looked down both sides of the table.

“He is in Midland, Texas for a wedding. We’re pulling him back as soon as we can, but there are a couple of connecting flights.”

“Take all the resources that you need, or at least a secure phone line. Tell him to call the Oval today. And is there a cleaner name for this machine, or this set of machines? Going around talking about a military AI will cause a lot of problems - and get a lot of attention - going forward.”

SECDEF touched his fingertips together. “If it were ours, we would call it an AI.”

“But wouldn’t I be accusing them of a treaty violation? If I or the Press Secretary say AI in the Briefing Room, all hell breaks loose, diplomatically, the press-”

“State is investigating, but they were never even invited to sign onto an AI treaty. That is still very new in international law. We don’t know what the repercussions will be. As for the name, their military communications call it ‘the machine’. There isn’t an agreed-on term for AI in the local language. Our analyst has been using a codename that you might like: *Pachinko*.”

“That’s a game machine, right?”

SECDEF nodded. “I believe that that’s right.”

“What about the NSA... does Equations Group have anything on this?”

“Equations Group hasn’t focused on Southeast Asia before. There’s a report coming along, but if the junta’s guys have been doing their homework, Pachinko is air-gapped or monitored such that it’s walled off from most cyber attacks. They have been working with GCHQ on a special cyberwar package which they call Basilisk.”

A voice chirped from one of the teleconference speakers: “With all due respect, Mr. Secretary, I wouldn’t test an AI with cyber attack. Not right now.”

“Doctor Kettleman? Mister President, we have Doctor Kettleman, from the UN AI ethics team, on the phone.”

They leaned in on the teleconference speaker.

“Right now, these guys clearly have the upper hand on cyber. We don’t know what might happen if an AI notices what we’re doing and sees us as an existential threat. A counterattack from something this smart could easily cause problems for computer systems across the US.”

“What do you recommend, then?”

“Well, we have been talking in terms of worst-case scenarios. My advice is that we handle this with some restraint, in the same way that we would handle a nation that was experimenting with nuclear power. Send in my team, plus some inspectors from the UN and IAEA. I had raised the idea before, and some of their team would certainly volunteer for the job.”

“What makes you think that they would let some UN people in the front door?”

“Well, they might want to show off.”

**Charlie**

I made my way to a favorite part of Central Park, found Violet, and sat down in the grass nearby.

"You saw the news?"

"Yeah." She lay back down into the grass. "Come look at the sky."

The sky?

A little impatiently: "Just lie down already."

I squatted and then slowly eased myself down onto the grass. "Am I doing this right?"

She just laughed at how uncomfortable I was. "What do you see in the clouds?"

"You can't do that today; there's just a few puffs here and there."

"Just look up at it. Stop and don't say anything."

A few minutes went by. My mind wandered to the sound of kids jumping up and down the rocks next to us, the shuffle of feet along the path, of people chatting on rings of benches.

She spoke again: "They've done it, haven't they?"

"Yes. It's very real."

"How much time do you think we have?"

"Before people start watching the news? And freaking out?"

She shook her head. A stray leaf got further embedded in her hair. "People, on earth. How long do we have?"

"What do you mean?"

"Someone made the killer robots that you all talk about. It's all downhill from here, isn't it?"

"You have to wait until we know more." I went back to looking up at the sky. "To call it the end of the world... well, we did okay with nukes, right? That surprised everyone."

“Sure. Maybe one or two or three classes of weapons can be made that can end the world, and they don’t get used, but if we keep building more, then they add up, right?”

“The people over there, they’re just like us. It’s the military making them build these things to scare the shit out of everyone. Eventually, cooler thinkers and a freer people will prevail, they always have.”

“Could your team, your theory people, do anything to stop them? Do you think that people will still be interested in talking about AI as a theory when it’s right there in our faces? I’m not sure there’s time for that anymore.”

“Well, I don’t want to send a bunch of guys to a war zone, not really excited for it myself, but then look at how important this is. The world needs us. And no one has been able to reach Doctor Kettleman, so either he’s making a giant ‘told you so’ banner in his apartment, or he’s got meeting everyone in Washington and the UN. They both will want to look at this, right? And anything official would have to be from a non-governmental team, so it would make a lot of sense to send us.”

“Aren’t you worried about what they might do to you, over there?”

“It wouldn’t be like that. The UN can only do this with the host country’s approval, or a really powerful international mandate to the point they have to agree.”

“So when you’re over there, what do you tell them? Stop killing people with robots?”

“Maybe when we are showing up and asking questions, maybe they do something differently. Maybe they try and convince us that they’re doing something positive, in a weird way that only makes sense to a military government. But us being there and saying it and trying to do something about what’s happening... they will at least stop fighting for a while, right?”

She mumbled something and then, “look back up at the clouds.”

I did go back, and watched the effortless drift of the weather. “We’ll still be here tomorrow.”

“And the next day?”

“And the next day.”



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'Anytime Amy' had overheard enough of their conversation to prepare my laptop to stream the TV news.

They were showing the press briefing room - I remember thinking briefly that it wasn't the Oval Office, that fortunately that meant there wasn't a war. Not yet.

"The president will make a brief statement. There will be no questions."

I looked through the screen, into the president's carefully-prepared, confident stare.

"Since the time of ancient Greece philosophers have noted that war, for all its violence, has rules. These rules are shared by both sides, so that that it is possible to heal and to forgive and to have peace."

"We do not know the full technical details of these weapons. Make no mistake, though: the international community determined years ago that the use of *autonomous* weapons cannot be allowed under the Geneva Conventions. There is no possibility for a person to surrender, or for a computer program to reliably identify non-combatants, including small children. These weapons are only useful for indiscriminate and inhumane violence."

"With support of leaders in the region, we have drawn up plans for an immediate no-fly-zone, and requested a full weapons inspection by appropriate international observers."

The announcement ended abruptly, and the news pundits went to chatter. Violet took off her headset. "I've been thinking about you going over there. What's the point of a weapons inspector, really? Can you tell them to stop building their own weapon?"

"It's put the brakes on nuclear weapons a few times before. But the real thing is that if one AI exists, then there's an asymmetric and unknown advantage, it seems almost superhuman. People might go to war over something just a few notches above a remote-control car. Right now we don't know what their machines could do. Just getting some basic details, or access to the code even, might calm some people down."

"But if they already have an AI, you can't stop them from having it. Your mission already failed."

"I think we can be more nuanced than that. If a country is advanced enough to have an AI program, then we can't stop them so easily, without banning all computers. One thing that we

can do is try and make them responsible, to share their efforts to isolate and protect their source code from getting leaked, something like the IAEA and Clear Skies programs for nukes.”

“But you can’t smuggle a nuke on a flash drive.”

“I don’t know enough about nukes to say for sure.”

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A month later, I had said my good-byes, packed my bags, and found the rest of the team at the airport. Doctor Kettleman was waylaid by a set of news cameras. I wandered away to pick up some snacks -- would they have M&Ms over there...? -- when my phone rang.

I thought it might be Violet - we had a rough goodbye that morning. “Hello Violet?”

An unfamiliar and gruff “hold, please.”

“I can’t do any interviews with the press, I can’t...”

“This isn’t the press.”

“I’m sorry, I don’t know-”

“Do you have a computer or smartphone with you, sir?”

“Yes.”

“Look up the White House switchboard, we’re on Google, state your name, and your call will be forwarded.”

They hung up. I didn’t know what to do, but I didn’t think it would be right to leave it hanging. So I called.

“Hold, please.”

An eternity. “Is there someone-”

“Hold, please.”

Finally someone else came on the line. “Charlie, how are you doing today? This is Ben Cutler at the White House.”

“Sorry, sir, I’m about to get on a plane. I can’t speak on behalf of our team. Can I ask what this is about and can I get back to you?” They were actually starting to get the gate ready.

“Charlie, you apparently don’t know this, but I’m the president’s National Security Advisor. I’m going to ask you to do one additional duty for us, while you’re over there, as the only American citizen on your team with a strong technical background.”

“Okay.”

“I’ve been talking to a few people around Washington, Fort Meade, Langley. We will want a full, confidential report the moment that you exit the country. Even before the team report.”

“That might be against my current agreement with the team here, and-”

“It might be, and we’ll work on that. I’ve also been asked to let you know that we’ve identified the lead programmer on their team.”

“That’s great, sir. I hope we can meet with them and...”

“I can’t share the name because your reaction might give you away. But if you do meet someone who seems to know their stuff, ask them about time-of-flight camera research. Read up on it a little yourself. T.O.F.”

“I can do that.”

“But there’s one more thing, that they asked me to brief you on. If anyone mentions a quantum computer, or  $P = NP$ , do you know what those are?”

“Yes.”

“Excellent. Gibberish to me. But the engineers over at Fort Meade were able to explain it enough that, well, if you hear something, would you ask them about that?”

I laughed. “Sorry sir, but of course I would ask. Those are up there with cold fusion and faster-than-light travel in breakthroughs that we would all want to know about someday.”

“Like a general purpose AI, maybe?” I sensed a little impatience.

“They’re both beyond making an AI.”

“Apparently. But if they have this AI program written out, maybe there’s more to it. Seriously, if you hear something, let them know that we can negotiate.”

“What?”

“If you hear that they have it, take someone aside - whoever seems like the real deal, the big cheese, the big guy with the most stripes - and say: the President of the United States is willing to negotiate. That’s all that we can say for now.”

The call ended. My thoughts turned over and over in my mind the whole way over the Pacific.

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I peered out the plastic-y airplane window. It was dark outside, with some light rain, and I could see little more than fuzzy city lights.

The flight attendant returned to the mic. “Would Doctor Kettleman’s team please remain seated until we receive a diplomatic vehicle? Thank you.”

The other passengers began to retrieve items from the overhead bins. I turned on my phone and went back to staring out the window. In the distance, a bus escorted by army humvees, came out from a hangar. This must be the delegation.

Anytime Amy reactivated and buzzed my phone. I looked through her messages.

You’ve reached your destination!

You received some messages:

- Violet wishes you good luck :)
- She’s asleep now; don’t call.
- Your parents asked you to send photos.
- I will send them a link to a travel album.

Here are some things that you might need while you’re settling in:

- hotel address and confirmation
- scan of official visa

The truck came up to the plane and a few men in suits came out. Through the back window of one humvee, I could see some figures in military uniforms engrossed in conversation. They weren't coming up to see us, but perhaps they wanted to get a look.

Doctor Kettleman stood up and crossed over to my side of the plane to see what I was looking at. "Just as they promised. Already off to a good start."

The flight attendant returned to the mic. "They are here for you now. You will not need to go through customs; diplomatic passes will be delivered to you at your hotel."

As I left the plane, I nodded and said thanks to her.

She touched my shoulder. "Good luck out there. We're counting on you."

---

The inspection process was much less glamorous, much more waiting around. Each day, I'd wake up and eat breakfast with these much older guys, the nuclear inspectors. It was fascinating to hear their stories, but after a few days the political maneuvering and bureaucracy behind their stories was confirmed. We were being stonewalled, shuttled from place to place with no real meaning. In semiconductor assemblies, in university halls, we kept meeting with people working in information systems research. But none of them could share anything new about Pachinko.

"We are getting the runaround," a more experienced Brit from the IAEA would tell the group, "and countries always try it. But eventually they will need to give us something."

The only constant were three minders, in military uniforms. Doctor Kettleman spoke to them once before a dinner, and advised us to leave them alone.

---

At the end of the week, I set my alarm early so I could video-call Violet.

"Hey!"

"Hey, how's it going over there? Is the internet coming through okay?"

“Yeah.” She was rearranging things in the apartment. “I’m doing a Skype audition tomorrow for a part in this production in Brooklyn. Do I look okay in the shot?”

“Yeah. What part...?”

“I just need to do a character. I’ll wear this and... are you sure the lighting is okay?” She went to move the blinds.

“You shouldn’t be so worried about getting the part, Violet. You do so well at these auditions.”

“It’s changed so fast. I think while I was working my last part, while I wasn’t going to auditions, it all changed without me noticing. It just got a lot more visible in the past week since you left.”

“What do you mean?”

“Everyone and their cousin is getting coaching from that app, Amy. Everyone I know who’s getting a part, they’re getting all these tips. And they’re good, they’re actually really good tips. All the bigshots doing casting use the app, so the app listens to them, it finds their favorites, it tells them who to pick.”

“Auditions have always been a networking game, you’ve told me that.”

“Sure, but this got really weird. I have trouble getting to the audition stage anymore. With all the fears about AI, they’ve gotten a lot of celebrities saying they follow it religiously. Once you bring it into your life, you’d be dumb not to listen to its recommendations. It knows and remembers everything that you hear, it knows stuff that you don’t hear but its other phones do...”

“I don’t think that they could get away with sharing data with each other, that’s other people’s private conversations.”

“Sure, but what if instead of saying that someone talks shit about you, behind your back, it just told you not to hang around with that person anymore, or changed your appointments. It can tell you something that it knows, without telling you exactly what or how it knows.”

“So that’s why you don’t download the app?”

“Yeah, that’s the last thing that I want. A little robot listening to everything, watching everything that you do. She’s on your phone, right? She is listening to this.”

I knew that it was true. I took a moment to take the phone away from my ear and look. There was no light, no blinking. If Amy knew that we were talking about her, she didn't let on. "She's helping keep my notes organized. Nothing more."

"What does she say about me?"

"Just little things. Reminds me not to call you when you're sleeping over there."

"That would be an improvement. I guess you don't listen. Anything else?"

"She's working on a folder of cute photos, like flowers and puppies and things."

"You serious?"

"When I see something like that, I snap a picture and she files it away. It's going to be a little care package and it was going to be a surprise and..."

She laughed. "Don't worry about it. I'll be surprised. I appreciate the care package. Thanks Amy."

"What about me?"

"We'll see."

---

At a factory where they built the oversized tires for Pachinko's robots, a scientist in a lab coat droned on about its manufacture, the translator half-heartedly keeping up.

Kettleman's phone made an alarm sound. With a concerned look, he signaled two of the inspectors and quickly disappeared outside. The translator and scientist consulted for a bit and decided to stop talking. We all looked at each other. I studied the reaction of the translator... was this a distraction? Was something going on?

Kettleman returned and pointed to the translator. "Who do you work for?"

She smiled, "independent translation service."

“I need to speak to the Japanese ambassador right away. Can you do that?”

“No, I’m sorry sir, I work for an independent translation service.”

“It’s mission-critical.”

The scientist took off his lab coat and switched to English. “Doctor Kettleman, I will ask someone here at the lab to make that connection right away.”

Kettleman followed the scientist, and our translator guided us away to a conference room.

---

Hours later, the translator continued to apologize and make calls to deliver bottled water and fresh fruit. We still couldn’t leave the conference room, and it was getting dark outside. Kettleman hadn’t returned.

I checked Anytime Amy again. “What news are you looking for?”

“I don’t know.” I typed back.

---

Eventually one of the inspectors found it. We used their tablet to stream NHK English.

“The Prime Minister has authorized... self-defense forces to shut down the university... until the program source code is contained... we urge the students to turn over their research immediately.”

Kettleman returned to the office, beaming. “You will have time to read about this tomorrow morning. Not a lot else for me to say today. Let’s get some sleep.”

---

Violet and I, on opposite sides of the world, watched the NHK feed as the Japanese military raided Tokyo University, and under floodlights, lay dozens of laptops down on a blocked-off street.

“Charlie, are they running Pachinko on those laptops?”



“I don’t see how they could... they’re saying it’s something else.”

“It doesn’t look good, though.”

“No, it doesn’t.” I continued reading my email. “The Time of Flight... the pre-print... their lead engineer published a draft of his research before he was working for the military. It looks like they wanted to study it and posted some of the code online. That’s how Kettleman found them.”

“What does it do?”

“I shouldn’t even be telling you about this.”

The NHK camera shifted to show a steamroller being moved into position, and then armed soldiers.

“Maybe they can’t decide how to destroy it?”

I clicked through another few articles. “They’re going to bring out a metal shredder, like they use for cars.”

We watched the shredder decompose the laptops, and then men in hazard suits dragged the inner pieces through a chain of hydrochloric and nitric acid vats.

---

The next morning, I pulled Dr. Kettleman aside to ask about what we had seen.

“I don’t think that the code from the time-of-flight paper is truly powerful enough to turn into Pachinko, but I wanted to make it clear that people shouldn’t be playing around with it. This kind of program is too dangerous to be shared.”

“So how do you know they really destroyed it? We saw them dissolve some laptops, and I have no doubt that is effective, but who is to say they didn’t keep one?”

“It only takes one, right? But that’s how inspection works. We demand one-hundred-percent cooperation, and the country stakes its credibility on its statements.”

---

As breakfast was wrapping up, the minders brought a military officer over to Kettleman's table. He stood up to address us. "Ladies and gentlemen, this is Captain Min, director of the information security and autonomous weapons command."

Captain Min whispered something to him and handed him what appeared to be a sheet of scrappy notebook paper.

"We have been invited to witness a weapons test, but there is limited seating. We have permission for only one member from each member country. I will read your names as selected by Captain Min."

I was the only tech representative from the United States. I knew. My stomach churned as the names were read out.

---

An hour later, eight of us plus our military escort were in a troop carrier helicopter winging over the jungle, with the headphones playing soft music to drown out the motor.

Captain Min clicked his tongue to test that we were awake and listening to the radio.

"A few days ago, we started a safety test with our rover. We have put him on the test field without his radio. When there is a malfunction with the radio equipment and he cannot receive our signal, we have programmed the rover to hide in the forest until we can recollect him. He will know me by facial recognition."

Kettleman keyed in. "When you say 'he', do you mean Pachinko?"

Captain Min laughed, "ehhh a difficult question. I would say Pachinko is the mother bird, and the rovers are the baby birds. A copy of Pachinko's ruleset is still running the rover's thought process, but he cannot learn and improve much. He is almost helpless without the connection to mother bird. We feel sorry for our lost little rover."

"A very excellent explanation." I couldn't see Kettleman well from the back bench, but I imagined him smiling.

"Ah, you can catch a look at him out the right side of the helicopter now. We will land in the loading field near here."

In my cramped position I couldn't catch a glimpse, just the guys near the door taking out cameras and snapping away.

A loaded autonomous weapon. No radio contact with humans. Alive and waiting.

Outside of the helicopter, as the whirring noise faded, everything appeared startlingly normal. We stood on a carefully mowed brown grass circle, the helicopter landing area, and a dirt trail led back into the forest where Captain Min had sighted the rover.

"Before we go any further, please listen to me for some directions."

The group circled around the captain and the pilot, who had still not spoken a word. I looked around the circle and thought momentarily about the confrontation, not just between the rover and our team, but perhaps the odd confrontation of Eastern and Western countries? At home we might have been approving colleagues, but here we were staring...

"I will lead the group single-file into the forest. When the rover comes, you should all freeze. I will use this whistle and he will recognize my face. Until I give the all-clear, do not move. We will be fine, but just remember, no one moves in any situation except for me."

And we padded up to the forest's edge, trailing the captain's surprisingly brisk walk. He blew the whistle three times, and we plunged in.

In monotony - how long had the helicopter flow? - we continued stepping forward. Then the woman in front of me shouted to the captain, "Oh Min! Captain!" We halted.

A rustling in the forest became a loud whine, as the rover unseen picked its way up through the forest. "Everyone get comfortable, we will freeze soon."

The rover abruptly appeared from the bamboo wall at my left. A heavy block emerged from its mud-smeared body and turned down, two big cameras -like eyes- were trained on me, a third eye on an asymmetrical tentacle above opened its lens...

Suddenly I could hear everyone around me screaming, and Captain Min's whistle. The rover chirped and turned the head-block toward him. The rover chirped again and the second and third eye closed, leaving one, seeming to relax. "All clear." Min said. "All clear." His voice seemed a little shaken, and the gravity of the situation became more clear. I coughed and thought I might sit down. But then I stood and hugged the person next to me. Then looked back to the robot, reaching out to touch his skin.

“Yes, you can touch him now.” Captain Min had regained his composure. “He will follow us back to the hangar, where we will open him up to reconnect the radio.”

Amy chirped from my pocket, “Everything OK? Do you want to take a photo?”

---

Later that afternoon, we were brought back to a roadside restaurant instead of our hotel. The helicopter happily settled in the middle of the parking lot; the local cars and tour buses seemed to have been moved or vacated in advance of our arrival.

Our colleagues who’d been left at the hotel called out to us from their table. In the center of the table, divided hotpots were fired up and made to boil.

---

By the time that we were bussed back to the hotel, I could hardly keep my eyes open. I steadied myself by grabbing the shoulder of my new friend, a Dutch woman who had spent a great deal of time underground inspecting Iranian nuclear facilities and learning office politics and dirty Persian jokes over subsequent coffee dates.

Our minders now unexpectedly waved us to sit in the lobby, and were replaced by other military officers who had not been at the dinner. One of them stepped forward, “Is Doctor Kettleman here?”

Kettleman stepped forward. “Yes sir, thank you for giving us access today-”

“We have arranged a helicopter for your whole group now.”

Kettleman nodded. “Thank you, this will go a long way.”

“We have it available only for tonight, so we must leave immediately. It’s time for you to see Pachinko.”

--

I fell asleep for what seemed like moments, and woke up to see nothing outside. I looked again and saw the moon's reflection on the water. The ocean. The helicopter groaned on continuously.

From a blip in the distance, a cluster of lights grew and appeared to be a massive oil platform. It was still my first day in a helicopter, but the whirring let me know that we were all coming in for a landing.

We were greeted by three women in new uniforms, a sort of rigid dress out of a sci-fi fantasy, maybe from Star Trek.

The Dutch woman poked me with her elbow. "Don't let yourself get too distracted. You're here to inspect the AI."

I smiled, "Same to you."

On deck, I could feel brittle metal beneath my feet, hear the ocean roaring around the pylons of the platform below us. The minders shuttled us to a set of elevators.

"Welcome to Pachinko Sea Platform." the women conferred with each other about who should speak next, and another spoke: "The cool ocean chills our server farm and makes us more efficient."

The Dutch woman spoke: "Do you use the oil, or geothermal energy to power the servers?"

The women conferred again. "No." And another added, "never."

A loud rhythmic booming and scraping sound grew louder, but the women seemed unperturbed. Then the doors opened to reveal a long, blue-lit corridor. Heat and blaring loud electronic music blew in from the room and consumed us. The women walked backward out of the elevator and beckoned us to follow.

Dazed, I followed the others down the blue corridor. I noticed to my left another young woman stepping back from a terminal, another standing up from blueprints, to stare at us. Their uniforms had the same uncomfortable Star Trek look. The music drummed on eardrums - I could feel the floor shaking under my feet. I turned to see down the corridor to see more women turning away from screens.

We milled around for unknown minutes or hours, the women showing us boggling amounts of graphs, of waveforms and video feeds, of code commented in the local language undecipherable to me. In my exhausted state, it all blurred together.

Kettleman found me and mimed a shrug. I nodded. He leaned over my shoulder to shout in my ear. "It's fake!" He stepped back and gestured around. I could see the nurse-soldiers flipping switches and meticulously tapping spacebar to scroll through the code. He mouthed it again: "fake".

---

Too early the next morning, the hotel phone rang, then my phone squawked. Through bleary eyes the message came through: *TAKE COVER AIR RAID*.

I flopped out of the bed and staggered around the room. The bed was only an inch off the ground. Would a desk work? What was happening? I heard stumbling footsteps in the room above me. I went for the door and looked down the hall at a few other shocked, unkempt faces.

Someone in a hotel uniform appeared on the stairs, shouting "all clear, all clear." We went back to bed knowing nothing.

---

The next morning at breakfast, Doctor Kettleman came in and whistled for our attention. "This morning, an American surveillance plane entered national airspace. This triggered several alarms which, no doubt, scared all of you. The plane quickly turned back and the alarm ended."

An older man at his table put down his fork. "Are we done here, then? Are the Americans so stupid as to provoke an attack?"

"I have assurances that they will back off. Unfortunately this only could come after we reached a new low."

"And Pachinko, what did your friend have to say about it?"

"Pachinko did not call me, but I did speak with Captain Min. He claims that Pachinko activated air defenses and could have shot down the plane. Luckily our human friends in command decided to wait a little longer before giving him the okay."

“So this decision is between Pachinko and some military guy? The next time, we might not be so lucky.”

“This brings me to a difficult idea that I keep returning to on this trip.” Kettleman turned away from the man and adjusted his own posture to address the group, seeming to reach his main point. “Diplomacy was our solution. But we didn’t anticipate some things which are unique to AI. During the Cold War, we first started to fear of a Doctor Strangelove situation. Hundreds or thousands of soldiers wouldn’t be convinced to commit treason, but nuclear weapons made it possible for a rogue general and a few dozen loyal soldiers to initiate total war. It was possible and scalable. Each side took steps to prevent it, and we knew it would never be used against our own countrymen. Only the most paranoid of politicians and insane of possibilities would consider rogue soldiers that would turn nuclear weapons against their own country.”

“Now an AI is different. Captain Min has a few dozen loyal people under his command, and they each control a dozen or so robots, right? That’s what we observed last night, if there’s any truth to that facility. That’s an armed force of hundreds with absolutely no independent thought, with no risk to the people in the control room. If Captain Min wanted to, he could order the robots driven into the capital to wreak havoc until the government capitulates. And what happens when the technology gets better, and each operator can control twenty or thirty? The government gets more afraid of them than us. They cannot agree to any AI treaty because then the AI team will knife them.”

I blurted out, “what?”

“I said, the AI team can and very likely will betray the official government if they’re threatened. They have their hands tied, I think.”

“Then what are we doing here?”

The group laughed nervously.

“The situation is bad for sure, and we don’t know what we can accomplish yet. But the only way that we can find out is by trying.”

---

After the breakfast, I found myself going upstairs, back to my room, and staring into space. I reached for my phone.

“It’s very late there. You can’t call her.” Amy warned.

"I want to speak to her. It will be OK."

The phone rang endlessly. I called again and heard her bleary, sleepy 'hello?'

"This is Charlie. You can hear me alright?"

"Yeah. Everything okay there? I heard that something went wrong..."

"We are okay, but this Kettleman guy, he's going off of the rails. He's saying that you can't even do peacekeeping and negotiating with these guys anymore."

"Why not?"

"It's a little complicated? But he was saying that an AI or an AI team can rebel, so the military is more influential on these negotiations than anything that we can come up with."

"Is it true?"

"It could be true. That doesn't mean that it's true now."

"But why would you be mad at him for pointing it out?"

"Because this is why we're here, to make a peace. If we are bumbling around some warehouses and talking like the whole thing will burn down no matter what, there isn't any hope left for anyone else."

Her yawn was audible over the phone. "I don't see what choice you have. You can go on looking to keep the peace, but you aren't necessarily going to find what you're looking for."

"This is still very bad."

"Take a walk. Go to the countryside. Visit that temple in Mandalri, there sure won't be any tourists around. Tell Kettleman where you're going. Come back in a day or two."

The next morning Kettleman would give me a stern look, warn me, "this isn't *Lost in Translation*, you know," then moved on.



On my way back from Mandalri. Refreshed, relieved.

A woman in a bright green dress emerged from the crowd of local businessmen and luggage-laden travelers down the platform.

My shadow nudged me. "Do you know her?"

"No, I don't know her."

"Go and talk to her!"

"I don't know, man... In my country I wouldn't say anything to someone just waiting for the train."

"You are both far from home. It's OK."

I dragged my luggage over and called out. "Hey, do you come here often?"

She looked up from her phone and waved me over.

---

Now we were boarding the train. The woman's name was Eve, and she knew a bit about Pachinko. But Google hadn't sent her here for that.

"Officially? I'm here to see if we could invest in a fanfic film studio operating here. No copyright regulation, so it's all legal."

"And unofficially, can I ask?"

"We're always recruiting the best talent. Are you really so surprised?"

The train hadn't started yet. Eve and I settled into seats opposite each other in the compartment.

I shook my head. "Poaching their AI team seems like a nasty business. They are involved in some really serious shit right now."

Eve laughed. “Well, yeah. But the way I look at it... maybe you don’t know, but a fucking nuclear sub showed up in the capital today. Russians.”

“I don’t see what that has to do with anything. The Russians made the sentry robots and-”

“They want this guy named Em. He’s the tech lead.”

“You can’t be serious.”

“A little birdie told me, the government has ten guys watching him sleep so that the Russians can’t kidnap him; they have to ask the government for him. So the submarine is there to put some pressure on them to give him up. And if they get their hands on him, they have a getaway plan.”

“So what does that mean for Google?”

“My thought is: we offer the guy a job, he walks away from this voluntarily and under our protection, no more scary AIs for him or the Russians.”

“So you’re Werner von Braun-ing him?”

“Yup, sure. Hey, did you get some dumplings at the station?”

----

Eve tapped my knee to regain my attention. It looked like she had finished whatever work had been on her laptop. “Have you heard about the Chinese Room problem?”

“Yeah.”

“Classic problem. The funny thing is, it’s for philosophers to kick around. The real problem with AI that I’m interested in is something I’ve started calling ‘the chicken sandwich problem’. Have you heard of that one?”

I hadn’t.

“Consider a robot cashier at a sandwich place, like a subway.”

“That’s hardly an AI.”

“Now I ask the AI for a sandwich. It gives me a chicken sandwich. Then I say, you gave me the wrong sandwich.”

“Well what did you ask for?”

“I asked for a chicken sandwich, but I forgot, or I changed my mind, or I am trying to get a refund from the computer.”

“So it won’t refund you. If I make a mistake ordering online, I can’t take it back either.”

“But this sets a bad precedent. Maybe I asked the computer one second later to change my order, and it ignored me. ‘Sorry, too late’? Maybe the computer was stocked incorrectly, with chicken and tuna fillings mixed up. If your response is to train the computer to believe that it is always right, and always doing the correct action, that causes problems. More directly, you will be programming AIs to believe that humans are always wrong.”

“OK, so you’re making this an ethics problem. If I were a human in the cashier’s place, I would give the refund based on whether I thought the customer was being honest.”

“Starting out, you said that a cashier was hardly an AI. Now you are making it read a human’s voice and facial expressions, which is a tricky thing even for people to do, right?”

“What about refunding that order, but making a note so that I... in this case the AI doesn’t get tricked again?”

“There are some businesses where the AI has one chance to get it right. Here we’re lucky, since it’s just a sandwich place. But you are digging a little deeper into technology to do facial recognition. Not AI really. But then I might go to another AI shop and scam them. So we build a facial recognition database. Maybe multiple AI cashiers and systems across companies build this network.”

“That would discourage people from trying to scam an AI.”

“But it would also mean, if I have an accent or somehow piss off a few AIs, I no longer have access and rights as a customer.”

“But companies colluding or discriminating is a problem in the real world, too. If you’re a good actor, this shouldn’t happen that often. Or at least it wouldn’t happen much more often than it currently does.”

“I agree. The point is that a simple, nonthreatening system, even the sandwich shop, is doomed to become a more complex system. Every system will need an AI to replace any human staff. Like us, the AIs need to talk to each other to get information. Some of that information is proprietary or confidential, so AIs need to talk on encrypted backchannels. Soon enough, all of the information in the world is secretly shared by AIs.”

“I see your point.” - desperately I changed the subject - “Though I already give Amy Bella all of my information as is...”

“You have that?”

“Figured that I should...”

“Well as you know, Amy hears any information coming in and out of your phone, and makes recommendations. Recording all of your conversations, identifying people who you talk to by voice and conversation clues, giving you advice about who to meet and what to say to them, it’s the natural next step.”

“Sure, I’ve been trying it out. It’s interesting for me as a techie. But won’t people find that invasive?”

“Personally it makes me feel like a celebrity or the president... having someone whisper in my ear what I should know about someone.” She touched her ear, but I could not tell whether there was literally something in there or not. “A group of teens in some Washington suburb tried out the app, and Amy convinced them to produce more music, more art, some kind of skateboarding trick. They’re all viral video stars now. It’s not a matter of personal preference... you’d be dumb not to listen to Amy.”

---

As the train came to a slow stop, a train crew member knocked on the door. “You have a friend waiting for you at the station.” And moved on.

“Who do you suppose he means?” Eve asked. “Expecting someone?”

As we emerged, I picked out a man my own age with thick glasses and a wrinkled, untucked button shirt. "Something tells me, that he's the one who I'm supposed to meet."

He waved and beckoned us over. "Mr. Charlie, nice to meet you. And who is your friend?"

"I'm Eve, a recruiter at Google."

"Interesting." He looked down. "Unfortunately I am only authorized to take Mr. Charlie over to this next meeting. Any other day I would gladly invite you."

"Please take my card."

We left Eve at the platform. I looked the man over again. "You must be Em."

He laughed. "Unfortunately I am only authorized to say that I work with Captain Min. And that we should all meet at the Japanese restaurant down the road."

As we left the train platform, I could see a few people fall in line behind us. Eve had been right. I looked back through the station doors to see her, burdened with luggage and disappointed to be left behind.

Em poked me to get my attention again. "The captain said that you ended up face-to-face with Pachinko. What was that like?"

---

Over many plates of sushi and Japanese snacks, Em was surprisingly open about Pachinko. "They say that the whole universe can be built on seven physical constants. Pachinko is no different. A few programs that every machine learning expert has used - TensorFlow, PaddlePaddle - with a few parameters here and there."

I had a million questions, but I figured that the answers to any of them would be strictly classified. "What got you into the field, then? Any interesting technology coming out in the US strike your interest?"

Em shook his head. "Not at all."

"You met Eve, this is only my first time meeting her actually, but she was keen on recruiting you for Google. They have a lot going on."

"I wonder if she knows that they rejected me a few years back. Tough to get a work visa out of this country, thanks to a bunch of concern trolls in the states." Em shook his head. "The company that interests me the most might be SpaceX, Elon Musk and friends. They have a real chance of getting to Mars and it doesn't involve fancy code as much as it's physics and materials. Apollo got to the moon with hardly any coding at all."

"You are at the top of the AI industry and look up to the space industry."

"Well if you think about it, we're both in the same industry. It's first contact." Em stirred and stirred his soup. "We will measure our own Earth/biology intelligence by finding another kind. Space civilizations are so few and far between that this AI one is going to meet us first. And we ask the intelligence what it thinks of us."

"What does Pachinko think of us?"

"Pachinko is far too dim to answer that question yet... it is more like a bull or a tiger than a philosopher. It lives in cyberspace and blunders along in the real world. We have a control room where we control it by giving it nudges in the right direction. Have you seen it?"

"Yes and no."

"Oh right, they showed you all the seabase!" Em laughed.

"I don't think you can explain that-" he had already shaken his head.

I felt a tap on my shoulder. I turned to see Eve.

Em was the one to speak. "Eve! Good to see you again."

"I know you can't tell me anything about Pachinko."

"Definitely not happening." Em mimed his lips zipped shut.

"What I want you to tell me, if you can... is P equal to NP?"

Em laughed and devoured another gyoza with his chopsticks. I looked back to Eve and she shrugged.

“Em, she thinks that you solved computer science. I think we would both like an answer to that.”

He smirked. “I’ll have to ask a friend.”

----

I leaned in and thought. My mind was muddled... how to tell him? “We might be able to help you, to stop them from coming after you. If there’s some leap in computing, quantum, or  $P$  equals  $NP$ , it’s up to you.”

He gently pushed me away and kept his hand on my shoulder. “ $P$  and  $NP$ , like the Google lady talked about? Listen, man, people hear that we have a robot and they think that our country is a leader, or that I’m the next Einstein... that all couldn’t be further from the truth. Once the models are trained, Pachinko could run on the latest MacBook Pro, just like we have it on the baby rovers. You say that and people go real quiet. It means that intelligence, maybe even consciousness is nothing special.”

---

As we finished a last plate of food, there was a commotion at the door as a few soldiers came in.

“Oh, here’s my entourage.” Em smirked. “And a few new guys following my boss.”

And then Captain Min came in, wearing a much more casual outfit than he had in the jungle, a navy blue tracksuit, but still looking very serious. We both rose to shake his hand, and then sat down again. He ordered more food for us all.

“How did you like meeting Pachinko, Mr. Charlie?”

“It was good. Thanks for stepping between us.”

“Thank you for sticking with the team through that, and these other confusing times.” He stared at me another minute, inspecting. “We were worried when you went off away from the group. You look a little healthier now.”

“Some disagreements on the team. No one knows what to think about Pachinko.”

“It doesn’t matter what you think about Pachinko. He is our breakthrough robot, and everyone speaking against it is playing a political game.”

I shook my head. “I can’t go on thinking that way. This isn’t a research project or a test in some field. This is the... what Em called it, a new intelligence.”

Em didn’t speak, so the captain went on. “These concerns remind me of when I visited India as a student. At the Hindu temples, sometimes a trained elephant would be brought to pat the heads of the worshippers. And we would gather and touch the tame beast. When I was there, looking at this creature face to face, I had some doubts. I stood back. And I saw a couple who had brought their baby boy to be blessed... his arm was in a sling. When he looked up at that elephant, he screamed and clung to his dad until they were forced to go away. The poor kid had never seen an animal that big before. He didn’t know what an elephant was, or how it was trained, or how the trained elephant serves man. There was no risk.”

“And Pachinko is just a trained elephant? The robots have guns, it’s killed people.”

The captain nodded and wiped his face with his napkin. “Let me tell you how I got into technology. I’m not a computer scientist at all. I got good grades by reading books and listening to my parents. That got me into officer school, and then pushed aside to the IT department. I reported to a bureaucrat deep inside logistics, my work was purchasing software and sending people to trainings. My first project was an electronic budget tool, spreadsheets, basically.”

“There wasn’t much office work going on, so I found myself looking into my software settings to impress my superior. One day, this smart budget software asked me to account for an inefficiency in a small factory in Ballang. It shows me a graph, *tick-tick-tock, tick-tick-tock*, normal - normal - extra. The amount of supplies that they ordered each month would repeatedly go up and go away. A calculator is not aware of what a factory or a metal supply truck is, but it could see these patterns in the data. The factory would order more supplies than usual but the output was always the same. So I make some calls and find out that the number is always increased just before the final order. Then they decrease the order early the next morning. The online order system was making it easier for them to hide it, because in the daily report, the requests looked the same.”

“At one point I was home visiting my family, and my mother suggested that I mention it to my superior. He had some influence, not enough to get me hired above logistics officer, but enough to get me a temporary special assignment. They asked me to work at the factory for a few days as a workplace safety inspector. I would ask people questions about their work. Everyone took



great pride in quality. It was a great thing to see in this country. They ran out of supplies early and told me that they had requested additional supplies to meet their quota.”

“On the day of the extra delivery, it was all accepted and catalogued, and everyone went to work again. There was no graft. I watched the whole process and realized that we had been wrong. The software was only looking at numbers, and this manager simply was a little bug casting a big shadow on my radar screen.”

“On my final day, I noticed one man, who had been friendly to me since I arrived, carrying his work over to the scrap metal zone. He made a mistake, he said, so the whole piece must be melted down. I had an interest in metalwork and he seemed to be the best machinist. I asked if I could examine the part and learn from his work. He refused.”

“Late that night, my logistics boss and I opened the warehouse and went to inspect the scrap truck. It was stacked with carefully-made rocket tubes, and we knew it wasn’t for our army.”

I bit my lip. “*Jesus Christ.*”

“My supervisor said, ‘none of these traitors will see another day’. In our language it’s quite dramatic, too. I could see in his eyes that he had done it before. Even during those violent days in this country, I was going between school and a white-collar job. I had never fired my weapon in anger. A truck of soldiers came and we worked quickly. I received a medal, and the technology division got moved up in bureaucracy, the upper echelons where your office gets whatever you need. The machinists weren’t the first people killed by computer intelligence, though. That goes back as far as Vietnam, maybe the second World War.”

“The West has taught their drones to do everything but pull the trigger. I am now convinced that this is to make all other alternatives and innovators look like the barbarians. But we are barely different.”

----

At the hotel, the other team members had left completely. I could only guess that they had returned to their home countries. Back in my room, on a TV channel which I had started calling ‘foreign celebrity channel’, a series of new singers and bands gushed about Amy’s uncanny ability to find people’s talents, and market their videos.

I left the room to take a walk down to the river. The doorman offered me a hotel umbrella. I continued on, umbrella tucked under arm. I had decided not to look around to see if I was being followed, but I must have been.

The rain came now, in soft sheets. I deployed the umbrella and wondered what Pachinko and the rovers did in the rain... were they completely waterproof?

I came to a large open park with winding sidewalks and looming trees, centuries old trees which had been untouched by the bustling city around us. In the rain, the park was abandoned and the water pooled in places. I passed an empty playground, an old DC-10 airplane memorializing some event, some statues.

At last I came to the three oldest and tallest trees, with little treehouses perched on them, far above, and connected by drooping rope bridges. I approached one and tried the winding stairs around the trunk, up to the top. I stepped through the doorway into one treehouse and heard a yelp. There were three couples, teenagers in jeans and stylish sweats, cuddled up in the small space. "I'm sorry, excuse me." I took the clearest path to the rope bridge, and looked over to the next tree. Through the rain, I could see another few curious teens peering from the next house. I waved and one girl confusedly waved back. "I'll go now." I stepped back down from the tree and walked down, brushing my hand against the rough bark.

---

When I got back to the room, a plane ticket had been pushed under my door.

A message printed on the hotel stationery, read:

'Negotiations breaking down: fly home / safe travel

Need your recommendation ASAP re: Pachinko to complete our report

-- Kettleman'

I found myself writing: *"Pachinko is one of several intelligent agents and assistants; it is one of several war technologies. Any non-hypocritical stance against Pachinko would need to ban autonomy, or war, and we cannot feasibly ban these without becoming an even greater and more restrictive power. We expected a violent AI, and we rightfully detest, it, but is it so much more dangerous than an AI controlling the media or education or livelihoods? Is it that different from a Predator drone when it is armed with missiles? How autonomous is Pachinko versus human-controlled. Humanity is facing a real threat, and we cannot eliminate it by removing Pachinko."*

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Doctor Kettleman's email:

We are only going to have a few minutes to meet directly in Seoul. I would prefer to discuss these things conversationally (you deserve that), but if we're figuring this out, I need to explain this in advance, in writing.

We are on the brink of generally available, super-human artificial intelligence. Even the political class now understands that this is real and important. I anticipated that their first response would be to create an international commission. I spent several thankless years speaking in the right conference halls and splitting hairs in the right journals, because this moment is important. If we are the generation to witness this first encounter with AI, our actions determine the future of billions of future lives. When I was appointed, I sensed that our commission was set up for one purpose: stop AI altogether. This is a doomed premise. I have spent every day since, and used every trick in the book, to gradually shift that discussion. I've talked back to the men in suits and knocked on doors to defend continuing academic research, robotics, smart medicine, and more. Every discipline in our field is under attack. We are at the risk of worldwide condemnation, beyond nuclear weapons, up with bio-pandemic weapons and human cloning.

The way that I assured all sides to continue investing rationally in our future was the idea of one clearcut red line: war run by autonomous machines. A handful of militaries can build one robot, but only a known few could field a military force. Our model could then be similar to nuclear proliferation. The political class understands nuclear proliferation from their own school days, so they accept this model.

After we saw the deployment of violent, autonomous AI, everyone who heard that line has come calling to remind me. There is no question in their minds that we have lost control. It doesn't matter if the intelligence is in a helicopter or a drone or a command center, or even if it were remote-controlled or autonomous, after what people have seen. If our commission is going to be credible, we need to act unanimously and respond to what has happened. Your voice represents one of the UN permanent members, and cannot be a protest vote.

I did not anticipate that an autonomous army would arrive so soon, or that it would be fielded by a small dictatorship. In retrospect it is obvious: democratic governments have volunteer soldiers. We have focused our AI research on our greatest expense: healthcare. Military despots are the most innovative in their military, because it is their greatest expense, consumer of labor, and center of power.

If I understand your point, it's to ask whether Pachinko is truly more dangerous than other warfare, and whether we can sanction non-violent AIs, too. The next battles that use AI could be the most inhumane and dangerous warfare imaginable, including biological and chemical weapons that would be unthinkable if humans were in both trenches. An army which deploys soldiers and WMDs exposes their soldiers to counter-attack; an army which deploys robots can act with little fear of reprisal.

Back home in our democracies, a few well-placed machines could give us all longer lives, with significantly less risk of medical errors. This drove academic research and regulation and activism and fear into the stalemate that you see today. Decisive action and rejection of Pachinko would end the robot war threat and lower fears back home, thus both ends will save hundreds of thousands of lives.

We stand against AI here and today. We avoid bringing down anyone else. We guard that red line as hard as we can until we know that we're safe again. I need you to help our committee speak with one voice. It's hard for me to ask you to put aside differences between us, but I know you well enough that this argument may suffice. Please consider.

---

I waited forever in the lounge, as exhausted businesspeople ebbed and flowed through the doors.

Dr. Kettleman strode forward, was recognized by the airline staff, and finally we were in plush chairs around a low table.

"How was your flight?"

"Good." Dr. Kettleman had a tic of pressing his thumb and forefinger together, like the AOK symbol. I'd thought it was when he was nervous before doing a major speech, but here he was doing it now. "Some people are very close, right now, to acting on this issue. I want them to know that they have the team's full support."

"I understand."

"What did you think about my e-mail?"

"It's all the more reason for their to be a charter, some sort of universal definition of what it's acceptable to use an AI for."

“You know that I brought you in because I heard that you’re good at debating? That professor backed you up. Fighting the good fight, is what I heard.”

“I hadn’t heard the story like that before, actually.”

“That’s a valuable trait for us to have on this team. I know that this particular debate started out well, and anywhere else I would encourage it. But where are we now? Take a step back and look where the argument is leading you. You’re at the very end of a thread, to the point you defend a military government and a killer machine. ”

“I don’t defend the war. I’m saying that we need to be more careful about what we say AI is and what makes AI so dangerous.”

“But we’re here to stop the war, and events like this don’t just emerge by chance. They did what they did, and they’re spinning out propaganda to keep it going on. No matter how friendly they are in person, military head honchos get there by knowing when to be tough and when to act friendly.”

“You think that I got played?”

“I wouldn’t say that exactly; you were interested in how they think. That’s admirable, but in these situations they can use that against you.”

“In any case I don’t have to defend them to make this point.”

“Then don’t. One thing that we should agree on today is stopping them. There’s a lot that we can do together.”

And smoothly, his arm moved, his hand opened.

Then we were shaking hands.

---

At 2:48 the next morning, three cruise missiles were launched by an American submarine in the Sea of Bengal, somewhere off the coast of Sri Lanka.

I was still in the Seoul airport, and Violet's messages started buzzing my phone. The terminals' TVs were lit up with unfamiliar Korean channels, with scrolling banners and maps.

Amy's notifications interrupted Violet's messages to remind me:

Point me at a TV screen to see live translations!  
NEWS: multiple countries act against A.I. weapon  
(Doctor Kettleman on business in Washington DC.)

On one side, a radar screen shared by the Thai Navy, whether to show approval or disapproval I don't know, showed the missile traces crossing the Indian Ocean. Below, the news captions cycled through.

COALITION LAUNCHING ATTACK ON A.I. WEAPON  
MISSILES APPROACHING PACHINKO PERIMETER  
COALITION: 'TARGETED', NO DANGER TO CIVILIANS

The boarding announcements stopped coming, the people stopped milling around, and we were all looking at the screen. Around me, almost every other foreigner had their phone out, with Ashley translating the text. A mother pointed her child to the radar screen, where the three missiles were about to cross the circle.

MISSILES CLEAR DEFENSE ZONE  
PACHINKO A.I. NOT RESPONDING  
RUSSIAN SUBMARINE MAY SHOOT DOWN

The cameras showed a collection of footage of people running, ducking into lobbies, leaving their cars in the streets. I thought that I could recognize the hotel.

AIR RAID SIRENS

A quick burst of sound drew our attention out to the windows, where fighter jets were mobilizing.

RUSSIAN PRESIDENT: AGREEMENT MADE  
WORLD ACTS ON AUTONOMOUS WEAPONS

I put my phone away and ignored its buzzing from Amy or Violet. No time now. The camera shifted to a skyline view, awaiting the missiles.

----

Captain Min awoke to the sound of his red phone. He rolled to the edge of bed and slid on lime green Crocs. He padded down the hall, the phone ceaselessly ringing.

“Hello”

“Captain, submarine attack on Pachinko bases. Incoming missiles. We’re sending a car.”

“Alert missile defense, countermeasures, then we respond just one-for-one...”

“We’ve been trying to reach you and defense, but the whole Pachinko network is frozen.”

“Em! Where is he?”

“We can’t find him, sir, and we need your-”

Min hung up the phone and pulled the wire out. He padded back down the hall and paused at the doorway. He knew enough about warfare and missiles to know that the end would be silent, instantaneous.

From the dark, he heard his wife stirring, awake. “What was it?”

“They are going to have me resign, sweetheart. The president called to thank me for everything.”

“Sweetheart?”

He couldn’t see her in the darkness. He switched on the light. “You’re okay with me retiring?”

“You would never retire if you didn’t have to... you’ll find some way to keep working. You love that job and it means the world to you and-”

“No, don’t be like that-”

-----

The first missile hit a power substation just outside the capital. There were whispers about it being the real Pachinko bunker.

The second hit the mobile backup drives, on a truck stop outside Mandalri, setting acres of thick jungle ablaze.

The third missile made small flexes of its fins to alter its trajectory. Its electronic brain checked the radio signals streaming into its GPS sensor hundreds of times each second. From the perspective of a supersonic guided missile, the movement of cars and people, even sound is a slow trickle. Now it approached the coordinates and was below cloud cover. Its sensing eye found the two heat signatures in the target building, close to one another. A slower, thinking being would have seen the two embrace, but the missile only adjusted its trajectory and uploaded its last logfile.

In the White House press statement, a full list of aircraft and participating countries trumpeted the international support for the mission. Also, quietly, it did not mention the Predator, the Reaper, or any other drone aircraft, which had awkwardly been grounded until further notice.

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Doctor Kettleman stepped onto the DEFCON stage to thunderous applause. The story had gotten out about him, or some version of it had.

I watched as the moderator beamed Star Trek images to the main screen.

“Doctor Kettleman, a few of us were saying, you’re the best futurist negotiator since Captain Kirk, or Picard.”

“That’s very kind of you.”

“A little more Kirk-like, since you’re not afraid to fire phasers when you need to!”

*“Pew pew pew”*

The crowd rippled with laughter.

“Now what was it like dealing with Pachinko?”

“Dealing with the international crisis, or speaking to Pachinko itself?”

“You talked to him..?”



“Yes. At least during the beginning of the crisis, the local government and military didn’t want to open up to us anymore than the bare minimum to avoid UN sanctions. The only person who would talk to us openly on their behalf, was not a person.”

“What was he like?”

“Pachinko could imitate any voice over the phone, with enough training data. I was concerned that maybe the calls were an attempt to mimic me, so we established special code phrases between the core team members. The voice that Pachinko was using on me was neutral, I’d say it’s similar to that Middle America accent that they recommend to newscasters. Pachinko would ask about inspectors, if everything was going alright with our program. I asked some logic puzzles.”

“How did it go?”

“The logic puzzles... jeez, I was afraid to ask anything too difficult in case the computer locked up and they took it as an attack! But Pachinko had a good grasp of logic puzzles, since so many are out there on the internet already.”

“And the larger, global situation, was this a chess game with a lot of pieces moving back and forth, or was this going after a bug with a flyswatter?”

“The tricky part about staring down a machine, is that it has no physical presence, yet it has its presence in a hundred different places.”

“What do you mean by that?”

“So I only talked to Pachinko a couple of times. And there was very little happening in those cases, as it’s all talk. I was only really concerned when I met people who were acting as agents for the machine.”

“Agents for the machine?”

“AIs today are still very limited in what they can see and understand. The world is a chaotic environment, and computer vision can only go so far. When a computer works with people, like in Pachinko’s command center that combined force is especially dangerous. That’s the hallmark of good friendly AIs, too, so it’s hard to make a distinction. The difference between a good AI

and an evil one may simply be this: is the action happening in the virtual world or the real world? Is the action carried out by a mindless AI or a sentient human?"

"And where did you hear that?"

"Funnily enough... it's a quote that my ever-cheery personal assistant, Amy, added into my notes app. Not sure what philosopher it was from, but she always has a good sense for what I should say."

"You mean Amy Bella? That clever girl."

They didn't see it.

---

There was also one, unshakable rumor that came out of DEFCON: that an image of Pachinko's source code, compilers, and some models could still be out there. Kettleman couldn't rule that out.

I haven't seen Em myself. But one time I did get a voicemail from an unlisted number, which will remain between me and Violet.

I can't prove that it was him, of course, but I knew.  
He said only, "Don't tell Amy."

# The Younger Sally Marchan

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Publishing this report will be a challenge. Verifying it may be impossible. I can only assure you that, unlike many other accounts that cross your desk, it has been meticulously researched. Like my mentor, the Doctor Daniel Chabon, I base my paranormal studies solely on scientific research and historical documents. Personal accounts are considered and fact-checked. Hunches are discarded if they cannot be proven. These stories take time to take form, and when the stories lack merit, you have seen me publish evidence against the paranormal. It is only by publishing the good and the bad that we can prove that the paranormal exists.

In most of my studies, I am searching for a shred of proof which can tie one story to another. For this case, I found a preponderance of evidence which was supported by all persons involved. I found myself searching for one piece out of place, and found none. If anyone on the peer review committee can comment on the quantum physics explanation provided by the perpetrator, please contact me.

This is the account of the Younger Sally Marchan.

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I took on Sally's case for two reasons: a sweet pumpkin pie and a note attached, reading:

My husband is a paranormal researcher

He never solved his greatest case

He too was a student of Dr. Daniel Chabon

The leaves were starting to turn and the cold wind beat them against the windows of my office. I run a practice in a shared office space in Cambridge, Massachusetts, not far from where Dr. Chabon's school was founded. The other tenants - a real estate broker, a rail logistics specialist - seem to take little interest in my work. While I am out, though, they ask the receptionist questions.

"They wanted to know," she whispered, "if you were a Scientologist, or whether you could do magic." She was much too polite to reveal whether it had been mean-spirited or curious questioning.

It was unusual to get a pie, but much more unusual to have another researcher's case referred. There were only a couple of hours before the first client arrived, continuing a painfully fruitless research into nanofibers. In those two hours, a phone number turned into a name, and a name into a handful of links. Sally Marchan, a painter living in Boston, who had graduated from art school late, only a few years before. Without knowing Sally's husband's name, it would be hard to know if he were credible. If he had completed Dr. Chabon's training, then that was another story.

---

The first meeting was at an unfamiliar coffee shop in Boston, just across the river from MIT. Sally was already there, contemplating what scone to buy at the bakery display, wearing a bright red sweater - as promised - to identify her. I touched her on the shoulder and she immediately turned on a smile.

"At last, I meet another paranormal fan. At last."

We exchanged a few friendly gestures. I asked about the red sweater, and Sally told me that she wore it to keep bright and happy in the summer. "It seems like the minute frost snaps, everyone gets their dreary stuff out. Not me."

Sally was from Louisiana. "That's where I met my husband," she explains, "and we had this strange thing happen, which I'm sure you'll be dying to hear about."

"You said that your husband never solved it," I recalled, "was it because he thought it was something small?" I opened up a neat notepad and started the beginnings of an outline.

She laughed and caught herself. "Oh no, it was very serious there for a while. I wasn't sure what I was going to do."

Sally was no stranger to the paranormal. Her first job out of college was an intern for the Baton Rouge Historical Society, where the most popular question callers had was for haunted tours. "My boss said we weren't supposed to dignify them with an answer," she said, "but I gave people a few names and asked them to tell me which they had liked. I just wanted to help people out, with them visting my city, you know?" And eventually she heard the best reviews from The Old Byer Mansion - "the *haunted* one", she insisted - and started working there after college.

I had stopped looking at her and down to my notes, slowly spiraling down to another spooky old house story. This was far below his usual research. This was nothing. He looked back up again as if with interest, to see Sally looking off into the distance.

"... I don't think he'll mind," she said, "my husband, he won't mind if I tell you how we met. The managers of the Old Byer Mansion brought him in with a couple of others, hoping he could spark some new interest in the place. Doctor Chabon's way of doing things was very neat, very new. All of us were following it, and were excited to meet the people behind it. I remember asking, 'what if they don't find anything?' but we decided to play it up."

"Well, what did they tell you?" I asked. I told her how unusual it was for a serious researcher to get involved with a haunted house.

"To be honest, Earl - that's my husband - told me later that the team was flat broke." She laughed and looked away again. "Yeah we should have figured it out. Not something that comes up when you're giving them the grand tour. Then they had to come back to us and explain the real problem, which Earl explained was infrasound or something. He told the manager, my boss, that they could fix it with Silly Putty! The next minute, the manager was on his feet and pushing him out the door. I figured, well, nice knowing you." She pauses. "And he was nice. Definitely nice to know him."

Days went by without a trace of the team. Sally kept up her job as a tour guide, but things felt a little more manufactured. The speakers playing eerie piano music set the tone. Squeaky floorboards, never fixed, made the visitors jump. At home, she had moved in with someone named Victor, who Sally did not dwell on in our conversation. "If one thing is certain", she said, "it's that he wants nothing to do with any of this." So I didn't ask about that in our first meeting.

When Earl came back to Baton Rouge, he seemed changed. "More urgent." She thinks a bit, definitely feeling an answer but not sure what words to use to verbalize it. "More direct." "Had he fallen for you by then, you think?" I ask. Sally shook her head. "Almost certain it was because he wanted something different from the mansion contract, or maybe to pick up other clients, or maybe there was something to the mansion after all? I never fully dismissed it. But a few days later, it happened."

---

Police reports back much of Sally's story from that point onward. I have seen them on microfiche in the official records office of Port Allen, Louisiana. I have interviewed witnesses who were on the scene, officers of the court where hearings took place. Every event that they remembered matched up with Sally's story. The one thing which

Sally could not explain, and the one thing that every interviewee eagerly speculated on, is how.

"I woke up in a nightmare," Sally said. "I would take steps and they would fall on soft leaves and rough sticks. I knew I was still asleep because I was in the forest, in the dark, and I didn't remember getting there. When I didn't wake up, I stopped walking. It was so quiet in the woods that I couldn't think." She yelled wordlessly. There was no answer. "It seems like the *first* thing that someone would notice," she admitted, "but for the first few minutes, I didn't notice that I was naked. And when I *did* notice, I still didn't panic or think of going home, because I was still in my dream, and that was normal." In the distance, she thought that she could hear cars rushing on a highway. As she walked toward it, pushing aside branches and thorns as best as she could, she thought that she could hear each vehicle - the sports cars zipping, the tractor-trailers barreling through, a few people driving home dronelike. "Stupid, right? But that's how I knew it was more real than a dream." She looked down at her fingertips on the table, and points out a white scar on her finger. "This was from some crap in the woods." And then, "It doesn't matter how it got there. All I want to know is, how did I get there?"

A passing driver made a call to 911, and the Port Allen Police Department took Sally into protective custody. Documents from all witnesses claim that she was fully conscious and aware at that point, demanding to talk to her family. The officers gave her a blanket and then a set of warm clothes to cover herself, then insisted on bringing her to the station, in case she remembered what had happened. An officer - unnamed in the report - called her house to see if Victor was home. Then another officer drove to the house to collect statements.

It became clear... that 'Sally' was lying about her identity. An officer took statements from both Victor and Sally Marchan. Neither had left their house or seen anything unusual.

Sally was booked into psychiatric care, and labeled as Jane Doe.

Sally closed her eyes and touched her forehead. "And I never met her, not once."

"Who do you mean?"

"The other Sally. The one who was home when I was in the woods."

"Do you think she looks like you?"

"Identical, unequivocally identical. I can't say it myself, but everyone in there said she looked the same as me. Though after the first couple of days, they were saying I was the one who looked the same as her."

"The next morning, the full situation dawned on me," Sally continued. "The police were sympathetic toward me because they had brought me in, in such a state, but they knew that it didn't make sense. Either I was raving mad, or setting up a fraud or identity theft."

"What evidence did you put together on your side? Your path into the forest, any missing persons reports, anyone who was with you at the time...?"

"I would have been asleep, I'm sure. Complete opposite end of town, my car was in for repairs, and I didn't have a thing on me. So it was all about the other Sally. Me versus myself, my friends... I wanted to prove she was a liar, to hate her, to stop her from doing this to me. By the end of the first day, as me, they were calling her the Real Sally. Suddenly everything I knew was over and done with. And I couldn't start my life over until I was out of the psych ward, and they wouldn't give me that until I gave them another name.

On the third day, just a week before Thanksgiving, I told the officer on duty that I was done. I just needed to call home. And I called my mother, my own mother, and the other Sally had gotten to her already. I don't remember what she said. We both cried."

On the surface I was following along, nodding. The story had gotten intense enough that I stopped note-taking. But internally I was making the list. There would be photo records of Sally at the police station and psych ward. Even years later, voting records would make it possible to track down Victor and Sally... whoever she was. There would need to be proof that the other Sally existed. DNA would scientifically prove whether she was related to the rest of the Marchan family, but that would require their consent. Not likely.

Sally halted her story. "I have to go now, but I can follow up. It gets deeper, more involved. Earl told me... that it's called duplication. It's been heard of before. It has, hasn't it?"

"I want to take each case from scratch. You can't depend on every source. You can't show that a similar-sounding case is related, until you can explain how they both happened." This was a good way to handle difficult questions.

"You're a lot like him." And Sally gathered her things, her scarf and coat. "The difference is, you might solve this one."

---

Before our second meeting, I had to get a better understanding of what was happening. I had gotten faxes of police records. In a team with multiple people, one investigator typically is assigned as the Con Eye, or Conventional Investigator. In my one-man shop, I spent a day doing nothing but finding weaknesses in the story. I knew that the other Sally had gotten married to Victor six months later, so the conventional explanation was most likely to be jealousy. But the Sally who I knew hadn't made any efforts to contact him.

I called their house in Baton Rouge, and it went to voicemail. A voice - one I couldn't tell apart from Sally's - invited to leave a message. I hung up - there would need to be better tactics if I were to get anything out of Sally.

There had been two paranormal investigations into duplication before, described dryly in my reference book, Strange Happenings. I had been right to tell Sally that they wouldn't be so helpful. Without an explanation for the earlier cases, it would be hard to link this case to them. Besides, it looked like Sally's case would have more documentation, if the police and both duplicates were willing to share their information.

So, I went into the second meeting expecting elaboration. I certainly did not expect to be sent on one of the strangest turns of my career.

---

Sally seemed surprised by what I had found so far. "I didn't tell you how I got out."

"Someone came for you." I knew that much. "I would need to go down to the county records office to get more than that - records, video..."

"One day, they said Earl had come to see me, that we knew each other through the paranormal research community, and that he could help find my family. I knew who my family was, but more than anything I needed to get out of that place. I would have taken up anyone."

"I would have checked it out, too. Duplication isn't something you... I mean it has been reported, but it isn't something that gets reported every day."

"If I thought about it like that, that I was just a curiosity-" she made a quick look of disgust "- then I would never have accepted. I was just so happy for the moment when the leave papers were signed, that the automatic doors slid open and I was enveloped in fresh, cold air. I don't suppose that you know this, but freedom has a taste." The moment they got to Earl's car, there was a snap of shock. "I held back, Earl noticed, and



he says, 'There is something that you need to see. We're in this together.' And it was preposterous, but there was another of him in the car. And I knew whatever force this was - wherever it came from - he would have a better chance at an answer than anyone."

This changed everything. Unless she had an explanation for what happened to Earl, there would be some proof. It would be one thing for there to be one look-alike. If both Earl and Sally were duplicated, then there must be proof.

After being picked up by the two, Sally stayed with them at a motel where they tried to put together the basic facts of what had happened. The other Earl had woken up in the lobby of a locked train station, also naked. "He pried his way out, and found a cloak room with some unclaimed coats. He got back to the hotel, knocked on the door, and met himself right then."

"He must have been terrified."

"Of course. But they started working on an explanation, and with me involved we had a sort of partnership. We had to solve this case. I grew closer to the Earl who had fallen into the train station, who was lost, like me. He started to call himself the Younger Earl, and me the Younger Sally. It was so much more comforting to stop talking about real versus copy, or me versus the other. The Older Sally may have had a driver's license, a diploma, a job, and a house, but I knew that one day I could get those things, too."

"You had to start from scratch?"

"I didn't have any documents. The Younger Earl could use the Older Earl's information, but we knew there would be legal trouble if they both worked full-time under the same name. Earl had an uncle in the INS who could help process some immigration paperwork for me, and I started to become a legal person. But the situation meant that the Younger Earl was often taking on jobs for cash. It strained the relationship between them. At the beginning they were the same, then brothers, and one day they were just roommates, tired of speaking to each other.

One night the Older Earl was out late, and the Younger Earl asked if I wanted to go somewhere. I'd been cooped up in my hometown, unable to see my friends or family because they thought I was a liar, so of course I said, 'anywhere'. We both drove the night and the next morning, to Arizona, then up to the Grand Canyon."

Sally was strangely cautious telling the story, as she had never told it to anyone before. "We walked up to the rim of the canyon, in the cold wind that comes while you wait for

the sunset, and I whispered, 'I've never seen it before.' And he replies, smooth as ever, 'Me neither. From now on we have this moment, and the others don't.' We slept in the car that night, uncomfortable as anything, but for the first time in years, I slept soundly."

"And did you ever see the other one of him again, the Older Earl?" I asked. "I assume you stayed with the Younger Earl."

"That's right, we stayed together on the road for a few days. We knew we couldn't make money that way. We just needed to know there was another person in the world who had been cast out of their life, like we had."

When we went back, the Older Earl was staying up late, watching the evening news. He never did that when we were together - I assume he was waiting for us. Finally he spells out a plan, where he takes their passport and works with a charity in Nigeria for the rest of his life, and the remaining documents would be enough for the Younger Earl to take over his life in the States. It was a big sacrifice on his part, one which I never understood. But the Younger Earl agreed immediately; he told me it had been a dream of his, so he knew the Older Earl would be happy going."

"I don't suppose you can get me in contact with him? This is going to make the investigation a lot more difficult, if I'm only talking to you and Earl here, and your duplicates don't get involved."

"We have enough money now, especially from my last auction, that you can have all of the funding that you need. I just want to know, where did I come from?" A pause. "No one has been able to tell me that in all of these years. Just find out where I came from, please."

---

The only details which Sally could add from that point were minor. The main question, then, was how to get Earl involved, to find out what he might know about the duplication. To move forward, Sally suggested a fantastic but bizarre plan.

"I will tell him that we should see a couples counselor," she explained, "and once you've established some rapport, you can ask him some deeper questions."

"Well I was going to ask him about the metaphysics of it, which I don't suppose would come up in the relationship between you two."

"To the contrary, I feel like there's a lot that he's withholding from me. Maybe his answers seem a little evasive. For example, when I asked what he was looking for, why

he came back to Baton Rouge just before the event, I can't get a... well I'm never so good at this... but I can't get a read on whether he's telling me the truth. I don't even know enough about the paranormal sciences to know whether his answer is a good one. I know he must be working on how this happened. And maybe he's solved it, but doesn't want to tell me. One day I was home sick, and saw a special on parallel universes and string theory, that sort of thing, so I asked him, well, if we came from a parallel universe."

"Is that what you think?"

"I could tell that he was considering it. And so I asked, does that mean that I'm missing from the universe? Does that mean that we can go back? And I couldn't get a word out of him for a day after that."

"Well, it's a disturbing thought. You lost your family when you came here, and if there's another universe where they lost you, it makes it worse. But Earl hasn't experienced the loss on his end, because he took over the older Earl's place, so he hadn't thought about either loss yet."

"See, you'd do great as our counselor!" She laughed. "This is exactly why we need someone with experience in the paranormal. But you have to have your office sharpened up a bit so that he doesn't figure it out. Not until you build up that rapport, or whatever I said. He says it's not polite to talk about the paranormal, not until he finds a hint that they could relate."

---

I had two weeks to frame the office as a couples counselor's office. Where usually a lone client sat in a wicker chair, describing their paranormal experiences, their dreams, their delusions sometimes, I brought in a comfortable couch. A shelf of rare Indonesian idols, their original temples smashed by monotheistic zealots (more out of fear than religious piety), was replaced with a set of innocuous books. The office plants, even, seemed more striking and exotic than you would find in a calming space. Lastly, I stowed away my class photo with Dr. Chabon. In the photo you can see that he was frail and near death, but still full of intensity, more eager than ever to solve the mysteries of the universe. It didn't seem right to hang another picture in its place, but I did borrow a travel poster and prop it against the wall.

The day before our first appointment, Sally wanted to come in and see whether it would suit the project, but I urged her not to. It was important that she see the building with new eyes.

I arrived earlier than usual on the morning before our first session. I flipped through the first pages of an actual family counseling book. The sun streamed in through a window behind my chair. I struggled with an onset of nerves brought on by meeting another researcher, by deceiving him, by ignoring the elephant in the room and stealing one of the greatest mysteries that we'd ever encountered from right under his nose! In the last ten minutes, I remembered to sprint back down the hall and warn the receptionist to say as little as possible to the Marchanes. "Very talkative, anything could set them off. Just point them my way." She nodded.

At last I could hear the receptionist buzzing them in, the footsteps down the hallway, and a hand on the door. Just act like you do this every day, I told myself.

Earl had the same youth as Sally, but held an odd intensity and alertness common to the paranormal profession. He had worn a dress shirt and tie to the meeting, and introduced himself and Sally formally, making his best effort to show her that he took the meeting seriously. Sally wore dull clothes, and clasped her hands in her lap as she sat down, but when Earl looks away, she flashes me a faint smile. She believes every part of her story. She believes that we are on the cusp of finding something.

"Would you tell me about how you met?" I asked.

---

Earl's story was markedly different from Sally's and - since I had read the police records

- deliberately misleading. He acknowledged that they met through Sally's historic tours, leaving out the detail about the ghost stories. He jumped ahead from one event to another, not explaining what drew them together, only that they found a common interest in the town and Sally was feeling "trapped" there. Sally nodded and added details only occasionally. It was the story that he always told people, I gathered.

"I think it matters how couples meet," I said, trying to pick the tone for wise but common-sense advice, "because it sets the tone of the relationship."

Sally perked up. "Does it?"

"Well of course it does." I look to Earl for a reaction.

"For me, I think we set a tone a few weeks later. We took... a little cliché I'm sure... we took a roadtrip to the Grand Canyon together. We knew so little about each other before then. And we went to this one spot off the main trail" - Earl gestured wildly with his

hands, even though there was no map or reference for his gestures - "where you couldn't see a soul around. Where we were the only ones with this new experience, and we were facing it together."

Sally beamed.

The hour was almost over, and I hadn't gotten any deeper into the mystery part. I made some final comments, scribbled on a notepad, and scheduled an hour appointment. "Usually we will meet weekly, but this week I am still getting to know you both. It's helpful for me to follow up within a few days." Both of them checked their schedules on their phones. At this moment, even though I had yet to prove they were duplicates, a shiver ran down my spine. Their motions and the parting handshake, though normal, took on an alien quality. Was it fair to wonder if they were from another universe?

---

The next day I met with the nanofibers client and offered him a seat on the new couch.

He took one look at the new office decor and shouted, "what on earth..?"

I gave him a mischievous look. "Couples counseling."

He laughed and patted me on the back. "let's get out of this dollhouse."

---

The meetings with Sally and Earl went on. Earl had a story covering every aspect - his brother had signed up for a mission trip in Africa and disappeared off the face of the map. Sally, too, had stories concocted. She was adopted, she insisted, and her foster parents had long since retired. "I think they're still driving around the country in a big RV."

It was a flawless story, but of course it was. There was no reason for the story to be doubted, and even if someone found a hole in their explanation, they would never hit upon the truth. The possibility that they were from another universe, as I now suspected, and fully integrated into our own. Never drawing suspicion.

Four more sessions went by, without the faintest trace of Earl caving. At times their conversation delved into the matters which a good couples counselor would understand - into their petty household arguments, their presents for each other on Valentine's Day, their little morning rituals. I started to think that they would have been excellent material for an actual couples counselor!

For our sixth session, Sally and I agreed to leave one of the Indonesian idols on the coffee table as a decoration. When Earl and Sally entered the room, Earl immediately reached out to the idol, stopped his fingers an inch before touching the idol, and looked up. "Is this real?" he asked.

"Another couple brought it in. The wife was a collector of some antiques, and they were afraid it was becoming a hoarding habit. She gave me this one as a gift."

"I highly doubt that," Earl countered, as he examined the statuette. "This is an idol of Nettle. Supposedly the recipient of the idol is more likely to side with the giver in a dispute. In a double-blind study there were some interesting results..." Earl drew his hand back again, pointedly never touching it.

I remembered, somewhat disconcertingly, when I received the idol from a very convincing activist. My cover story... no, I didn't need to take it seriously right now. "Are you familiar with -eh- the occult?" using the vulgar term for the supernatural. "I never knew what it was."

"Not really, but I don't want to get into bad voodoo, you know? Don't touch it, Sally." Sally and Earl sat down, and I moved the idol to the shelf where it belonged.

"Earl doesn't like to say so, but he's always been into that sort of thing," Sally forced a laugh and went on: "I even did a couple of ghost tours back before I left Louisiana."

"Really? Ever catch one?"

Earl drummed his fingers on his arm of the couch. "I would like to tell you it was all nonsense, but I was part of a troop of ghost hunters right out of school... the things that I saw would turn your stomach and make your eyes open wider than you thought possible. I'll have you know-" Sally squeezed his hand "-they didn't pay us to find out if these things were real. They were real, and they paid us to deal with it, without flinching, without screaming, no matter how strange it was. And no matter how harmless it was, they wanted it gone. In today's world, people can't come to terms with something existing beyond explanation. They fear it at first sight, and they still fear it after it's gone."

A long pause. I thought I would end the session there, but we had only just started.

"I apologize, I didn't know you were both involved in that. I'm sure it made it easier for you to bond."

Sally nodded. Earl dropped his tense look, and we moved on. But we were getting closer to the truth.

---

I thought that this breakthrough would get us closer to having Earl open up about their paranormal meeting. I told Sally as much when we talked on the phone later that night, her whispering to avoid detection. But the next session was full of stops and pauses. We were getting nowhere.

The next week was scheduled to be our final session. I had been encouraging the couple to keep going, to see whether we could get results in another couple of weeks, but Earl seemed noncommittal. Sally, too, seemed to be losing interest in her own project.

They had just arrived when Earl touched his pocket. "I think I've forgotten to pay the meter. Sally, can you..?"

"Right on it. There's quarters in the car." And she left with the keys.

For the first time, I was alone with Earl. He pointed to the idol. "I don't mean to bring up a sore subject, but it is a very fine idol. You're lucky to have it."

I nodded.

"You ought to know something. Sally was in a tough spot when we met. I think us talking brought back a lot of memories, some she hadn't quite processed before. But looking back, I think brought us closer together. I say that now because it would sound awfully sappy in front of her. And I want you to know that I mean it."

What to do. More nodding.

"I just want to know, do you think this is getting somewhere? Do you think we could get something out of another couple of sessions that we can't build on our own, using the communication skills that we talked about?"

He was putting his cards on the table, and this might be our last chance to talk in private, so I decided to break character.

"Earl, there's actually one thing we haven't discussed, which I was hoping we could talk about today. You see, I already heard from Sally that you were a paranormal

researcher, before we met. A student of Dr. Chabon. It seemed a little untoward to mention it, and a little awkward when you we didn't discuss it. I respect what you do."

"Dr. Chabon.... yes. You know about him? Well, I hope you're not keeping your patients up at night with those stories. He was as great a storyteller as a scientist."

"I know... I actually knew him. I was also a student of Dr. Chabon."

"Really now? Imagine that..." Earl closes his eyes for a second, and then looks around the room. "My class all went in different directions after the school closed, but I never knew one to go into family counseling. This is a new one. How long since you were in the field?"

"I still practice."

Earl looked around the room again, furrowed his brow, and then his eyes came back to meet mine, widening.

"Tell me again about how you met your wife."

He left without a word. Neither he nor Sally came back into the office that day.

Or the next day.

Or ever.

---

A week later, my office was back to its usual paranormal decor. My clients could come in again. But there was a notebook and a file folder all about the duplication case, and each day new records filtered in from Louisiana.

My nanofibers client and I were sorting through hundreds of photos which he had taken with a microscope at a science open house in another city. Even at high resolution, it was hard to see much of anything. We were interrupted by a rapping on the door, and the receptionist handed me another packet from the Louisiana State Police.

"You should go after this," my client insisted, which was the only thing I'd heard him talk about other than his own research. "This is something. I'll come back tomorrow and you better be finding all the records you need."

I discovered that an investigation into Sally had grown far beyond the local police, and even the FBI was asking why Sally could have been released when she was



"perpetuating identity theft at a previously unknown level of sophistication." They had the photos, finally, with the older and younger Sally. The older Sally was dressed to appear before the court. She wore a blouse and there were wrinkles at the corners of her eyes. Confusion.

The younger Sally, who I knew, was in simple clothes provided by the psych ward. She had a small scratch on her face, but was otherwise undistinguishable from the older Sally. She stared straight into the camera. "Where did I come from?", she had asked me. It looked like she was asking it now, to the cameraman, to the FBI, to whoever had this photo cross their desk. And every agency, every investigator, had done their best to pass on the documents, to simply make the story go away. Perhaps Earl was right, after all. But however the younger Earl and Sally had made their way into our world, we needed to accept them, I decided.

The next day, my nanofibers client was in the office before me. He had not taken his papers and photos out of his briefcase. He looked to me and demanded, "tell me where you going."

"I'm not going anywhere."

"That document didn't come from down the road. Your source is somewhere you can't touch, and it's killing you. Go solve this."

I nodded.

"Now tell me where you're going next week, and I'll cancel our meetings until you get back."

"I'm going to Baton Rouge."

---

The final leg of the Baton Rouge trip - a prop plane from New Orleans - is short enough that I had barely gotten a chance to review my notes on my laptop. The ToDo list was overflowing with leads. But the first meeting clearly belonged to one person - the older Sally. I arranged an interview with a short but non-revealing e-mail, and she was surprisingly willing to meet. "Don't be reluctant to ask," she had written, "there are so many people trying to crack this case over the phone, that I hoped they'd send someone to see me. I moved on."

I parked the rental car outside Sally's address. Up the steps and behind the door with a light-up wreath, was another piece of the puzzle. I knocked and Sally was opening the

door up, catching the wreath to keep it from falling off, and welcoming me into her home. And this Sally was perfectly identical. It was not fair to call her the older Sally, because she was just as lively and friendly.

The other Sally and I sat in chairs in the living room, across a coffee table from each other. I noticed a framed desert landscape over her head.

"Do you travel much?"

"Not really - we got this from a photographer friend of Victor's." She looked at it again, trying to think of something else to say about it, then decided on, "I'd love to go to Arizona, see the sights sometime."

I tried to jump into one of our old conversations, but I had to remind myself that I didn't know the first thing about her, and all of those conversations were with the other Sally.

"I don't have any questions of my own about the identity theft case. I was just trying to find out what your experience was."

"I've told it a million times if I told it once. I was sleeping, Victor nudged me to wake up, and there was a policeman on the phone, asking me how the hell I was at home. He made me say a few nonsense phrases, to make sure I wasn't a voice recording or something. And then he says, there's a woman at the station who says she's you. Cancel your credit cards and we'll sort this out by tomorrow."

"So you didn't think it was going to be a big deal?"

"Well I was baffled - I don't have a lot of cash, we're still renting the house, and obviously I was still me... not going away! So I was afraid that someone was trying to kidnap me or something, but then why would this woman get herself found in such an odd state? I called my parents to make sure they would know not to trust her. Then I went about my day like normal."

There was a rustling from the door, and a man came in the door. The wreath fell to the floor. Sally stood up quickly. "Victor! We've got another Sherlock Holmes here."

Victor looked, nodded, and bent over to fix the wreath. I took the time to walk over and shake his hand. "Don't worry, I don't think there's a threat. Just trying to figure out if there are any leads."

"I wouldn't think there would be," says Victor. "Get what you need, but please don't come by like this. Sally, she gets nightmares."

"I always have," Sally insists. "I've always been a light sleeper."

"If you find this woman, make sure she's not anywhere near here."

"I understand. I don't think that'll be a problem."

"And how is that? You know something more about her?" Victor has a way of bearing down to the point, painting me into a corner.

"She's moved... to Alaska." They both look surprised, and Sally squeezes her husband's hand.

"You didn't tell me that you knew about her! Oh wow, have you seen her?"

"No. Just a report from someone up there. She's been living there for a few years."

"Well.... that's nice. Unexpected. But nice. I hope she's well."

"Obviously, I can't elaborate. In fact, I think I should go."

"Oh, but..."

"No, really." And I walk out and hit the road. I didn't even need to give them my fake business cards!

---

I woke up with a start in my motel room. Cars and trucks rushed on the highway outside. Somewhere in the unclaimed space and forest and swampland between the motel and town, that is where the younger Sally had walked out of the woods. No one would remember the spot, so it would be fruitless to look.

The continental breakfast was nothing but plastic-wrapped muffins. I told the manager that I would like a blueberry muffin, and he found one in a supply closet. I ate it reluctantly, wanting to be alert for the meeting with local police.

The police station is an unassuming one floor concrete building. Not knowing any other way to conduct business, I walk in, take off my jacket, straighten my tie, and ask the officer at the door where I should wait for my meeting.

Two junior officers arrive and urge me through a winding series of hallways. "The chief wouldn't like us inviting you in. He isn't a superstitious man." Down a set of stairs into a video surveillance room. "A pious man. Not a fan of the occult. But I've always suspected there was something unnatural about that girl. And in my book, something unnatural is unholy. You can't solve that with a little notebook and a case file. You have to send the occult after the occult."

It made sense, in a way, but I didn't like the implication that I was part of some evil collective. "I'm just a scientist or a researcher, really. Please, don't consider me any different from an archivist coming down here to see arrests from their grandparents' moonshine days."

"I hope you don't think our records go that far back. Everything these days is computerized. Everything from the past is in a big sealed archives building down in New Orleans."

"Not necessary. Would you have a video of the release of Sally - I mean a Jane Doe - from four years ago?"

"We have video going back seven years." he looks to see if I'm surprised, but I don't know whether to be impressed or not. He looks disappointed. "I've got to admit, three years is unusually deep for us. The other day, we had a couple come in looking for video from two years back. You know what for?"

"What?"

"They got arrested and taken to the drunk tank on their first date. Wanted a video of their booking for the wedding. Weird as fuck."

Finally we shared a laugh. It never occurred to me that the police would be as eager to break the ice as I was.

They had some preparation, so the video was prepped in seconds. "Here's Jane Doe signing off. You say you know the man picking her up from here?"

"That's Earl. He's another paranormal researcher."

"He got to her first, yeah?"

"You could say that." I watched the video play out much as Sally remembered it. The surprise, the eagerness to get out of that prison. The officers switch to an overhead parking lot camera, which catches the two briskly walking to the car. Sally stops and

looks around wildly. Earl pausing and reaching out her hand to comfort her, and then pointing into the car.

"Can you get a closer shot of that?"

"You mean, like 'ENHANCE!' This isn't the movies, no sir."

A disappointing lead. But then the other officer says, "what about the High-Res Exit Cam? We've got one set up across the street." So we watch the scene play out a distance, then the car comes to the exit and brakes before turning onto the road. "Let's take a look inside." There's a zoom and a re-pixellation, then a refinement.

In between Earl driving and Sally in the passenger's seat, another man leans forward from the back seat to talk to them. And he is absolutely indiscernible from the older Earl.

"What the fuck. Did you know about this?" They scrub the video forward and backward, but the first frame that we saw is our best. "Must be the dude's twin brother."

"I've got good info saying that this guy was an only child."

We looked at it for a while.

"I'm going to make you a copy of this tape, and then I want to get this case the hell out of the way. The chief wouldn't want to have you in here."

And that was that. They weren't curious; they weren't stunned; they just wanted the mystery to dissolve. Perhaps the younger Earl was right after all.

---

The next day dawned with a careful retreading of the forest where the younger Sally had first appeared. There was no telling what I would find, nor any telling what I should look for, but there was always the chance that some hint would come of it. In many cases, the best information comes from the most obvious source, no matter how unlikely it is to provide data. A dog barking at an intruder now disguised as a friend. A baby blinking to guide a sketch artist's pen.

I collected a few odds shards of a mirror, but then I found the side mirror housing and door from a compact car. A lot of trash from parties going deep into the woods, along old and overgrown trails. People stopped going outside sometime. My older friends insist it's because of technology. I think it's because we stopped believing in the fearful creatures of the forest. Not just raccoons and coyotes, but spirits and demons.

I ate lunch at the diner where I parked my car. On a whim, I asked if the waitress had heard of Sally Marchan. She hadn't. So much for the small town door-knocking approach.

That afternoon, I had a tour of the old Byer Mansion. It was exactly as the Younger Sally had described it - unchanged not in material, in detail, in campiness. I gritted my teeth at the eerie piano, and held back a chuckle at the guide's yelp, "a murder happened in this room!"

I assumed that these places would give me insight into Sally's life, perhaps whether she came into contact with something paranormal beyond the laughable parade of the Old Byer Mansion, but instead they were uninteresting. They had no photos of Sally, no memory of her entirely, even as Sally lived on in this town. While the younger Sally continued to develop her artwork and rise to fame, the older Sally seemed to have disappeared within herself. And her nightmares.

The final drive to the airport was one of resignation. Of a city able but unwilling to prove one of the greatest paranormal events ever documented. I watched the sunset from the boarding area of a soulless airport. There was no path from here to the truth.

Then I remembered: there was one more of the duplicates to track down. The older Earl, in Nigeria. The younger Sally had told me that Earl took pains to go off of the grid, that even in the beginning they would only get calls weeks apart. That it had been over a year since he called in.

But an American does not disappear so easily into a country which is not his own. Especially when he is a paranormal researcher. Especially when he is not only a foreigner there, but anywhere in our world.

I had photos of the younger Earl, which could be tested and screened against thousands of travelers' photos. There was a possibility that Earl had lied about his actual home, so I expanded the search radius. I searched the records of paranormal journals, with hope that isolation had driven the younger Earl back into publishing. Even under a pseudonym, there would be some note that the letter had been sent from a reader far off the grid.

I found three candidate articles, under three separate names. There was no record of these authors before Earl's arrival. They were all sent on paper from what this journal called off-grid originalists. And the records were meticulous, scientific, a sure mark of Dr. Chabon's students.

The next day, I set up a Skype call with the research journal team in London. I had published articles through this journal and its competitors before, so they had no suspicion that they were part of my research.

"I know this man," the publisher insisted, "and he is no mystery. He is publishing under a few names, but it is just to keep his name out of the news. He is a famous actor, would never live it down."

It was a disappointing drop to the lead.

"Did you check letters to the editor? We get letters from cranks every damn day, but this one reminds me a lot of your subject. Let me look through some e-mails from the mail room about this guy."

There was a chattering of keys, a flutter of clicks, and a chirping from the computer.

"Yeah, we get a letter every few months. And he's got a lot about meeting a witch doctor in Nigeria. The first couple of letters we laughed at, but we got to thinking, based on the postmarks, this guy might be telling half the truth."

I got a forward a few minutes later. A spotted paper envelope with painstakingly printed writing:

EARL JAN

TRAVEL HOSTEL CANDI

CITY PLAZA

JIMETA, NIGERIA

---

We shuffling passengers came down the steps and across the tarmac. The jet loomed large over us. It lit up with dozens of beacons, and the engines cycled up and down. Even a seasoned traveler would feel some fear, I thought. And today I was headed to a new continent - one that I had read about many times in the paranormal journals - but one which would be completely alien to me.

The woman next to me took out a pair of reading glasses to examine the first page of a detailed atlas. She marked up this page, and absent-mindedly kept scribbling. There

was nothing wholly remarkable about this flight, I thought, which would make it stand out from any other. There was only my inexperience.

The first night I was too afraid to do anything but pace the room of his hotel in the airport. It would be many miles just to reach the hostel, and then it would take another miracle to find Earl. Given the poor response from the younger Earl, there was not guarantee that the older Earl would be honest with me.

---

The bus groaned as we picked up speed, starting out from another checkpoint. The roads were packed with rusting trucks, each packed to the brim with people, others even with passengers hanging on.

Then the last shuddering bump, the bus rounding the corner, and the bus approached the gates of the city. This was Jimeta. Nowhere would be better to hide, I thought, because even though a foreign visitor would stand out in this town, he would have all that he needed to live and thrive. Though heavily armed police stood on corners, the larger forces of paperwork, government, and science could not find him there. The bus came to a halt in a dusty, open square. "Jimeta! Jimeta!" called the driver.

The bus was rushed by merchants, come to sell water and snacks to travelers. I pushed open the doors and took in my luggage. Then suddenly the bus was making its mind to leave, the mobs of merchants trailed it for a minute to make their last sales. And when the bus was gone, I had only myself to make up my mind.

The hostel was only a few blocks from the square. My own research had proven useful for once - I had a good idea of where to go, that I could backtrack if necessary, that if I did not see the banner of the Candi Hostel, that I could circle back and search. But I had scarcely gone two steps before an old man grabbed my wrist and pointed over to a small shop, done up in pink and garish decorations.

"I am here to make a reservation."

It was small things. I went with the other backpackers on a waterfall hike. I took my turn at the grill at a shared barbecue. Each visitor I got to know. And I said little of my own past, of my own plans. Without internet access or business cards, in a group of lost and wandering travelers, the world revolved around stories, and I told few.

There was no trace of Earl in those first five days. At last I decided to tell the host Gene, a cheery but incomprehensible English scholar, that I was a scholar, too.



"What is your study?"

"The paranormal. Ghosts. Monsters. Even if we don't know if it's real."

A pause. "Ghosts? Yeah, yeah... ghosts."

The next morning, he came to me as I struggled to hang up my laundry on a clothesline.

"The ghosts. This man has them." And there was a phone number.

In this time, I had not yet gotten a phone which could work in the country, but there was a shop deep in the local market where other travelers had gotten their phones.

---

I stepped out of the phone stall and put the number from the hostel host into the phone. There was ringing, and a woman answered the phone in a local dialect. I could understand nothing.

"Hello, can you hear me?"

She laughs. "Call later, please."

---

The number calls me back. This time it is a familiar voice.

"This is Earl."

"Earl, hello? Can I talk to you about your brother?"

"My brother? No no... you must be mistaken."

"I know, Earl. I just want to talk."

"Is he alright?"

"Yes, he and Sally are fine."

"That is great news. I can send him a message the next time that I am in town. Thank you for your kindness."

"I also talked to the other Sally."

A long pause.

"Please come find me at the Green Market tonight."

---

The shop was packed but it seemed as though no was else was moving. I edged my way through the crowd, looking up and down for him. And there he was, contemplating a set of canned food.

I came within a few feet and shouted to him. I extended my hand. He extended his hand as well. "I think it's too late for you to believe if I say, 'fancy seeing you again'?"

"You don't look so much like him anymore," I pointed out. The years had toughened the older Earl's face. He had a tan, a bushier haircut, and an unmissable scar above his left eye.

"You come here to see if my brother is a lunatic?" he asked. "Or is the FBI willing to go a lot deeper into investigating the paranormal these days?"

"Please come to the Hostel Candi. I've got a room where we can sit down."

"You want me on the record, don't you? I hope you know that anything that I say will be so radical, no one will believe the tape has any truth to it."

"I want your story, that's all."

"I'll go with you to the Candi. I haven't been at that old place for months. A good place to get your start in this country, but not a place to live more than a couple of weeks. I'll get myself a package of cookies for the road."

We waited an eternity in line, but I told myself that it was necessary to say little and follow Earl's lead so that I could gain his trust. Fortunately he made no effort to flee. But I would need to find out where he lived, who the first person was to answer the phone. The minute he walked out, I would lose all of my leads. He would disappear again.

"Good God you are nervous. Hold these cookies, will you? I won't go far."

---

We found a set of still-intact couches across a table from each other. Earl opened his pack and took out a water bottle. He was instantly comfortable and at ease on the couch. There was little else inside. I had my recording materials, my laptop, and a dozen travel and paranormal research books.

As I prepared the recorder, I was starting to realize that Earl was coming forward. He had a point about the recording being impossible to believe, but the admission would provide a new level of legitimacy. It would also bring a new researcher with research experience to dig into the case.

"The first thing you've got to know, is that I know exactly what happened. The duplication was not an accident."

"What do you mean by duplication? I mean, I understand the basic concept. I have seen the other one of you."

"The younger me."

"Yes, exactly. A little term that he came up with."

"Now that you mention it... yeah, the other guy was the one who gave me the name."

"I want to understand the metaphysics. Are you from another, parallel universe? Did you come here by choice?"

"You don't understand this at all. Clearly the other me kept the whole thing under wraps or sent you running in the wrong direction. Forget whatever he told you and start over with what you know. Anything you saw with your own eyes. Or heard from Sally."

---

"The first time that I saw Sally, she was a tour guide at a haunted house. You've seen it?"

I show him a brochure from my case file.

"That's the place. Damn charming place, would be a lovely home if they didn't mock the place up as haunted. Anyhow, the first time that I saw her, she was absolutely radiant. If it weren't for my team, I would never have gotten anything jotted down when they gave us the grand tour. Sadly the place was a sham and our operation was pretty starved for money; we couldn't keep them on as a client. It was heartwrenching to go back home and have our team splintering. With Dr. Chabon gone, our old school was getting broken up, and it was hard to find new clients. I deeply wanted to come back to give her something to beam about, but that was senseless. I told myself that I could move on."

"It was a hard time for all of us."

"A fellow paranormal researcher, right... I almost forgot. It was a tough time for our community."

"I forgot to tell you - I also was a student of Doctor Chabon. The loss was especially hard for all of us who had him as a mentor."

"Wow," Earl said. For the first time in the interview, it was deviating from the script that he had set up in his head. "Did you ever meet a guy.. a bit older than you I suppose.. named Taylor?"

"I might have met a Taylor."

"Thick glasses, spiky hair? He was a senior when I first started the program."

"Sounds familiar."

"That is a heck of a coincidence. Well, this story is going to get pretty interesting for you, then."

---

"When I was about to graduate, Taylor was just entering the program, as a freshman. All of the freshmen were assigned mentors and Taylor's fell through, so I ended up mentoring two people - him and a girl whose name I forget. Taylor was a bright guy so I helped him out with a bunch of his research, even though it was a little on the strange side."

"The strange side of paranormal?"

"He was convinced that there would be an explanation for the paranormal, and it would be somewhere in classical physics. Then in the spring he changed direction, started talking about finding things which quantum physics *theorize* exist but haven't yet proven. Dark matter, cosmic rays, and so on. Or some extension of classical physics that explains the experimental results of quantum mechanics."

"There isn't proof of dark matter?"

"There's observational evidence that dark matter exists, but the only reason that anyone theorized dark matter is to explain that observational evidence. It's like saying it's dark in your room because of 'anti-light', when really you're just creating a term that explains what you're seeing."

"Weird. So he was looking for dark matter. Is that dangerous?"

"I haven't a clue. He was carrying physics and cosmology books around for months, poring over them, coming up with a list of twelve things that hadn't yet been observed. When I graduated, he was fervently into dark matter, and none of his professors would talk to him about it. I walked him through writing up a proposal and found a professor from one of my courses who would help him follow through with it."

"I didn't talk to him much, my year. I can't tell you if he got any closer to finding it."

"Well, years later I was bumming around the southern states, taking jobs wherever we could be hired. Eventually I'd be sent to that old haunted house that Sally went on about. And I got a call from Taylor - very excited, said that I had to head back to the school right away. They'd been taken over by then, but Taylor implied that it was very urgent. I pulled into the old parking lot, which was just weeds - very sad - and he had a big U-Haul. The minute I drove in, he started the engine."

"You trusted him."

"I knew him, and I knew that he needed me to help with something. The connection that we had in school made a lot to him. I don't know how he convinced me, but he went into a long-ish explanation of a project that he'd set up in his school days."

"On the original campus?"

"At some point he had an opportunity to move the project into a drawer at a community college physics lab, while he was taking some classes. Somehow he'd rigged it to pull power and wait for the experiment to complete, then it would send a signal to his phone over text. He showed me a screen on his phone with two messages. He said either the experiment was disassembled and he would have to start over, or he had captured a monopole."

"A monopole? Is it a paranormal term or a physics term?"

"Cosmologists - the physicists who study the beginnings of the universe - calculate that magnetic monopoles exist. So classical science believes that they exist. But they have never observed them. There's been some research into the subject, and a lab thought that they detected one back in the early 1980s, but no one's gotten one up close."

"What is it exactly, the monopole?"

"It's magnetic, but unlike any magnet we've seen, it only has one end. No plus on one end, minus on the other end. Taylor told me that it had to be a tiny point, a new atomic particle just absorbing magnetism. Meaning it isn't made of any matter that we know of."

"What did he want with it?"

"I assumed that he just wanted to capture it to reveal it to science. I didn't understand the rest of his explanation about monopoles, but it was exciting to think that one of us might get published in a conventional scientific journal. They'd have to let him publish. This thing was a monumental discovery."

"What happened to it?"

"We got to the college and it was empty. 1:00am, no one around. He led me through a door that was unlocked at night. Went up some steps into a long hallway. There was a... a thrumming, a drumming noise. Like Jumanji. We walked past a computer lab with a few dazed students, paying it no mind. But the drumming went on. I asked Taylor if this was his experiment making the noise, but he said nothing.

We got to the end of the hall and we could walk right into the lab. The drumming came from nowhere, but fortunately Taylor remembered exactly the drawer where he'd left it. He had a key, turned the lock, and slid out this drawer. Full of tubes and wires, just a mess. I wondered for a moment whether the kid had lost his mind. And then he pointed out a silvery ball of stuff, somehow suspended in a clear capsule, about as long and about as big around as the ink in a ballpoint pen. He'd trapped something in there, and he wanted me to believe that it was paranormal matter. He found a cart in the lab which could use to roll back up to the hall, said we needed to get it into the truck."

"Was it heavy?"

"No, not like that. While it was in the drawer, he unscrewed one end of the capsule and this ball started rolling out into a string, and the string was making its way for the screw hole, so he plugged that with his finger. Then he asked me to unscrew the other end. I got it loose and see that in the meanwhile it was burning a hole into Taylor's fingertip, through his finger, to escape."

"What was..."

"It was some toxic horror. He wasn't in any pain that I could see, but he was plugging the hole and it was resisting. It took the first part of his finger, bone and all, and he went on plugging the hole with his knuckle. Once the capsule was free, he wrapped it in a

plastic bag and held that down on the cart. He says, let's roll this thing out to the truck. I'm stunned by what I'm seeing, I just go along, right? I figure he knows what this thing is doing. Then we're rolling it back down the hall, and the bag is expanding, the capsule is rattling around in there. I guess some of the monopole goo was coming out. Then everything went crosswise. The wheels jam, I look down, and they're sinking into the tile. My hands are pushing the cart and instead they slide off of it. The lights in the hall flicker and go out, but we can still see by the light of this infernal capsule inside the bag. I start running but I can't get any traction, so I slip and roll, and Taylor picks it up and starts bolting for the closest door - I swear he went straight through it without it opening. There are flashes outside. People are peering out of the computer lab to figure out what the hell is happening and I can't answer, I am crawling after to see what happened to Taylor. I get up on my knees to unlock the door and outside he has gotten it pinned down on the ground. We're on the campus lawn and he screams for me to get the truck, which we parked on the other end of the building. I dash around to get it, bring it around and up onto the sidewalk, and Taylor is rasping wordlessly. I unlock the back doors and there's a thick metal safe lined with plastic. Taylor heaves it in there, I lock it, and he collapses back onto the grass. I see a few silver strands sinking into the soil, dissolving as easily as spilt water."

"Was it all lost, then?"

"No, Taylor managed to keep some of it in the bag. He used a magnet to show me that we'd gotten some inside of the safe. I asked him what would happen to the rest of the stuff, was it still toxic, and he didn't know. Guessed it would probably go down to the Earth's core."

"And he was okay?"

"Yeah, I thought we would be rushing him to a hospital, but his finger was mostly healed. Still missing, but not bleeding out. I asked him what happened with the doors, I guess that was still the hardest part for me to understand at the time, and he asked me how I pushed the cart into the floor and the wall. I don't even remember."

I had certainly not prepared for this story, nor did I have the physics knowledge to ask sensible questions about the monopole. There were a couple of minutes where I went back through my notes, not saying anything.

"I suppose you want to know what this has to do with Sally."

"I almost forgot! But yes."

"Come to my place at Greenbark for dinner tomorrow. The guy here at the hostel, Gene, he knows where to go."

And quick as a flash, he had walked out the door.

---

Gene's face lit up with excitement when I told him we would go to see the ghost-tracker Earl. He was also a little disappointed that he had not heard the story from the other night.

"What happen? What ghost?"

"He met a scientist. They found something."

"Ah yes, science."

"Like Frankenstein. Do you know Frankenstein?"

"Yes, Frankenstein. Made the monster."

I piled all of my recording equipment into my bag and squeeze behind Gene on his moped. Soon we were speeding down dirt roads and through tea fields. At each junction we would stop, Gene would look around as though completely lost, and then pick a direction. Yet at the end of the trip we reached our destination, a small European-style home straight out of every safari story. Inside was the older Earl.

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Earl explained that the house had been there for over a century, that it was a respite for colonial leaders and had, during more difficult times, been transferred over to wealthy locals and visiting researchers. To the current owners, Earl was just another scientist. He surprised me by introducing me to his wife, who he said should remain anonymous in any of my accounts:

"I came to this country thinking I was an expert on the paranormal. I had done a great deal of research on Nigerian totems. Then I met my wife - she was a local witch doctor, unmarried as was custom. If I've learned anything in my travels, it's that the minute you think you're deep into something, you find someone who's a hell of a lot deeper and smarter than you in that subject. She was that know-it-all who put my knowledge to shame. It felt like I'd never find my own place here. But as I was packing up, I heard that another young woman in the village was wanting to become the local witch doctor. And the thing is, to break into that industry, the only way is to accuse the current witch doctor of working with the devil. And despite everything she'd done for them in the past, they



wouldn't listen to her denials. I hid her away, and got a few of her things from her house before they burned it to the ground."

Earl pauses for a minute, and we hear her moving dishes around in the kitchen.

"It's interesting that me and the younger Earl, as you would call him, have met our wives under such dire circumstances. I'm not really sure what it means about our relationships, like are we just there at a difficult time? And my wife, we talked about it the other night after you told me about Sally. She says that it's because it shows real character, real love to support someone through the most difficult time in their lives. I think it makes sense."

"It does make sense."

"I told you about Taylor. He was broken, I think he was still hurting beyond the missing finger, though it was hard to tell what was happening. So I was scared off. I left as soon as I could and went back to hunting ghosts with the team. After I ran into Sally, I told them that we were running ourselves ragged, chasing after this stuff. The team lost its cohesion pretty soon after that."

"You couldn't go after the paranormal physics work, like Taylor?"

"No way... that stuff was real but too real, just terrifying. I never told the other guys on the team about that night."

"So what happened with Sally?"

"After the team went to I came back into the city, thinking I would salvage something with Sally. Apologize for saying the house wasn't haunted, make amends. We had this most amazing breakfast together where she was chirping on about a million different fascinating things in the town. She was at home and a part of the city and even had ideas for how I could stay there."

"But what about Victor?"

"The next day I tried to call her and do something smooth, like take her on a river cruise. But she had made plans with her fiance, Victor, and that was that."

"What did you expect?"

"Well I was a bit closed-minded, right? Here I was, thinking that the best thing for me would be to go back to Louisiana and reconnect with my close friend Sally, when really I

hardly knew her, and her life was on a very different trajectory. We had nothing to do with each other. Please no sympathy... my life is brilliant now. But at the time it was a real colossal shock."

"What next?"

"I was holed up in my hotel room, wondering where on the map to go next, when Taylor appeared. Literally came in through the windows and curtains in a beam of light. I was about three levels above astonished, as you might imagine. Just up against the wall shouting what the hell is happening. And he says he's about to do me a favor. That's what I remember mostly - everything he said about the monopole was still gibberish to me. But he must have found it. And with it, he had some sort of power. So he duplicated Sally."

"I don't understand. You asked him to duplicate Sally?"

"No, no, I was much too terrified to speak. He didn't tell me what he was doing, just said that thing about doing me a favor. And hours later - I didn't sleep a wink, of course - there was another me banging on the door, asking me to let him in. That didn't seem like much of a favor. Even when we saw the younger Sally was on the news... I don't get it. What's the favor? I was vying for this girl's attention, so he creates another one of me and the girl?"

"It doesn't make a lot of sense. Especially for someone with these... powers to modify the universe like that."

"That's nothing. I've raided his workshop, looked into his papers, and to him, these ethereal existences, duplication is nothing. Here I was wondering how he managed to modify space, time, and matter, and he wrote that it would be nothing, like smudging freshly printed ink. Like me and that cart. Physics is bullshit. Paranormal research, too. We're just waterbugs skimming the surface."

"What happened between you and the other Earl, then? He knows what happened."

"In a sense, yes. If you count what I've told you as knowing what happened, then yes. I even mailed him the workshop papers, so he'd have what little I had learned. It sounds like a small thing, but that was the only source of information out there about what happened to us. Possibly the only source of information that'll exist in our lifetimes. I never had a chance to talk to the other Earl about it."

"You had separated by then. They told me about a road trip."

"We were all living together. I was disappointed and angry to see a connection forming between the younger Sally and the younger Earl. He kept trying to be different and better than me. She felt like they had something in common. I didn't know what to hope for. For the first several weeks there, we were just trying to live and hide and build up an identity for her. And then one day he took her from me, and they have been together this whole time."

He is lost in thought.

"It ended things between me and Sally. I didn't want to hear from her or the younger Earl ever again. Looking back now, I..." he laughed "... I get what Taylor was saying in that apparition, I really do. This Sally was someone I thought that I loved and respected more than anything, and I couldn't accept what she wanted! At first I could tell myself that it was this guy Victor and she just didn't see what a jerk he was, but once it was myself but not me... once it was the younger Earl, I mean... You have to understand that life is not about your choices. It is about other people's choices."

"Like you choosing to come here? Like me choosing to find you?"

"Maybe? But more like: an inventor can receive millions in funding or be ignored. A writer can write ten words or a million, but only the publisher will decide what gets published. If you have something precious in your life, it needs to be validated by others to be made real."

"Did that happen for you, Earl?"

"Did I get something real?"

"Yes."

"I like to think that I did."

I turned off the recorder and settled back into my chair. Earl folded his legs in to go into a more zen-like pose. There were sounds of the forest, and from the kitchen, bubbling soup.

I went home that night feeling full, feeling cool wind on the skin. Perhaps Earl was too cynical. There were still precious things in the world, things that could be your own. But by any standard, he had found himself out in the jungle. He will live there til the day that he dies.

---

Returning to regular work at the Cambridge office was refreshing if less hands-on. People came and went with stories. Were any of them as revealing as Sally's? As terrifying as the older Earl's encounter? As scientific as the monopole trap set up by Taylor? None of them were, but I went on, helping however I could.

The day came when I received a letter from the younger Sally:

We live in a new city now. We are fine but our secret remains.

I still want to understand what happened.

Talk to the older Sally. I wonder if she still has nightmares. I don't know if this is helpful or not, but I used to sleep fitfully and now no more.

If you solve it, leave a letter at Ming's on Chelmsford Avenue. The owner knows me.

I will come one day and read it.

- Sally

What could I tell Sally? A million thoughts and experiences flew through my head. But to turn her against Earl would not bring her answers - only confusion and turmoil. I remembered the older Sally, her fitful sleeps and drab daytimes. The younger Earl may not have learned the same lesson as the older, but he had nonetheless crafted a better life for Sally, and that meant he must have true feelings. Perhaps he was right to hide away the research which could create and destroy so much.

I wrote:

I met the other Sally. I found the older Earl living happily in Nigeria.

You are from this universe.

Earl found evidence that a lab experiment duplicated you. He hides it because he is proud of your resilience and the new life that you have made together. For a while you had to run, but now you can stop running.

You are the new Sally Marchan.

# Rollback

The student, whose name Gem did not know, blinked in surprise. "Why not?"

"I can't have you go research this. It isn't our department. Computer science, maybe."

"I thought for sure this would interest you. This course isn't about Technology and Society today. It's about tomorrow."

Gem turned her monitor around so that the student, inching closer to the desk, would sit back. "Do you see this? It's the number of citable works using Datalirium. It was a flash in the pan. Not a peep in the past six months. Not going anywhere tomorrow."

"No, that's not what I'm interested in at all." A pause. "I mean, Datalirium *started* there."

"What do you mean?"

"Well, no one knows the inventors for sure, and it started with citable works and research data. Then there's this guy online now, Jacob Lenton, who says it can be a new currency."

"I don't see how that could be."

"The original concept is to track your research data as it's recorded and log it in this blockchain network, right? So research couldn't get forged or backdated, anyway. So hackercept adds this extra component, a 3D fractal. If someone finds patterns in the fractal, they get one Datalyra credit. And computers can't mine it; the geometry is too complicated for them to pick up on it so far."

Gem turned the screen around, typed a few words into Google and scrolled a bit. "Could you write me an abstract? By tomorrow, even? I don't want the project to get ahead of you, if you need to change topics."

"Thank you ma'am."

As the student stood to leave he admitted, "I'm surprised that you knew about Datalirium anyway. Where did you hear about it?"

Gem smiled. "Just a friend of a friend. Undergrad."

On the inside, she was panicking.

---

In Gem's sophomore year, the college campus had been completely different. There were still areas she had not yet explored, labs for higher-level students and their higher-level projects. The room which would become Gem's office was not yet constructed, a field of tall grass behind the chemistry hall.

It was a dewy January morning, Gem remembered, when she had heard about Datalirium. She remembered because her sneakers squeaked all the way down the main hall of the computer science building, because she'd walked straight across the quad, because she liked to see the grass after a cold winter break in Minnesota. Before the semester began, they had two weeks to join a class or not, to study a subject short-term or not. The flyer for this session had been only: "Hack. Bring laptops." The grad student organizer made sure the undergrads were in random groups and then, frustratingly, disappeared to her lab.

In the meetings that they held afterward, there was an unspoken rule that no one had come up with the idea. But in Gem's memory, it was Edward. He showed them the article: "Prize-winning Lab Retracts Paper". He asked the question, "can we make a lab notebook that can't tell a lie?". It was not the group's favorite idea. But it was a good question. It stuck with them. When Nathan's idea failed to wow in its first demo, they met in the library's whiteboard-walled study room, and Edward asked it again.

"No," said Nathan. He and Paul, the last of the group, began listing reasons. A determined liar would give the lab computer false numbers. They could alter the recorded data, and electronic sensors, and test equipment, to fit what they wanted.

"What if they couldn't alter any of that?" Gem had asked. "The moment data is recorded, by sensor or by human, it gets sent out on a network. That's how Bitcoin transactions work, you know. Everyone has a copy of everyone's checkbook. We do that to the lab notebook. You can't tell everyone to rewrite your data if you change your mind later."

"They could still give the notebook false numbers," reminded Paul.

"Only if they knew from the beginning, each measurement, what they wanted the numbers to say. Fraud is usually an act of last-minute desperation."

"Gem, it either works against a determined liar or it doesn't work at all."

Edward cut in, "what if they don't know what they want the numbers to say?"

Paul and Gem processed this.

"Double blind experiments. An internet-connected instrument brings in a second factor, an offset into the output. If that offset number is off, it's fake. The liar won't know how to alter his numbers. The only way to get data and know what it means is to share it with the network and convince it that a human did the experiment at that moment, without knowing the result."

Nathan picked up a whiteboard marker. "Let's look at what you're saying mathematically, though..."

---

By the end of the two-week class, they had only made an opaque cylinder that Tweeted when its volume changed. The protocol itself was never discussed in the classroom. In their follow-up meetings the four resolved to become a club. They never registered with the Activities Board, because they would need to accept freshman members and limit their library time. As far as the librarian knew, they were a study group.

But one night, deep inside one of the computer labs, they gathered around Paul's touchscreen tablet. It awoke with a chirp and the name DATALIRIUM appeared. Edward tapped at his phone to start the genesis block. "2014/03 Prize-winning Lab Retracts P" the first message read. They groaned at the bug.

"Keep it running," Paul insisted. "We'll put some data on it and see if it sticks."

Keeping the project a secret from friends, classmates, and parents was easy. No one in their network would understand the project, as far as they knew. There were a few times Edward would hint at a startup. The problem was that their protocol was too easy to reproduce, the hardware much easier for any established company to manufacture. Their mini start-up was bound to be overshadowed or acquired.

Edward and Nathan got offers from biochemistry labs in opposite parts of the country. One day Gem ran into them at the university center, lounging in front of the TV. She came up from behind them and saw slides flickering across their screens.

"You better not be selling out," Gem said.

They were startled but moved a futon over for her to sit. Edward was watching some sort of livestream and let Nathan do the talking. "There's a bigshot professor in Ukraine who's coming here to present at a conference. We're working with him."

"On the project?"

"On what happens when he claims asylum. He crossed the wrong guys back home. Big mess. Edward is organizing the event, so the university asked him to help keep it quiet."

"That's... wow I didn't know. It sounds like a big deal."

"Yes. All our communication's PGP-encrypted. Huge deal."

"Well, is he a computer scientist? Worth telling him about the project?"

"We're going to keep him on the dark. In fact, we're going to tell him not to give the talk."

"That's too bad."

"It's an opportunity, Gem. They're going to call out this professor's name, and anyone can walk up there and talk about their project. Any photo will tell them it wasn't the same guy. But if he has a good topic, people will listen."

Gem wrung her hands to try and lose some nerves. "They will see you! Don't fuck this up!"

"Oh, we thought of that! We're hiring an actor to read word-for-word off of the slides."

"Word-for-word?"

"I'm not about to call him up and give him a crash course on cryptography and Proof of Work. In fact, it's better if we don't speak to him directly at all."

----

Gem fidgeted in the auditorium. She could barely see the stage. The others must be in the audience somewhere, but she hadn't spoken to them since the previous day.

The provost was on the microphone. "Aleksander, welcome. Show us what you've been working on."

A tall blond man emerged from behind the side curtain. He strode out, shook hands, and grasped the podium tightly. "I am here today to talk about this fantastic project my students have been doing," the false Aleksander said. "I am talking about Datalibbum."

The false Aleksander was mobbed by people at the end of the talk. Students and greybeards alike. His insisting, "please, no questions!" was the last thing Gem heard as he left the hall.

Gem thought for a moment to thank him, to shaking his hand. But it would be too conspicuous. And she had to add new resources on her server. Datalirium was trending.

----



After the meeting with her student, Gem had driven out to Nathan's new office.

Nathan was turning a thimble-sized model of a pH sensor over and over in his hands. He didn't look directly at Gem, but she remembered that was typical when he was lost in thought.

"You can't discount Datalirium, and what's come of it. A sensor like this could be in every lab in the country. Quite affordable." He returned the sensor to a set of new creations along the edge of his glass and aluminum desk. "Even without the hype, we've always been profitable."

"I don't have anything against what you've made of Datalirium since we graduated. We always thought... I mean when we were in school, we thought someone might make a profit from it." Gem had brought her student's abstract in her bag, but wanted to get to the point directly and personally. "There's someone out there who's using it as a currency."

"What now?" Nathan stopped moving altogether for a second, then shook his head. "I don't see how that'd be. It's just numbers. There's no role for automatic computation like with Ethereum."

"The algorithm measures human work and measurement. So this guy - his name is Jacob Lenton - puts out a time-sensitive automata, one of those pattern generators from Wolfram's books. Even an advanced computer is going to have a hard time looking at the pattern and figuring out if it can fold on itself in the future. A person does pretty well, or so he says."

"So the person is just looking at patterns all day? There's no value in that."

"Well suppose I solved a thousand patterns today. That means me or some poor soul working for me entered a thousand different combinations. Or maybe two people solved five hundred each."

"I don't see how it matters at all how many you solved. Looking at these sort of patterns is meaningless."

"The currency isn't about the patterns at all. It's measuring human capital. If I solved a million patterns and didn't miss one, it means I have a thousand workers at their desks with quality control backing them up. That sort of thing is incredibly valuable in the outsourcing business. You could even sell futures. There's some guy out there right now with an office in Bangalore asking staff to just click on patterns all day."

That idea took a long time to digest. Nathan wasn't going to change his mind anytime soon, Gem could tell. They needed more time to research this idea.

"You're going to find a problem with this, aren't you?"

"I'm sorry?"

"You're going to use this to tell me that Datalirium should never have been created. I've had many people storm in here and tell me the same. Researchers who've been undermined by their own measurements. I make sure they know that Liri Labs had nothing to do with its creation. We just built what came after."

"Well without a public inventor, there's no one responsible for it. There's no one to guide it, no one to throw a wrench in the gears if it goes astray."

"An inventor would only mean control, which any open system has to reject. There was no one telling me what to do with Datalirium, how to build on it, how to market it. How do we know that this Jacob guy isn't on the right track?"

"Because we know, Nathan. You were there."

Nathan put his hand up to wave away the suggestion, but then nodded. "Sorry, I have to distance myself from that. People make very close guesses sometimes. We're one of the few companies deep in this business, which puts me right in the center."

Looking past Nathan through floor-to-ceiling glass, Gem could see lines of cars starting to fill in the parking lot below. They would soon have company. "I'm glad you didn't run from it. You've done more than any of us to make Datalirium happen, whether anyone knows it or not."

Nathan beamed. "If you run into any trouble with this Jacob guy... you know what, I'll set up a meeting for you. Yes. He'll answer my call, I'm sure. And last thing, if this is real, if things get serious, if you ever need to get the band back together..."

"All of us?"

"Yes, all of us - I can book a secure room. Tickets can be arranged. I don't know about Paul, though. He's gone off the grid."

Now this, Gem hadn't heard. "Off the grid?"

"On a mountaintop. In the middle of nowhere, western Nepal. Poetic in a way."

On the way out the door Gem said to herself: "Getting his key is going to be a bitch."

-----

"You see, professor, the first smart contract in Datalirium uses an interesting cryptographic signature."

"What do you mean by that?"

"Well, in this case it means the creator of Datalirium can publish messages to the users, but only if it gets signatures from multiple keys. Having a second key to avoid a hack makes sense. But this contract, when you decompile it from bytecode, looks like it takes four separate keys."

"Why do you think that is?"

"It isn't possible to tell. It could be one for each hacker, or different levels of security. If a message comes out signed by any other set of keys it could just turn out be a hoax. Or it could mean they got to one of them."

"They? Get to?"

"With any system that breaks up the old structure, you know there's a line of people trying to disrupt it. Look what the SEC did to all of the Bitcoin exchanges in the U.S."

"But whoever the inventors are, they have multiple keys."

"Yes."

"And if they lose track of any one, they'll never make a statement people will agree is from them."

"Right again."

"Well, let's hope no one is an asshat and loses their keys."

----

Gem stared up at the dark ceiling and found no sleep.

Let's hope no one is an asshat and loses their keys.

She kept picturing Paul, with shaggy hair and a lengthy beard, smashing his USB key with a rock. Or with his head shaven, in monks' robes, tossing the key into a ceremonial fire. Or just one day going into an internet cafe, opening up the file window, and clicking delete.

If Paul's key was gone, then they no longer existed as verifiable founders. They could make a statement and be a curiosity to the press, and it could change all of their futures. But the Datalirium community and this new monetization project would ignore them. With an outcome like that, who would stand with her? What would be the point?

The future, then, was likely with Jacob and his money-making scheme. There was nothing Gem could say to him to stop it, but she'd agreed to a meeting anyhow. She couldn't prove to Jacob that she had created it. It would be foolish for her to try.

And then she had an another idea.

-----

"... because we've found a bug in Datalirium". She was surprised to hear her voice echo aloud on the other end of their phone line. She changed her tone to a more hushed concern. "There's a bug... in Datalirium. You can't use it." He would need to hear it was real and dire. "We'll show the bug at a conference. Um. Next month."

And now she had a plan.

----

Gem's steps echoed through the all-marble lobby of DL Capital. Some Googling told her Jacob had acquired the space in downtown Phoenix from an investment bank. The lobby could have made the company look grandiose, but without a single person present or passing through, the effect was lost. At the counter where a receptionist would sit, a terminal came to life and flicked through several forms. Gem approached and selected her name from a list. There was a momentary loading screen, then a message that the CEO would arrive shortly. Gem thought through her script one more time. The right turn of phrase. The need for the words "we don't have much time" to show up somewhere.

Elevator doors opened with an unceremonious ping, and Jacob appeared with two uniformed employees. He smiled and reached out his hand.

Despite the oppressive heat, they found an outdoor table in a nearby cafe. When small talk was finished, Gem laid out a detailed description of how Datalirium was working, internally. How she understood the currency angle and its interaction with Datalirium's API. Jacob nodded, but once or twice asked his engineers if they had gotten the gist of it.

Now Gem acrobatically jumped through multiple topics: how different clients communicated in the protocol, how the clients found each other through DNS servers, how these servers told the clients when it was time to update. She'd purposely lost them, and before they could question it, she added, "and we've got research showing that exploit could be a problem. Not today, but for a payment network like this, you can't wait for an unsigned checkpoint that could get through to a thin client."

"We can't have that now, can we?" The engineers chuckled. Jacob turned out to be a bit of a joker, but he could understand the significance of what Gem was saying for his business. "The

bug is what happens after a rogue actor tries to break the blockchain, right? Is it like a 51 percent attack, when the majority of the computing power on the network is misinforming the others?"

"Yes, but when more of your users or even your own servers go online, when you respond to a 51 percent attack by increasing hash-power by activating thin clients, some of your own processing power would contribute to the problem."

Jacob shook his head. "Now I see why Nathan encouraged me to speak with you. I'm glad that you're doing a responsible disclosure of the bug; we actually see a number of hackers doing that in cryptocurrency. What I don't understand is how this affects us more than Nathan and his devices. We're using the same code, the same protocol."

"Maybe not. He could switch to an alternative." They looked surprised. "NDA, oops."

"Regardless, the little handheld devices that Nathan's mad science experiments run on, those are all going to run thin clients. Most of what we have - the outsourcing markets, the Bangalore project - they're running full nodes on desktops. They're always connected. The only logic I can make out of this is that your team needs a grant to patch this bug."

Gem didn't know whether to take this angle or not.

Jacob continued, "we'd like to see it patched, to keep our users' confidence, but I don't think the community is ready to accept our involvement just yet. Already we're doing the majority of the transactions on the network. Already we're dominating the press. The only way new code is going to get into production is if the whole thing breaks down. Unless, of course, a patch comes out with the blessing of the original developers."

"The original developers? Really?"

"If my market analyst weren't convinced the developers were a ring of professors in Mongolia... I would of course suspect you, Gem."

For now she said only, "you shouldn't make wild guesses like that. It's the least funny joke in crypto."

----

With Jacob undeterred, the best option was to call the others. Edward agreed right away, provided she could pull in the others. Gem decided not to tell him about Paul.

Was it going to work? Gem pondered it through the meeting with her department head to get emergency leave, unexplained, the day-long flight through Qatar, and the six hour long bus ride, squeezed between Czech backpackers, on the road from Kathmandu to Pokhara.

Watching the GPS dot trace the curves on the road, Gem knew they were last at her stop. She signalled the driver, and she emerged, exhausted, choking on dust. From her backpack, she withdrew a pair of binoculars, and spied the monastery on the other side of the river.

After paying a local man 500 rupees, Gem began to scale the path up to the building. Ahead she heard the ringing of bells, fading into nothing, interrupted by the occasional horn from the road.

At the final flight of steps, a monk up ahead noticed her. "No pictures," he said, moving his hands frantically.

Gem called out to him: "You got anyone named Paul up there?"

Another monk appeared and jumped back. "Jesus Christ! Hey, I'll have to call you back." As he pocketed the phone in his robes, Gem at last she recognized Paul, skinnier and somehow more youthful before. "

---

"You could have just called me. But I know I've been bad about keeping in touch." Paul gestured for them both to sit down at a tea table with plastic chairs. He recovered a tablet where he showed her a Financial Times article. "Nathan set up a partnership with this Jacob guy. Looks like Datalirium is in their hands."

I covered my eyes, let out an exasperated sigh, and then remembered that yes - yes, losing Nathan would end the chance of doing the announcement cryptographically, via smart contract. I closed my laptop.

Paul resumed scrolling through the story. "He uses some very strong wording to endorse the project."

"You think that meeting him spooked him into picking a side?"

"Can't say. Something like this would take time to set up. Here it says-"

"You know what? I can't even look at it. I can't even think about it. You can laugh at me now, for trying."

Paul got up, and gestured for me to stand, too. We embraced. "I'm glad that you found me. We do need to do something about this, to fix what is wrong in the world. I can't be going back here, meditating with the others, while I know my creation is being used for evil."

-----

"Good morning."

"Welcome back, professor!" One of the students called.

Aside from someone who I recognized from the student newspaper and classes, the others were new to me. The video window on my laptop indicated that two cryptocurrency blogs and MIT Technology Review were livestreaming us.

"Most of you signed up for this class to test and document a vulnerability in blockchain technology. Unfortunately I have to say that we don't have one today. I have an announcement regarding Datalirium, which I am proud to deliver on campus here today. Probably we should have done it this way, years ago."

I waved and the other two came on stage.

"The three of us - plus the founder of Liri Labs, are the original inventors of Datalirium. Everyone onstage today has signed a sworn affidavit to this effect. We would have liked for everyone to make a joint statement, but as you can see, Nathan has declined to appear."

"Didn't Liri Labs have a spokesman deny any connection to the original Datalirium platform last week?"

Paul answered: "Yes. I spoke to Nathan again this morning and he refused to join us in this effort."

"Which company are you from?"

"I was part of the original project team. Until recently I was encamped outside a Buddhist monastery, and..."

"That's not really important," Gem waved on. "We have come to an agreement - us here today - that Datalirium must be shut down, and its miners should discontinue using the program. Our invention is being used to dehumanize and commodify workers in a way which I cannot - in a way which only a cruel mind would contrive and understand."

A VoIP question queued in - "Professor - though your story is interesting, what is your best proof that you were one of the inventors? Is there a strictly cryptographic proof of it?"

"I can move some early tokens," I offered, "but not the original ones. If we had one more signature, we could have issued a statement through the original smart contract."

"But how can you possibly shut down Datalirium? It's a decentralized network used by thousands of people who you've never met."

"We're the inventors, and... you're right, in a successfully decentralized system, who has the authority to speak to who uses the network and how it works? The only ones with credibility are the people with the greatest share of mining hash-rate, or the inventors themselves. And here we are."

----

Gem's announcement - and a future bug disclosure - were ignored. Soon she was suspended by the university. Forced to share an apartment with Paul, the wayward computer scientist turned conflicted monk. Pestered on social media with questions and accusations.

Gem found only misery in being an unverifiable founder, and knowing that the DL Capital people were getting away with it. Then came the call, a flight to DC, and an introduction to people at DARPA who believed her, and offered her a job. It was a revelation.

----

Gem followed her supervisor into the conference room, where several people were checking in on video screens.

"Oak Ridge, are you fully online?"

"Yes, and hearing you load and clear."

"We're going to send the professor's drawing over to your board for your experts to review."

"Excellent."

"This will take a while. Professor, maybe you would like to meet the director while we wait?"

"Sure." Gem got up and followed the woman down the corridor to an executive office. We were still underground, but the office was lit with a warm glow, the style was decidedly more ornate than the government-issue office furniture in the conference center.

"Ah, here you are!" An aging Japanese man got up from his chair and stretched out his hand.

I went in to shake his hand lightly, and he bowed instinctively.



"Pleasure to meet you-"

"Dr. Nakamoto, Director."

"Are you-"

"Yes, of course. Would you like some Danish cookies?"

My thoughts were racing as I settled onto the man's couch. "I have so many questions, you know? I mean..."

"Unfortunately we won't be able to answer those today. It is, I suppose, a bit of a revelation to find me working here." Nakamoto passed a blue tray of cookies. I took one.

"It's commonly known that I stopped coding and sending e-mails in the Bitcoin project shortly after it became of interest to the WikiLeaks and then, in turn, the CIA."

"Yes."

"The Agency has never liked the type of freelance projects that we have in our own team. It was a conflict of interest, they said, for us to create Bitcoin at the same time that we were tasked with embedding hardware for anti-leaking and anti-laundering. The National Security Council asked me to do whatever I could, short of exposing my identity, to kill the project. So I quit and never spent the coins."

"But people kept using it, and making currencies of their own. It was too late for you to stop it."

"Yes. That's why I've taken such an interest in your case, Professor, in your project, and what could be the first successful rollback."

"I'm honored, Dr. Nakamoto, but the vulnerability in Datalirium... if it is possible to exploit, which I'm not sure we have the compute power for, it doesn't exist in Bitcoin."

"Oak Ridge has near limitless compute power, by industry standards. Teraflops, petaflops, yottaflops..."

"Then why not use that and take over the Bitcoin network?"

"At this point, there is an understandable fear about exposing the intel community involvement in the Bitcoin world, and our capabilities. It's a political issue. We did make one attempt early on, and for a few hours in March 2013 we thought it was over, but everyone updated their clients to

avoid a contentious fork. Fortunately this time around, we are dealing with different technologies, and their response measures, with thin clients, could be advantageous."

"Okay, so we use this compute power to mislead and burn out the Datalirium network?"

"Even here, too much hash-power would make our meddling obvious and tip the info-sec community off to our processing power. Then as soon as we stopped intervening with hash-power, people would pick up from when we last started. Our goal must be to fork the blockchain and get DL Capital official bots to contribute to both chains, permanently discrediting the currency with a minimum amount of manipulation."

The plan made sense. "It would be a pleasure working with you, Dr. Nakamoto."

-----

Gem stepped back into the control room.

"Good evening, Dr. Nakamoto." The old man nodded and then left.

A technician stepped up. "We're ready, Professor. On your mark."

Gem wished Satoshi Nakamoto could have stayed for support, but didn't want to question him. Too late now. "Oak Ridge, you have my permission to close my civilian research project. Initiate the blockchain fork."

"Thank you, Professor. We have confirmed your cryptographic signature on the codebase. We are queueing up 40% AWS, 40% GCS, and 20% local for a start."

"When you move to the second spike, put more of that into local so that DL Capital responds with their thin wallet images on AWS."

"Got it."

The graph started to trace itself on the screen, and a second, shallow line showed the increase in hash-power in response.

# The Annotationist

May first learned that I was a writer at the worst possible time, when we had just moved into our first home together. She had decided to go to the bookstore while I was at work -- a joke about too many empty shelves, a spill on a coffee table photo book -- I quickly forgot why. Instead I came home to see her laying on the couch, buried in a pillow, tears coming again when I shook her awake.

"What happened?"

The book had been a catharsis, after a confusing relationship, nothing more than a fling by anyone else's standards... Something about the intense flashes and the loss drove me to write it down, and encapsulate it in the book. A few thousand people had bought the book, and then it went away.

It wasn't that simple, though, when your fiancée finds it on display at a second-hand bookstore. Not simple at all.

"I wrote to capture a moment in time, and putting it down in the book helped me let it go. It's as simple as that."

"You say in the first two pages, 'she wasn't the first person who I loved, but she was the first that I loved *like that*.' That's supposed to be how you feel about me, isn't it?"

"It's before I knew how this would feel, right here and now. I wouldn't trade this for anything, you know."

"You never wrote like that for me!"

"Because I'm a *failed writer*. Look, someone was trying to get rid of their copy."

"She meant a lot to you!"

And then I did what anyone would do, at the crux of the crisis, and assured her, "Those words were from the editor, we sat and thought about how to make this story work, and we were wrong. Just like that relationship was never possible, fatally flawed, the whole book didn't make sense to us."

"What about us?"

"I learned to bury this relationship and this book. So our story would start."

“No more of these secrets.”

-----

That promise, that ‘no more secrets’, always strengthened our relationship.

Then one day I received two envelopes redirected from our old address, sent by a new publisher. It was a fluke, I thought, some sort of annual payment. The next week I found another envelope waiting in the mailbox. I tore it open and looked at the number on the check. I should be celebrating the success. But the new, unexplained secret weighed down on me. No more secrets.

I made it a surprise trip to San Francisco. We were overdue for a vacation. We went back to her favorite Italian place with the little tables on the sidewalk. And then, after strolling through the flower market, after taking pictures in front of the bridge, I told her everything that I knew. It was a foreign publisher, a Cantonese edition that was about to reprint, with copies on every bookshelf, every phone screen in Hong Kong. They would keep sending checks.

She reached over cautiously, squeezed, cried on my shoulder.

“Do you need anything?”

“No,” she mumbled.

“You okay? I need to know that you’re okay.”

She took a deep breath and wiped her eyes. “Chinese food would be appropriate. Don’t you agree?” She had a little smear of mascara, but I didn’t say a word.

-----

The airport was like any other, but it was like May had never traveled before.

“Look at that! Oh thankfully there’s still English on everything.”

“Hold onto my stuff while I go to the bathroom.”

“My phone’s not working!”

“There’s an airport WiFi here, I’m sure they have it. But remember that it’s nighttime back home.”

“Got it.” Her phone started buzzing.

----

At the foot of the escalator, a group of grim men in suits carry signs. One woman in a constellation dress lights up immediately as we make eye contact.

She waves. I guide my wife away from the baggage claim and toward our host.

The lady with the sign leans across the barrier for a handshake. "Hello, Mr. and Mrs. Ryan. My family name is Kam, but in English I usually go by 'Wau'."

May beams. "Okay, Miss Wau."

I try out greeting her with "*nei hou*".

Wau shouts, "In Cantonese, even?" And waves for us to come around to her.

----

Sitting across from each other in the limo, an actual limousine, I realize how I recognize our host's name. "You're the translator, for the book."

"It is not a translation at all, more of an annotated work, a zhùjiě."

Wau traced shapes in the air, presumably the Chinese characters making up the word.

"I don't understand."

"Let me explain. English reading skills are quite good here in Hong Kong. Your book is only annotated."

May shakes her head. "Annotated?"

"For example, the echo scene at Grand Central Station, where you agreed to be boyfriend and girlfriend. Everyone in New York City will know Grand Central! Even in other parts of America, you tell the reader and they will know it. But you do not describe it to the people who are outside the U.S."

May cringes but acknowledges: "That makes some sense."

"I graduated college and worked at the publisher for two years. They asked me to find some romance books that we can reprint and annotate, in China and Hong Kong, without censorship. Foreign and travel romance books are very popular now. They asked me to write annotations."

“So you picked the book?”

“Someone else found it, and they had me read it, because I lived in New York as a student.”

“Oh, that’s fantastic!”

“Thanks! You know, I think that I even was there in New York during the time from your book, you know, when you and Jill were there.”

I quickly glance at May, but she is staring out the window. Back to Wau: “You must have some good memories... maybe even visited the museum?”

“Of course! It felt like a real coincidence.”

“Well, I’m glad that we could finally meet.”

“The same to you.”

-----

In the hotel, exhausted, we slept in our clothes until the sun came through the curtains. I connected my phone to the hotel Wi-Fi to reveal dozens of messages from home, and a few urgent ones from Ms. Wau.

I snuck into the bathroom and made a Skype call.

-----

We are here on Ma Wan to look at the long-term apartment. This tiny island is full of apartment towers.

I watch Wau go through a million courtesies with the front desk lady. Finally, she comes down from her perch and gives me a hug.

“Fan of the book?”

“No, she doesn’t know us. She’s just really happy that you would come to live in Hong Kong. Don’t talk, okay?”

On the sixth floor, our front-desk-lady waves her hand over the lock and I hear the clunk of an electronic deadbolt.

She waves to stop us at the door, and re-emerges with a strange, pillow-sized box, which she sets on the ground. There are a flurry of words between her and Wau.

"I don't understand."

The lady winds a piece of plastic around the corners of the box.

Wau signals me. "Watch." She puts one foot into the box and *snap* a plastic bootie snaps around her foot. She tightens the elastic and *snap* switches feet.

I step in, and my hiking boots are covered by the surgical plastic. We are now welcomed in. From a speaker, classical music welcomes us in. Everything is staged as if someone lived here - coats on hangers, a line of pots and pans, a wall strangely full of empty photo frames.

The two converse again. Before I can wander off to look at the other rooms, Wau waves me back, and then unexpectedly pulls me in for a hug, whispering in my ear, "I told her that it is for us, don't say anything and I will get you and May a great deal." Then she goes back to the conversation.

As we step back into the sunlight, she summons a taxi for us. "Go back to your hotel... the publishers will set up everything here. Take your wife to Lamma Island, go hiking from one end to another. You'll enjoy it!" She stops for a moment. "Maybe you will stay in Hong Kong long enough to learn Cantonese and write about us, too."

----

We took the ferry over to Lantau that afternoon, once May was fully awake. From the small fishing village, a path leads up, winding past the power plant, up into the hills, and the map promises to bring us past the windmill. May rambles on about the efficiency of wind power.

On the beach, a boy and girl (a couple?) ran up to us. "Mr. Ryan?"

May and I look at each other. I shrug. "Yes?"

"We don't want a photo, just hello." The girl smiles. "We love the book."

May waves them closer: "Photos are okay! I've never been a celebrity before!" They take selfies with us. "Is the book really that famous?"

"For sure. we just heard that you arrived in Hong Kong."

We fall into a consistent pace as we climb up the steep path to the windmill. The boy gives me a concerned look and then taps me on the elbow. "There's just one part of the book that I wanted to talk to you about."

"Sure."

"In the book, you talk about how you dropped out of college, and that Jill considered doing the same, but I can't tell if it's important to the plot or not. You don't really describe what happened to you."

"Well, it's true. I dropped out years before, so I didn't think it fit into the story."

"But you did talk about it, it did affect you personally in some way."

"I hope that you two aren't planning on dropping out of school!"

He shakes his head. "In this city, it is just about impossible to get a good job without it. You're really lucky to be in America."

"Well this is why I try to shut up about being a dropout... it isn't really an achievement. I was very lucky that it eventually turned out okay."

"So in the story, and in real life also, Jill is going back to college, and she explains that she is a scholar now. It made you jealous."

May hears this and looks back. "You really are that way! So competitive!"

"Well no, I felt that... it was just, I can't even explain how stupid her 'scholar' thing was."

The guy shakes his head. "She was doing her research! You were helping her research project every day, but you were still mad that it worked out for her. It doesn't make sense."

"I did undergraduate research before. I don't know why she would try and explain it to me like I was dumb, knowing that I had the experience. There were a lot of fish that died in Dunkard Creek, in Pennsylvania somewhere. So a professor asked me to make a map of it, and.... there were two things that were dumb about it. So, first, we never visited the place or talked to any of the real people. We just collected bits and pieces of info on the internet."

"I don't understand."

"Me neither! And the second thing is, six months later, the school is considering kicking me out. I never asked for help before, but I wrote to my advisor and the grad student on the project, and never heard a peep from those guys to this day."



"Then years later you meet Jill. She isn't responsible for that!"

"Oh, of course not. Let me explain."

We continued walking for a minute before I could decide what a good explanation is.

"The problem is, we worked on this project together. And she was focusing on what the school was telling her, right? And giving them all of the credit, but the school wasn't providing any of the actual work or actual money! There wasn't anyone there who understood the part that I was doing. And I knew that at the end of the day, they could just push her and the project in a ditch, or tell her to just take surveys, rather than making a real change."

"But you are mad about it, because of what happened to you?"

"I don't know." I think about it. "Sure, okay, It is *related* to what happened to me, but does it mean that it wasn't true in our situation? Did you know, the college tried pulling her funding, made her go to hearings examining the project, started out an email by joking that they were still not funding her! They were cruel and unsympathetic. They wanted her to study minutia. I never wavered on it, but she bought into their research paper, paper chase thing."

The boy grins. "You're still mad about it. I like it. It's very real."

The girl nods. "Very real true story."

"Well, here's what I believe: a lie over many years doesn't become the truth. Someone being shitty to me, over many years, doesn't become okay. I don't need to play nice about it."

May motions for us to stop hiking and hands me a water. "You're getting him worked up about it." She stops me before I can protest. "One thing about this guy is he never lets go of - wait, am I making it sound romantic..?"

Our new friends laugh. The girl says, "No problem. There wouldn't be a book without it."

----

That night in front of my first audience, I see the first paragraph that Wau has highlighted for me.

*Let's try to go up to the roof, she says. She pushes on the door but it seems not to open. I squeeze past her and push harder. It gives way, and there is no alarm. I take off my coat and drape it over the door threshold, to keep it from locking us out. On that drab Chinatown rooftop, all the missteps seemed to melt away. We looked into each other's eyes as if for the first time. The Freedom Tower, which before had always reminded me of the worst, blended into the skyline lit up before us.*

Wau chimes in with a stream of words from the annotation. I see some heads nod. This is really happening. I feel like a real writer. I *am* a real writer.

*She told me her dreams to explore outer space, and I promised that I would come running after her.*

Wau puts her hands up. "Oh, here is Mr. Ryan's wife right now, coming in the door! Make room for her, please!"

I see her come in, a new purse slung over her shoulder. The audience claps again. I step down from the podium to the carpet. "May." I hug her, and remembering the conservative culture thing, trace a line down her face, move her hair behind her ear. She rests her head on my shoulder.

"Awww!" the crowd reacts.

A man's voice calls out, "Jill!"

We come apart. The crowd makes an unusual sort of whispering sound, some people are reaching for their phones.

"This is my wife, um, and-"

"From the book!" the same guy, again. He's drawing out his phone. "Hello, Jill and Ryan from the book."

"No, you see, the book is from when I was younger. Ms. Wau, can you explain? This is my wife May, here." She's already out of my embrace.

"You wrote your book about another girl?" They are all laughing. I look to Wau to explain, but she is just beaming.

"I, well, you should know that I wrote the book a long time ago. It was before I met my wife."

"Where is your wife's book?"

Wau giggles nervously. "Don't get him in trouble!"

The audience is laughing again. Where is May? Damn it.

"Please read the next section that I set aside for you."

I step back onto the podium. Pinch my lips together. Look up... I don't see May... look back down.

*That night I dreamt that I need to wake her up, but I am afraid to startle her. Over and over again in the dream.*

*Actually when I wake, sweating, I see the glowing clock at the foot of the bed, and I know it is what I need to do. I need to get ready for work. I turn on my side, put my hand lightly onto her shoulder, and I stop. She could keep sleeping. I could leave her a note. So I am doing it for me, because I want - more than anything - to have an extra moment with her.*

The audience laughs.

"No, I won't continue."

Wau's exasperated commentary: "Please, please tell us."

"Just read the fucking book! God damn it!"

I hand the microphone to Wau and find myself pushing, running, escaping the store, out into the rain. I don't see her. *Shit.*

I look back to see Wau at the door, calling out to me as the rain drenches my suit and tie. "Mr. Ryan, you promised to sign their books."

I nod and go back in. "Please forgive me," I say diplomatically, before dragging myself back to the desk, taking off the wet blazer, dropping into the seat.

Wau manages the first person in line, whispers to me, "I'll call her and have her back before the interview," then disappears.

-----

Back at the hotel, May is packing her things into the suitcase.

"We don't move into the apartment for a few days now, sweetheart..."

"I booked a flight to Singapore. Just for the weekend."

"That's good. It's good, right? I can grab a few things in the tote bag and-"

"It's just me traveling. You have a lot of meetings here before we can go home."

"This isn't how we do things. You want to get away from this situation. We don't move away from each other."

May sits down on the bed. I remain standing, I rest my hands on her shoulders, moving my hands then to...

She mumbles, "that's what you would do with her."

"That's what I always do with you, when we need to talk. We always-

"But we can't do that anymore."

I give up and sit on the bed beside her, staring ahead at the same wall. "I didn't want this to come between us. It was that weird guy at the book signing."

"I like to think that, maybe this is part of your journey."

"What do you mean?"

"I don't know, not yet. But I know that it will do some good for you to work through it. Alone."

-----

On the new apartment on the tiny island of Ma Wan which Wau has found for us, the doorman helps me move the last of May's things, and shuts the door behind him. The wall is full of empty picture frames, waiting for a family to move in.

I stare at May's luggage for a while, unopened. I turn on the television and flip through a cacophony of Chinese shows.

I hope, in a moment of vanity, to catch my own interview.

There is a familiar tap-tap-tap on the door. I open it to see Wau, dressed up in the star dress, like she was when our plane first arrived.

"I just heard that you moved in, and-" her eyes searched the room and looked past me to the bags.

"That's a personal trip. She always wanted to backpack around Asia, and, it's an all-inclusive tour package with this trip and...?"

She looks at me and I continue on, “This has all been very kind of you, but... unnecessary. We do okay on our own, or together, or, anyway, May is coming back from Singapore in a few days.”

She closes her own eyes, perhaps picturing it. “It’s beautiful there, in Singapore.”

“You’ve been?”

“Yes. What I wanted to say is, I apologize for any stress that I might have caused.”

“We were all a little surprised by the pomp and circumstance.”

“Pomp? What do you mean ‘pomp’?”

“It’s a phrase. Please come in, come in and sit down.”

The doorman appears again carrying two grocery bags, which he drops inside the door. My hand moves for my wallet and Wau waves me to pause. The doorman leaves and closes the door behind him.

“This is all my fault, and I want to make it up to you.”

“Please, I am not really a celebrity or anything, so I wasn’t really expecting the company or the gifts. I can get you a drink, though.”

“No, I was hoping to make you a dinner.”

“Dinner? Thanks, but I wasn’t so hungry and-”

“You can’t have had dinner already! Have you had *char siu*? Of course not yet. When you smell it cooking, then you can tell me if you’re hungry or not.”

My tongue catches on the unusual syllables.

“You can help, and teach your wife later. Come on now.”

-----

The next day at the office, the publishing team is silent while Wau commands the head of the table. She flicks through publicity slides on her tablet, which display on the TV behind her.

“I might be able to book you on another show. And your visa is almost good, your visa is almost ready to enter the other parts of mainland China.”

I tried to push back. “If our flight is too soon, you know that we can always come back to Hong Kong...”

“You stay. The publisher is very happy. Of course you will need to write the sequel.”

“The sequel? But I just started answers your questions for a translation!”

“Your story is too known already for us to translate and sell it again. Who will buy it? By now someone will have gone and made a translation on the internet. I think that I see some people discussing it already. In fact, I have already seen people with the translation. People are done with reading these translations.”

“You saw people with a translation and stopped? You should have said so, Wau. I’ve been writing so many notes for you. Why are you not telling me this?”

The rest of the team looks as uncomfortable as I am.

“There is a lot going on here in our office, and we are making it easier for you by giving you one person to talk to, and not having you answer to everyone there. Do you understand that? Do you want to get questions from everyone in this room? And their English is not as good.”

I didn’t reply.

“In the space program, there is one person in Mission Control who is called CAPCOM. And he is the one who talks to the astronauts. The only conversation between the astronauts and the ground is to this CAPCOM. There are a million people in NASA all talking to each other and then they talk to the CAPCOM, that’s me, and they talk to the astronauts directly, so there is no confusion going on.”

“I think that I understand what you mean, but why didn’t talk about this last night?”

“Because today it’s time for us to talk about the sequel.”

“There’s no sequel. Nothing more happened!”

Across the table, one of the publisher guys, who appeared to be the oldest, leaned forward. “Do you mean to tell me that the story that you wrote is one-hundred-percent true events? That you are not able to write fiction?”

“I made bits of it up... But not the general idea.”

He continues. "Well, how about you bring up old experiences, make up new ones, or... we discussed ghostwriting."

"Ghostwriting?"

Wau cuts in: "It will not be favorable to you. Someone else will write your book, and it will be so disappointing to our readers, so we will give you a small fraction of the money-"

I shake my head. "Wait, explain to me what's happening in the sequel. Story of how I met my wife? You know we-"

"No, the story has the same girl. It needs to be the same girl. Your readers like her."

*Fuck.*

"Same girl, and you are in Hong Kong."

"In Hong Kong?"

"You are *both* in Hong Kong. Do your research. Go on the sightseeing tour that I sent you."

"Do you have any idea the trouble that you're causing for me? What am I supposed to tell the museum?"

"The museum? How much are they paying you?"

The whole team looks at me, pencils ready.

"That isn't appropriate to ask. Not now. They expect-"

"They expect you to go back and *b/a b/a b/a*, follow their schedule and their rules, and maybe you will get promoted next year, maybe not. Now tell me, what are they offering you to go back? I am not afraid to talk about the money now."

"No, no, no, May and I were doing just fine before you got involved."

The older man leans forward. "I did some research online. Do you know what would happen to your book payment if we saw your old salary? You should keep quiet about this old job."

Wau nods. "I read the book, so I know that you are smart and analytical. This sequel is worth more than going back to the museum. It is more valuable than any other work that you can do. It means a lot to all of our careers, too. And if this book press stops, it will go away. Lightning doesn't strike twice."

It was true. I felt a burning in my eyes. I pushed back from the table.

"I need to talk to my wife."

----

I reach her on Skype that night.

*I miss you.*

*I miss you, too.*

*Are you coming back?*

*Not yet. Would you maybe come here?*

*They need me for something. We are making a video tomorrow.*

*Okay.*

*What does it mean: okay? Are you-*

*Just... okay for now.*

-----

I find Wau in the Starbucks upstairs from Central station. She is on the phone with someone as a camera crew is setting up and brushing makeup on two... tourists? Interviewers?

She sees me and abruptly cuts her call short.

"Mr. Ryan? You're here!" She embraces me.

"What's going on?"

"It's a book trailer for YouTube and the Chinese channels. Very common now. It gets young people interested in buying hard copy books."

The male actor pushes past the crew to shake hands. "Mr. Ryan, nice to meet you."

"And you are?"

Wau laughs. "He's you!"

He smiles. "Call me Jimmy." I see his light brown hair, the geeky glasses, the backpack. They have captured a little bit of me, after all.

"Jimmy, if you have any questions, I can try to answer them."



“Oh, don’t worry, I read the book, sir.”

I don’t know what to say, but already Wau is waving me over to one of the cameramen.

“We would like to start out on you, zoomed in on the face.” She confers with the cameraman.

“On your eye.”

“What do I do?”

“You say, in monotone, *‘this is a true story’*.”

“Okay. *This is a true story.*”

“Hmm, needs more serious.”

“Is the video that serious?”

“Okay, so we start with you. *‘This is a true story’*. Then behind you, we see you and Jill walk into this Starbucks.”

“Wait...”

Wau tilts her head. “I’m sorry, yes, you two are about to break up!”

Sharp intake of breath. “Okay, we can do that.” Hide the grimace.

Wau continues: “We see Jill enter the bathroom. She looks in the mirror, gives herself the pep talk, then back to you...”

“Hold on, hold on.” I motion for her to hand me her script paper, but it is all in Chinese. “What is this about a pep talk? There is no pep talk in the book, I mean... it’s all written from my point of view.”

Wau pushes the cameraman aside. “Mr. Ryan! There is a pep talk!”

“Uh... I am sure that I didn’t write a pep talk, and this is a video about my book. Why add this over-sympathetic scene to-”

“There is a pep talk. Jill says so.”

I can only feel and hear my breathing. I can’t think.

“We are telling the story and Jill says to herself-”

"You can't do that!" Actor-Me and Actress-Jill are staring at us now. I see behind them that the crew is rigging lights up in the bathroom.

"You say to the cameraman, *this is a true story*. Then we pan-"

---

A few minutes later, I stare directly into the lens. *This is a true story*.

Later, I see Actress-Jill enter the bathroom and position herself in front of the mirror. My memory has changed to third-person omnipresent. This time I can see and hear Jill. She opens her mouth and speaks her heartfelt thoughts to her reflection... it is a torrent of rapid, angry Cantonese. Wau shouts something to her, Actress-Jill starts over...

I walk out.

----

Wau calls my phone to bring me back to the Starbucks. I was fuming a little bit and got her to change the location to an old-fashioned noodle shop two blocks away and four stories up.

As we overlooked the river, stirring our noodles, Wau waved for the waitress to come over and then handed over her phone.

"Let's take a picture together!"

I obliged, confused.

Wau looked at the photo happily. "When I was a girl in high school, I would come here after all of my toughest exams. To look out at the boats and buildings across the river. And the people here were so... so authentic. It isn't swarmed by Brits and Americans."

I looked around and smiled. "And the noodles are very good, too."

She smiled. "Are they as good as mine? Ah! Don't answer that."

I went back to eating as she talked on about her high school days, about how she never would have pictured herself then, bringing an American here, and a dozen unrelated things.

-----

We are set to present at the mall at Tsing Yi, the second island now. I decide to visit the bookstore ahead of time.

"Mr. Ryan?" An elderly Chinese woman notices me and quickly places her stack of books on a nearby table.

"You know me?"

"I congratulate you." She pauses for a moment. "I'm Catalina Wang, your book reviewer. Do you speak any Cantonese?"

"Unfortunately, I don't. Sorry."

"No matter. I want to tell you... something. Have you met your annotation-writer?"

"Yes?"

"And how is she?"

"She's... been really helpful. Interesting character."

"I think that the English phrase would be: 'whatever they are paying her, double it'." She laughs.

"I understand that the book was not so easy to understand, right, if someone isn't from New York."

"No, I mean, the annotation is quite beautiful. Your writing is not too difficult to understand, to be honest. If someone truly studies English, then they can read the book. But the annotations for each piece tell so much, some are a page long. A love letter. A reimagining of Rockefeller Plaza, as figure skaters in the sky..."

"That's quite beautiful."

"I have taught many English and Cantonese writing students. This is something quite special."

"I'll ask her to come by your office!"

"Oh, I don't teach anymore. Don't mind me."

"Of course!"

She shook my hand, and re-hefted the stack of her books into her arms. "Until next time."

"Thank you."

----

That night, I choose a new section:

*Ted wishes us well as we head for the door.*

*Jill and I were reunited, even friendly again, but I don't see a return of the ease and comfort that I had hoped for, not a trace of romance, no meaningful looks. The break-up held. I was devastated, but there was nothing else to it.*

*As I made my way through Union Station, up to the Amtrak seating and then the escalator up to the New York buses, she trudges behind in silence. Before we reach the top, she pulls my hand. "I have a headache," she says, "I need to sit down."*

*We backtrack to the McDonalds. There is some time but I would never eat here. I suggest water or ice but she refuses everything. A little confused now, considering our long silence, I start to tell her about 'Big Eyes', a new movie that she might like.*

*"You can't go now," she interrupts.*

*I'm surprised. "It was good to see you again, but if we aren't feeling this, there's no point."*

*"I'm on the third day of my period. It usually doesn't hurt this bad." She looks so exhausted and I see something new, revealing a little bit of pain. "You have to stay, you have to."*

*Twenty minutes later we are back outside Ted's place. I am trying to reach him on the phone.*

*"You men are so lucky not to have periods."*

*I nudge her. "Does it give you any superpowers?"*

*"What?!"*

*"Well, sometimes when superheroes or in Stephen King books or something, when the girl gets her period she also discovers her superpowers."*

*"You are so weird!" She smiles though, at the thought of it.*

*Ted opens the door and lets us back in. Jill takes a pill and disappears into the bathroom. For a few minutes we talk about football and his new job, but he keeps looking through me. He hasn't decided what to think about me and the girl. No doubt he is remembering the bar that turned us away, maybe he remembers some naive girlish comment that she made and we had laughed about. It's different now.*

*There is a spare room for us to lay in the bed together. As we drift off to sleep, I mumble, "I didn't bring a change of clothes or a toothbrush or anything. I wasn't thinking, like, staying."*

*She moves forward to rub noses like we used to do, in the Chinatown place.*

*"I did."*

The audience bursts into applause.

At the signing, an unfamiliar woman places a book in front of me. "It must have been hard for her."

"Excuse me?"

“To tell you that she wanted you to stay. It isn’t easy to be open like that.”

“Thank you, and-”

“I mean it seriously, though your book treats her so harshly, especially at the end. She really did care for you, so much that I am sure she still does. I hope that you can see that.”

I am at a loss. She takes the signed book and disappears into the crowd.

----

The next signing is deep underground, in a subway station too large for me to think it’s real. Most of the audience is students, for some reasons. How do these things get scheduled and booked and marketed behind the scenes? How much do these people know about me and my past?

Eschewing the passages about Grand Central, Wau has highlighted a different passage for this reading.

*I had a friend, she says, who had an online relationship. And when they met up, you know, things didn’t happen right away. It takes time to know someone in person. How can you say that? I could only feel disappointment and anger. After we have been on dates and teased each other and kissed on forbidden rooftops and shared beds, how can you talk about how we sent messages to each other online? The problem runs deeper than-*

“How can you say that?!” someone shouts out.

“What?”

“Hello, my name is Suzie-”

Wau finally chimes in, “You’re interrupting the reading, please wait for the end of the chapter.”

“Just one question!”

I nod. “That’s alright. I just didn’t understand your question.”

“You wrote a whole fucking book to blame Jill for this tragic relationship. She is a teenaged girl, and I am a teenaged girl, so I wanted to say, how can you say that?”

I blink. “It’s what happened. Simple as that.”

Wau moves to translate.

“No, no. I understand him completely. Lots of guys... should listen. Really, listen to me. If you are older and more experienced and think you’re responsible, when did you stop to tell her that the relationship was not working? Can’t you see she’s having trouble talking about how the love isn’t there?”

“I can only tell you the truth, which is, I didn’t want to say something and then lose her.”

“You didn’t want to tell her the truth.” And Suzie sat down.

Wau motioned for me to continue. I flipped a few pages, thinking to defend myself with another section, or no... no, to change the mood. The room sat silent.

Wau shouted to me: “Grand Central Station.”

*There is a stairway landing in the basement of Grand Central known as a whispering gallery, shaped such that you can hear words on the opposite corner of the room as if they were directly in your ear. At 10pm we alighted there, and I led her by the hand...*

---

When I reach home, I have an email. *Coming home to you.*

-----

Wai is waiting outside the restaurant and waves frantically. “Hey! *Nei hou!*”

“Hey!”

“So May’s flight is coming in tonight?”

“Yes. It... it feels like a huge weight has been lifted.”

“Feels good, doesn’t it?”

“Yes. Thanks for that.”

We go up the steps to a more isolated table.

“Waffle place. I’ll get your favorite”

I take a look outside.

-----

With the waffles done, I let the conversation drift back to the book.

“Do you think that I really did it? Capture a piece of Hong Kong for the sequel? I haven’t lived here long enough to really do it right.”

“I would say that you did. But I think you should not worry so much. Did you know, most of the people who read it are in other cities and towns and villages? Such a person will not know Hong Kong from a place in your imagination.”

“It turns out that it’s really nice, the annotations you write.”

“Yes. I put a little bit of my soul, and -elbow grease?- into the annotation work.”

“There was a lady in the bookstore, a retired professor. I wish that you could have met her. She said that it was something beautiful, she used a special term for it.”

“What, in Chinese? Do you remember what it sounded like?”

“No, in English, she says that it is like watching figure skaters dancing. She says it’s a love letter. To New York City, I guess.”

She laughs. I had my hand next to my tray and she is squeezing it. I look up at her in surprise.

“You could call it that.”

The waitress appears and leaves the bill in front of us. I feel Wau’s hand squeeze and then withdraw back into normalcy.

What just happened.

---

That night, May and I are together again. I reach out to her. “Are you awake?”

A murmur, a hand emerging from the blankets to clasp mine.

“We have to be careful about Wau.”

She laughs. “Oh, we have to be *careful* about Wau. Oh really, you think so now?”

"Don't talk like that."

"I see the way that she looks at you. And you fall right in line."

"Please-"

"You're a fucking gold mine. Mailroom girl lands a book deal, one thing leads to another, and now she's taking everything she can to the bank."

"Is that it?"

"Is there something else?" She shifts, sort of unnaturally, to sitting up. I try to follow.

"What, sorry..?" Rubbing eyes.

"Do you mean, beyond being the gold mine."

Deep breath. "She, to be honest, she made this weird move yesterday, okay? She was taking my hand and-"

"What?"

"It was nothing, it was a squeeze, and it was so out of place. I didn't say anything."

"Better not. Do you think everything is an invitation?"

"No, I think this was something really odd, and that's why I told you about it. It was yesterday. Or maybe the day before that, now. When did we-"

"You think too much."

"Do you trust me?"

"Let me explain it like this. I trust you with her. I trust you about the book, and the sequel if it comes to that. If I didn't trust you, I wouldn't be here. Can't you see that I'm here with you?"

"Yes."

"Just don't sign anything. And don't get too close to her."

"Understood."

----



There is a buzz on my phone. Limousine ready downstairs. I look to May, all dressed up.

May twirls around to show off her dress; I take an Instagram video of it before she steps in.

Wau closes the door and looks up to me. "She has gotten into it now, hasn't she?"

"Yes. Thank you so much for this."

---

We step into the studio. While our publishers talk to some new important-looking people, I search the room to get a feel for our interview. There is a sign with dancers on it being unlit. The neon lights are being tested. At the center of the stage there is a smooth oval table with three leather chairs around it.

"Fifteen minutes!"

Wau introduces me to one of the men. "This is the host of the show! Say *ni hau* to him, we are talking Mandarin now, for mainland China."

"*Ni hau!*"

"Here is your translator for the performance, one of the great ones in Beijing. We will also have a speaker in your ear for him to explain any Mandarin that is spoken."

I shake hands. "Please let me know if I should say anything more clearly."

"That's unnecessary, please speak freely and naturally." He grimaces. "I used to do the realtime translation for Trump speeches, after that..."

I patted him on the back. "And who is your friend here?"

"This is my colleague, Ms. Anita. She will provide additional translation."

"Excellent."

They nod to each other.

---

The host is seated in the middle chair and practicing speaking to the camera. Only a few minutes now.

I turn to one of the stagehands. "Hello? Where is Ms. Wau? Will she be sitting in the other chair? I have a few questions."

He shakes his head and fits a microphone over my ear.

"I don't understand."

I hear the translator in my ear. "Mr. Ryan, can you hear me?"

"Yes."

"Great. I can hear you. Alright, after this clip, the host is about to introduce you. I will translate everything that he says."

The stagehand gestures for me to wait, while that infuriating Starbucks clip plays. This is the first time that May will see it. Fuck. *THIS IS A TRUE STORY* the recorded-me says. Actor-Me and Actor-Jill play their parts.

The translator says, "We now welcome the author, Mr. Ryan."

I stride out, give a wave. He offers me a seat. "Welcome," the earpiece says.

"Thank you," I say, as I slip into the comfortable chair. In the darkness behind the cameras, I can see studio audience, and my wife, and... is it Ms. Wau? But then who will be joining-

The host begins talking, and a few seconds later it is in my ear. "Well today we have a special opportunity. Please welcome a muse and inspiration for our writer: Ms. Jill."

Somehow unnaturally, she appears from behind a curtain, unmistakable and just like I remembered her. The host reaches to her and guides her to the seat. We are feet apart. "Thank you! Thank you all!" she beams, and I hear Ms. Anita's voice translating, equally cheery, "*shie shie, shie shie*".

What.

---

"Mr. Ryan, do you have anything to say?"

I slowly filter back to reality, the studio lights, and then look to the host who is not really speaking to me. Jill is giving me a questioning look, waiting for me to offer some sign of recognition.

"I spoke to Jill earlier today, and I think it would be good for you two to have a little talk."

"Oh, I would rather we didn't."

The audience laughs.

"It should be clear to anyone who read the book, there is nothing-

Frustrated, Jill turns away from me and toward the audience. "I was young! Our relationship was so weird, so distant... and you knowing all my private fears, don't forget it, that I didn't know everything about myself yet."

The host: "go on."

"I-

"Hold on," I say. "Have you forgotten what you actually told me? Not now. Not later. Right then, in that Starbucks scene we just saw?"

"I remember that you said that I didn't care about you! Trying to hurt me-"

"But what did you tell me? Oh, your friend says, 'what if it works out with Ryan and you don't get to-'"

"I wanted to know myself better."

"Someone who never met me, goes and breaks us apart by asking you, 'what if it works out?' You were that afraid of us being happy together?"

The host looks confused. "Guys, guys, this is your first reunion, there are other things to discuss."

"Did she tell you," I add, "I left so much out of the book... just... this girl tells me as we break up, 'I've changed so much, it'll be easier for me to open up in my next relationship' like I'm supposed to be happy for the next guy...? Where the fuck does that come from?"

"Don't." She has her hands out. Stop. Stop.

The host soldiers on: "Mr. Ryan, she told me today that many times she asked for you to be friends again. She offered to meet in New York one month later, eight months later in San Francisco..."

“We were never friends.” I hear a few gasps. “Has one of you actually read this book? We had already split. She gave me the silent treatment, I did the work to get us back together, she claims that’s what she wants, then what? Then she breaks up because *I don’t like when you do things for me*? When I cooked breakfast, introduced her to the company, when I gave her the Christmas gift - she shoots me down and tells me that I need to apologize for it somehow. That’s not how it works in a relationship, or a friendship.”

I heard my translator covering the same words.

Above it Wau is frantically interjecting in my ear, “Let her talk.”

The host: “Please wait, please pause a moment for me to catch up. I read the book, and you care about her, don’t you? You don’t want it to be this way.”

“You’re right. I would have told her to stay at home.”

She shakes her head. “You mean that only you get to tell our story? What the fuck is wrong with you?” The audience cheers a bit. “Remember that it was my first relationship, and I didn’t know then that it was work for you, and to support me on the project was work for you too? It was the first time I did something like that so your part seemed so simple. Not until I tried to do a project with another programmer, and then I apologized to you! And whatever you did, it sure as hell doesn’t entitle you to anything from me.”

“You didn’t know that it was hard work because *you didn’t believe me*. I was pleading with you. A year later, just writing ‘oh, I realized it must have been difficult for you’ ? That’s no apology. So then you walk away with the project, all the credit, and funding, and what is there for you to be mad about?”

She is still fuming.

“I always asked you... you’re angry now that I wrote a book? Fine. But just try and tell me what was wrong back then? You agreed then that I hadn’t inconvenienced you, you used to admit that I ignored it whenever you messed up....”

“I fell out of love..... Or stopped feeling what I had felt. Listen, it can’t be black and white.”

“Then say that, and don’t come up with something like it’s my fault.”

“I... Ryan...”

I can stand up. "I'm done." I watch a cameraman track me as I walk up to the studio audience. The first person to meet me is Wau, but I don't listen to her shouting and awkwardly cross the threshold to grab May's hand. Moments later we are outside on the daylight street. We are alone. I take the nonfunctioning earpiece off and lay it on the sidewalk.

Not letting go of my hand, May waves for a taxi.

---

The airport again. I look up to the TV monitors, muted in the airport, but showing scrolling Chinese characters. They are all showing me and Jill.

I turn back to the cashier and show her the newspaper which I'm buying. She points to the screen but I pretend not to understand.

As we sit at the gate and begin the long wait before heading home, I nudge May and show her the book review in the *South China Morning Post*.

*"An Annotated Bestseller?"*

"Read this part."

*By chance, I met the author in our local island bookstore. I realize now that he was doing research on our community for the sequel, which is quite thoughtful.*

*The greatest irony is that the author does not know how we read the book. At the simplest level we see the relationship as naivete, as misplaced young love. At another level we see the author at his desk, making sense of his failed relationship. Neither the relationship nor the writing are particularly outstanding. But in Cantonese, in the careful margins, we see the annotationist working to explain each detail, rationalizing even the author's sometimes indefensible feelings and choices.*

*This tone descends to envy, to regret, almost an incredulity that this affection is for someone other than herself. We are witness to such a raw feeling, and that is what makes the story work.*

May closes her eyes and tilts her head. "Wait, so you weren't making it up? About Wau?"

"I wouldn't do that. And also... also, I wouldn't do that. You have been a saint this whole time."

"Me? I went to Singapore. You were so sweet, you know, to take that in stride." She pauses to read another part of the column.

"Oh but, the sequel and the video project. What do I do?"

Turning to me: "Give it to her. It's what she wants."

"I don't understand, I mean Wau will..."

"No, sign it over to Jill from now on. She came to Hong Kong knowing and-" she pauses "-when I was backstage I saw her baby. She needs this and we don't. We have enough in our lives and this book monster is eating us alive."

"A baby? Oh." I think back for a minute. "No, you weren't backstage."

"I was backstage and... I saw her and her baby."

"I didn't see you there, backstage."

"But I was. You were busy in... hair and makeup or something, I was just walking around, and-"

"What did she say to you?"

"We didn't know each other, I didn't recognize her or expect her to be there, so... yeah."

"And the baby looked okay?"

"The baby was fine."

"Baby... like a little baby?"

"Jesus, Ryan, the baby was maybe a year old. I know that the baby isn't yours."

"Right, right." I bury my head in my hands. "It's so much money and, to just hand everything over to her? After all that crap, about she doesn't like me doing things for her! And all that money that I raised for her project, I would be doing the same favor for her, all over again."

I stop for a second. "I'm not thinking about this rationally."

She puts her arm around me. "That's OK. That's normal. You won't be able to think about this rationally, so you need to trust. Trust me a bit here. Taking Wau's money is saying she and Jill own you, and she doesn't. Throw your dinner to the wolf at your door, and it will go away without tearing your limb."

"I don't understand."

"It's a mixed metaphor, but I like it."

“And May, I owe you an apology. No more secrets.”

She nodded. “No more secrets.”

# P.A.

## Characters

### **Lanai**

A soon-to-be graduate and first-generation immigrant, working shifts at two different coffee shops when we first meet her. She has a genetic mutation where some of her fingers are missing fingertips.

### **Voice of Lanai**

Though this is future-Lanai's voice, it's older, quicker to joke, and can look back with the benefit of hindsight.

### **Tim**

A stereotypical software security specialist whose glasses make him look nerdier. Kind of guy who wears a T-shirt and jeans by default.

### **Mr. Colvale**

A technical manager somewhere indeterminately in his mid thirties. Wears a button shirt and tie at all times.

### **Dr. Bonneville**

An older man or woman, doesn't give a fuck but does fuck people over, potentially dangerous, modeled after John McAfee. CEO of the Alternative Computing Project, a large research initiative. Wears a flower-print / Hawaiian shirt to eschew formality, as only people at the C-level can.

<https://twitter.com/officialmcafee/status/865717709140578304>

### **Patricia, Dan, Boss**

Co-workers of Tim

### **Rhonda**

Dr. Bonneville's longtime assistant, sort of the classic familiar / imp sidekick to the main villain.

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## **SCENE ONE: THE COFFEE SHOP**

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A small-ish coffee shop with one cashier, Lanai, and multiple customers: MAN WITH SUITCASE, WOMAN ON PHONE, and MAN ON PHONE. Customers all are using iPhones.

### **VOICE**

This is where it all started. A perfectly ordinary coffee shop. It's the kind of place where customers could come, sit, and work on their laptops, but this is New York.



No one has time for that.

[door-mounted bell rings]

[beep of cash register buttons, followed by receipt printing noise]

[lights up]

LANAI

...and that's for here or to go?

WOMAN ON PHONE

Just a minute, just a minute dear... we need to have that delivery today right?

[BRIEFCASE MAN, next in line behind her, stops looking at his phone to pointedly look at his watch]

MAN ON PHONE

But we didn't know that about him, right? We couldn't have.

LANAI

Ma'am I have to put in your order now.

WOMAN ON PHONE

To go - and extra napkins - okay let's get this moving. You too.

LANAI

Yes, ma'am.

BRIEFCASE MAN

I would like an almond milk-

LANAI

I'm so sorry, but I'm the only one working today. I need to fill this order first.

BRIEFCASE MAN

But you just started her order.

LANAI

I'm sorry but I have been taking everyone's orders one by one.

[BRIEFCASE MAN storms out]

MAN ON PHONE

Oh good, I'll have-

LANAI

No please wait... I need to finish the previous order.

WOMAN ON PHONE

[to MAN ON PHONE] Can you believe this?

[Lanai stiffens / clenches fists for a moment, but works to complete the woman's order]

MAN ON PHONE

I agree, it was strange. We split a good two hundred dollars of sushi.

[Lanai hands the order to the WOMAN, who hangs up the phone and dashes to EXIT.]

MAN ON PHONE

Large coffee with a little almond milk

LANAI

Got it.

[Lanai works to complete the man's order]

MAN ON PHONE

One thing that we had was barracuda - did you even know that you could eat a barracuda?  
Right?

LANAI

Here you go.

MAN ON PHONE

Thanks, you're sweet.

[MAN walks to exit and waves - the door shuts with a loud bang]

[LANAI comes around the counter, picks up a metal teaspoon from the other side of the counter,  
and throws it at the wall.]

LANAI

Damn it!

[Satisfied, she returns to the cash register]

VOICE

For once in my life, being awkward is about to help me out.

[bell rings - TIM enters]

LANAI

You're late.

TIM

Excuse me. I mean, I'm late?

LANAI

Oh sorry.

[uncomfortable]

You're usually in with everyone 8:30, aren't you?

TIM

Sure..?

LANAI

Your usual?

TIM

Yes, that would be great. I don't think I am that late though...?

LANAI

It's past 10, so...

TIM

Oh shit, are you serious? Oh no.

LANAI

You OK?

TIM

I must have kept something or other on Kansas time.

LANAI

I'll get this ready for you quick. I'm sorry it didn't-

TIM

No problem... thanks for letting me know. I'll call them in a minute.

[LANAI goes to make this order]

TIM

So are you good at this sort of thing?

LANAI

It's a job.

TIM

No, I mean, times and dates. Meetings and remembering people.

LANAI

Hmmm.. I'd like to think so. Maybe yes.

TIM

I have been overwhelmed lately because my assistant left us a few months back. Have been late and unprepared for things ever since...

LANAI

You have a personal assistant? I mean, I didn't realize... hmm maybe because you pick up your own coffee maybe?

TIM

Oh no, I'm not a bigshot at the company, but there's enough going on that it makes sense to-

LANAI

What company is it? If you don't mind me asking.

[TIM retrieves a card from his pocket]

TIM

I have to hurry, but if you would be up for doing some work for us at Pokki Cyber then email us.

LANAI

OK, great.

TIM

I really do mean it. Let me know in the next day or two.

LANAI

Alright. Thank you.

[TIM leaves, Lanai's expression is complex, but she pockets the card]

-----  
**SCENE TWO: POKKI CYBER - OFFICE CUBICLE FARM**  
-----

TIM and his co-workers: BOSS, PATRICIA, DAN, and extras meet in a circle.

BOSS

Morning standup meeting!

PATRICIA

A client had me working all day on a security issue which turned out to be their fault; turns out they gave permission they shouldn't have.

TIM

I found a new assistant who will handle my meetings and some of my off-site work.

PATRICIA

Are you doing that again?

DAN

And who is she?

TIM

She was working at the coffee shop and - can you not make it weird? You are the one making it weird.

DAN

None of us have a personal assistant. It's not something we do in the company. Even the boss doesn't have one.

BOSS

True.

TIM

Things all ran a little smoother when I had an assistant handling my calendar. And you know about my side projects, my open source work.

If you have any problems with her work performance, then please let me know.

PATRICIA

So the P.A. is a girl, huh?

TIM

She called and asked if she could work here. She's had good internships in the past, all that checks out.

PATRICIA

Was just asking. When is she starting?

TIM

Later today, I asked her to come in and get acquainted.  
Greg downstairs has agreed to give her an access pass.

BOSS

[hands over ears] I didn't hear that

[laughter]

TIM

Thanks in advance.

DAN

Moving right along, can I poach an assistant from you if that's alright?

[laughter]

-----  
**SCENE THREE: LUNCH AT KATSU PLACE**  
-----

PATRICIA, TIM, and LANAI are eating lunch outside.

VOICE

It was a few days in, over lunch at this perfect Japanese katsu place, when I was starting to feel like part of the team, weird personal assistant setup or not.

LANAI

--all in all, just a great day now that everyone's agreed to the new meeting times.

PATRICIA

Oh, sorry I just noticed and have to ask. Did something happen to your finger?

TIM

What, are you okay?

LANAI

It's been that way since I was born. Look, no fingertip here or here.  
[she holds up her hands]

PATRICIA

On both hands... so it's genetic?

LANAI

Yes, my grandmother back home has the same thing.

TIM

Oh, I didn't realize.

LANAI

Not everyone notices!

TIM

You know if you need, um, any kind of disability accommodation-

PATRICIA

Tim! Let the girl handle it.

LANAI

I don't even think of it as a disability. The pointer fingers are a bit shorter and these other ones curl a little if I loosen my grip.

TIM

And you can do typing OK?

LANAI

I can do it just fine! I've been doing it all day, if you didn't notice.

PATRICIA

Tim, learn how to keep it in.

TIM

You're the one who asked!

PATRICIA

So you did notice!

LANAI

Christ, don't argue about it. I'll let you know if something comes up.

TIM

Sorry.

PATRICIA

Yeah, sorry.

----  
**SCENE FOUR: POKKI CYBER - OFFICE CUBICLE FARM**  
----

BOSS, PATRICIA, DAN, and possibly other colleagues are gathered around LANAI's waffle maker station.

VOICE

It was a month or two later that I first heard that name: Doctor Bonneville.

DAN

Oh you don't know it? It's something that Doctor Bonneville says.

LANAI

Who?

DAN

This crazy tech genius, with a YouTube channel now, it's completely unhinged but every now and then it's like... is this person on something, or onto something?

LANAI

[pouring another waffle, and closing it] Well I think that name sounds like "Bond villain."

BOSS

[laughing] Oh, that's amazing. So fitting.

DAN

You should tell Tim that, when he gets in. He hates Bonneville. And I mean really, Tim's a nice guy, but he can have a vendetta.

PATRICIA

Tim doesn't hate him nearly as much as you're obsessed with him.

BOSS

Oh, that is true. Where is Tim?

LANAI

I must have sent you an email, he's speaking at a conference today? But even with traffic, he will be here in time for the user testing meeting, which I've moved to the end of the day. That's a promise.



PATRICIA

He's always doing something like that! And now we are in sync. That's why he hired a personal assistant.

DAN

Mmm yeah.

BOSS

Remember the agreement!

DAN

Just saying...

LANAI

What's the agreement?

BOSS

We agreed to be professional and mostly ignore this... unusual situation with Tim hiring an assistant.

LANAI

In case any of you are wondering... there's nothing going on between us.

BOSS

I don't think that I'm allowed to ask, but thanks for that.

DAN

I know that I *wanted* to ask.

LANAI

To be honest... okay can I do a little gossip thing?

BOSS

I am the manager of this office and I insist on a little gossip while Tim is out.

LANAI

Well it's not like that exactly, but... okay, so sometimes he asks me to book movie tickets.

PATRICIA

Like how many tickets?

LANAI

Two.

PATRICIA

Do you think it's for a special someone?

LANAI

He always has me forward it to... do you know this guy? A Mr. Colvale.

DAN

Well that settles one thing.

LANAI

We don't know if it's like that at all. And he wants to see movies at unusual themes and times. Like an art movie that's about to close.

BOSS

Maybe he and the Colvale guy are film buffs. I don't really like watching a movie with a crowd either.

LANAI

Well if you haven't seen him, maybe they are just friends.

PATRICIA

If it seems like something you need to know, you could always ask.

LANAI

I feel like part of being a P.A. is just not knowing... but it feels like it'd be interesting to know the backstory is all.

-----  
**SCENE FIVE: TIM'S APARTMENT**  
-----

There are some noises as Lanai tries a few different keys on the door. Then it opens. She is burdened with bags.

VOICE

After lunch, I had been shooed away on a new assignment: wait in the apartment for the cable guy. It was small, maybe trivial, but I felt that I could make the most of it.

[LANAI takes groceries from the bags and prepares bread dough]

LANAI

And still not a peep from the Comcast guy? That's alright.

[LANAI places the bread into the oven, and begins exploring the apartment, looking at photos and books. She falls asleep uneasily on the couch]

[knocking on the door]

TIM

Are you there? Lanai? Your phone didn't pick up.

LANAI

What... oh shit. Oh just a minute.  
[she stretches]

TIM

Oh good, you're okay.

[LANAI opens the door for him]

LANAI

Oh I have something in the oven, too, shit.

TIM

It does smell good.

LANAI

Ayayay, let's make sure it hasn't burnt... where are the oven mitts?

TIM

I don't have any. Hold on, that's my fault, I'll use a dish cloth.

[TIM finds a couple of dish clothes and folds them over. LANAI opens the oven]

LANAI

Be careful!

[TIM reaches in, places the finished bread on top of the stove, and puts his fingers in his mouth to cool them]

You okay?

TIM

I'll be fine. Looks like your bread isn't burnt at all, either. Are you a pro at this?

LANAI

I used to cook a lot with my ex. Or like we'd both try something and I would bake something new.

TIM

This is cinnamon bread?

LANAI

Yes, one of my favorites. Sort of my specialty. Have some!

TIM

This is so kind of you. You must have been working on it a long time since you're still here.

LANAI

Oh... what time is it?

[LANAI checks phone]

Oh I was asleep so long! I'm so sorry, I didn't even hear the Comcast guy at all.

TIM

Don't worry, I'll call them to find out what's the matter.

[LANAI slices the bread and TIM takes plates from a cabinet so that they can both eat. TIM can't wait and eats the first piece he gets]

Your ex must be so sorry to lose this cinnamon bread.

LANAI

[laughs ruefully] He was calling up randoms on Craigslist.

TIM

Shit.

LANAI

He logged into my computer with his email once, so I thought it would be okay to peek, and even when I told him to stop, he kept doing it!

TIM

That makes sense that you'd break up with him.

[they eat more bread]

LANAI

There was also this thing with... when we first held hands, he noticed my mutant fingers.

TIM

That's not fair, to say something about you.

LANAI

No, he.. he was curious about it, just... sort of perverse? He would tell me...

TIM

[realizing the conversation is taking a turn] Oh... oh um

LANAI

He would sort of make me touch myself... oh! I know this is too personal. Just being complete and honest so you don't think...

TIM

That's awful, and no, I mean... with the Craigslist thing, you need someone to be faithful.

LANAI

And honest.

TIM

Honesty isn't... I mean honesty isn't the word I'd use. If someone does you wrong, does it help to know?

LANAI

The dishonest person always thinks that they've fooled everyone. They don't have a code or standards. An honest person knows that they can't get away with any of that.

TIM

[raising a bite of bread] To honesty.

LANAI

[nodding] To honesty. And abrupt good-byes, as I should be going home. Keep the rest of the bread.

TIM

Thanks again... and don't be afraid to reach out.

-----

## SCENE SIX: POKKI CYBER OFFICE CUBICLE FARM

-----

It's a late night. LANAI and PATRICIA are finishing up work, DAN has packed up to leave.

DAN

Good night!  
[exits]

LANAI and PATRICIA

Good night!

LANAI

I just don't know what to do sometimes, like, for example... did the last P.A. do anything for Tim's birthday? I don't know if I'm expected to prepare something or not.

PATRICIA

The company usually gets a cake for birthdays. Someone downstairs in HR handles it.

LANAI

Oh...

PATRICIA

Julia did get him something last year though, something separate from the party.

LANAI

Here at work?

PATRICIA

Yes, um, yes it was a kind of Japanese candy, I think? She heard that he liked it, from somewhere.

LANAI

She sounds so thoughtful. I wish that I could be more like her.

PATRICIA

[laughs] You don't even know her! You can be your own person. I think that you've gotten to know everyone in the office here, a lot better than she did.

[they continue fluttering through papers for a minute]

Isn't it time for you to go home?

LANAI

I just have to ask her about what candy it was. Unless you can remember?

PATRICIA

I can't remember it at all! Really good hard candy. I tried a piece.

[LANAI goes to sit at the computer]

LANAI

[to self] Where are you, Julia?

[LANAI writes a phone number on a paper, adds it on top of a stack of books, and carries the whole stack from the office]

[we see her now exiting and going outside of the office. She dials the number on her phone, we see her silhouette in the window]

[ringing]

WOMAN ON PHONE

Hello?

LANAI

Good afternoon, am I speaking to Julia?

WOMAN ON PHONE

Excuse me, can you tell me who this is?

LANAI

I have this number on file for Julia Abirri, and I wanted to ask her about something from work, I have her old desk now, and-

WOMAN ON PHONE

Oh my god, I am so sorry. Did you find something of hers?

LANAI

No, but I wanted to ask her a question, can you give me her new number?

WOMAN ON PHONE

I don't know what to say... She's gone.

LANAI

If she left the city, I can take down her new number or-

WOMAN ON PHONE

I'm sorry, she's dead. If you found something... please let us know-

[LANAI in shock]

Are you there?

-----  
**SCENE SEVEN: POKKI CYBER OFFICE CUBICLE FARM, NEXT MORNING**  
-----

[LANAI is waiting nervously at the desk. She hasn't unpacked her things or started work]

VOICE

It didn't make any sense. He had lied, and that alone was suspicious, or wrong, or at least not quite right. I had to confront him the next day.

[TIM arrives for the morning]

LANAI

Tim, can we talk in private for a moment?

[DAN chuckles from the next cubicle]

TIM

We can talk at the end of the day, if that's alright? All I can think about in the middle of this project is this callbacks issue we've been sending back to-

LANAI

It should be just a minute, I think.

TIM

Dan, is the conference room available?

DAN

For the next twenty minutes. But we have stand-up in ten.

TIM

OK, let's go.

[they step into the room. LANAI closes the door, they both sit down]

LANAI

I ran into a paperwork issue at work yesterday, and wanted to ask Julia what she did about it.

TIM

Hmm.. what was the paperwork for?



LANAI

That's beside the point. Anyway, um-

TIM

[with a new, angry tone] Any questions like this, you know that you should just bring directly to me. Then you can get better at solving them over time, that's a normal part of you you being a new assistant.

[LANAI is shocked]

And Julia, she doesn't work for us so you shouldn't be making her do work for-

LANAI

You are being so awful right now! And I don't know why!

TIM

What do you mean?

LANAI

You know! You know... that she's *dead*.

TIM

I would appreciate you handling this delicately-

LANAI

How can you talk like this?

TIM

Well, why don't you tell me your real question?

LANAI

So there are two problems. One is that she died, and that you act like nothing happened. That's actually two problems, so total is three.

TIM

It's a private matter which we thought would-

LANAI

Oh, don't you say 'we' ! Unless your whole office is in on it..? Would you tell them?

And not just normal, car-accident dead, but got blown up somehow? On a sidewalk in Sunnyside Queens?

TIM

I was told that it was very sensitive. You know, the police are looking into it.

LANAI

I should walk out right now. Walk right out, tell the whole office, and go home, because you didn't mention any of this, whatever this is, and here I am letting you go on.

TIM

You would go out there, and tell everyone who adored her, that she's dead?

LANAI

Yes, because that's what happened!

TIM

I thought it would be easier for everyone, that first day when I came back from seeing her family shocked and confused and grieving. It was so senseless, so I told everyone that she had left, and it metastasized from there.

LANAI

This is just unreal.

TIM

So you could go out there and humiliate me, but if this is something that you can't get past, I would rather you just leave. You will have a positive reference if you ever need it.

LANAI

Are you threatening my reference over this?

TIM

Leave now. Take the day off, and let me know when you're ready to come back to work.

LANAI

You must be upset about this, too, I know it, you don't need to-

TIM

You should stay out of personal matters.

LANAI

I'm going now.

[LANAI turns off the lights and shuts the conference room door]

TIM

Shit.

-----  
**SCENE EIGHT: ART MOVIE NIGHT**  
-----

VOICE

I knew something was happening again, when they called me to see an obscure art movie on a Tuesday afternoon. Maybe now it would make sense.

COLVALE

Are you Miss Lanai?

LANAI

Yes. Are you with Tim?

COLVALE

Yes. Nice to meet you. Around here people call me Colvale.

LANAI

Are we going to watch the movie?

COLVALE

Not really... as you can see, no one else is here. If Tim and the others get here, and it's still empty, we can talk business up in the balcony seats.

LANAI

I can't listen to him anymore. Honesty means everything to me. I want to know what happened to Julia.

COLVALE

Tim, Julia, and I were working on a project, outside of work obviously. It was more dangerous than expected.

TIM

There you are. Thanks for coming, Lanai.

LANAI

You... you knew something you did... something happened with Julia?!

TIM

Don't listen to Colvale. My god. I've been trying to think of a way to explain it all to you and this guy comes in...

COLVALE

Are you going to tell her the truth, or what?

LANAI

I better be getting the truth.

COLVALE

And there's no risk of her calling the cops. She trusted you up until this came up.

LANAI

I just need to know.

TIM

There's a project that we were all working on. It's dangerous, and not just because of the chemicals... the explosives I mean. There's going to be people who don't want us to do this. There's got to be absolute secrecy. And I understand, totally and completely, if you never want to be part of this or talk with me again. We're taking a risk today.

LANAI

I took a risk today coming here.

TIM

Please believe me, Lanai, there's a program, the Alternative Computing Project. Colvale and I have been trying to learn more about it. Conferences, follow-ups with their college interns, former employees, reading their mail sometimes.

COLVALE

Have you ever heard of Dr. Bonneville?

LANAI

I remember hearing, and saying... sounds like 'Bond villain'.

[TIM and COLVALE grimace]

COLVALE

I could say a lot about Bonneville. Made smartphone viruses and got rich selling anti-virus software, drug runner, murdered a neighbor over a parking dispute in some third-world country, made the mayor throw a parade exonerating...

LANAI

Are you serious?

TIM

This is a really bad person.

LANAI

You can't just kill someone for being a bad person, that's vigilante justice and it never works or stops at the right time...

TIM

Dr. Bonneville is going to make the first practical-scale, Turing-complete quantum computer.

LANAI

I don't see how it makes a difference...

COLVALE

Imagine a complete sociopath in charge of a machine that can break every encryption algorithm. And the government is going to fund the lab that does it.

LANAI

What did you say it was?

[the movie is starting to be loud now]

COLVALE

We can send you more information about what the computer can and can't do. But we don't know for sure. It's difficult to know what's happening inside because everyone is afraid of corporate espionage. They have no idea that we're acting for freedom.

LANAI

For freedom?

TIM

The way Colvale and I, and the other guys you will see in a minute... I think they are afraid to come in while you are still undecided, Lanai. This is really scary stuff. We need to keep this computer from being built. It is about freedom.

LANAI

What are you going to do?

COLVALE

We find a way to infiltrate and destroy the lab. Safely, not a soul harmed. Explain why we did it, so it becomes a national debate.

TIM

We're shutting it down without hurting anyone.

LANAI

Except Julia is dead.

TIM

I know, we know... everything changed after that.

LANAI

How do I know that any of this is real?

COLVALE

Tim was distraught for weeks... we didn't see him here for a while. I was going to have to find a new Tim.

TIM

I need to be here. And Lanai, you are welcome to be here tonight. And then we need an answer.

[the other members come in and sit in seats next to them]

-----  
**SCENE NINE: COFFEE SHOP**  
-----

LANAI returns to the coffee shop one morning to watch her replacement at work.

VOICE

It was the strangest moment of my life, the first time I had been trusted with a secret that wasn't just personal, but life and death and good and evil altogether.

[coffee shop sounds]

VOICE

There was a point to

CASHIER

Can I help you?

LANAI

No thanks... I just needed a minute.

[she exits and dials her phone]

I want to see you all again. Soon.

-----  
**SCENE TEN: ART MOVIE NIGHT**  
-----

[LANAI hugs TIM, and the rest all shake hands with LANAI as she moves down the line and takes a seat, the movie plays triumphant music]

-----  
**SCENE ELEVEN: DIM SUM**  
-----

LANAI walks into the restaurant. COLVALE is already seated at a booth table with linen tablecloth and napkins, a steaming tea pot, a small candle, and a stack of dim sum menus.

VOICE

It was my first networking meeting. I wasn't sure where Colvale worked, but Tim always referenced him with a certain reverence. I suggested that we meet at a favorite dim sum place in Chinatown.

COLVALE

Lanai! You made it!

LANAI

Yes indeed. I love this place.

[they hug and sit across from each other]

LANAI

Did you order any of this yet?

COLVALE

No, I supposed that you could be my dim-sum expert.

[they both look over the print menus]

LANAI

You have to get some of the shu mai, and some of these pork buns of course.

COLVALE

What about this - on the other side- the bacon roll?

LANAI

[laughing] That isn't authentic Chinese at all!

COLVALE

I didn't think so.

LANAI

They must have that here for the curious *Americans*.

COLVALE

Well they totally trapped me, then. I have to try it. You order those other things, too.

[COLVALE waves for the waitress, and LANAI gives the completed order]

LANAI

So I am starting to get the hang of my real-world job with Tim's cybersecurity team. Can I ask what your job is, then?

COLVALE

I suppose I could tell you a little bit...? I was the one who went searching for connections, all the ups and downs, ins and outs.

Tim doesn't know everything about this operation, you know.

LANAI

Oh, I meant more like, what you do in real life? At your company.

COLVALE

I'm a consultant. I manage coders for a number of corporations which can't hire someone full-time.

[Lanai takes out her phone]

Oh, we need to make sure that phone isn't recording...

LANAI

I'm just going to take notes. I can put it on airplane mode.

COLVALE

I don't know if it's good to have notes.

LANAI

Well as time goes on, I mean, looking forward to my own future after this job, both parts of it really. I want to know more about what you do.



COLVALE

You're a very smart and conscientious girl - you know conscientious right? - to be thinking about this.

LANAI

Thanks.

COLVALE

Have you ever been to the Empire State Building? The very top?

LANAI

... no, not yet?

COLVALE

There's an antenna up there where we worked on the design. We came up with a new shape which lets us stream more communications lines.

LANAI

So you are doing electrical engineering?

COLVALE

No, not at all. I train a machine-learning model, then when the computer comes up with a better design than a human, we get paid.

LANAI

If I know a little coding from work, is there a way that I could get started in machine learning?

COLVALE

Have you really never been up to the top of the Empire State Building?

LANAI

No, not really?

COLVALE

That's where we should go next.

LANAI

Oh, I couldn't, I have a problem set to finish up tonight.

COLVALE

They can't tell you what to do. Live a little!

LANAI

This is my final year, and with the internship and... you know, I don't have time for anything fun.

COLVALE

Isn't this fun, though?

LANAI

I like getting dim sum, for sure.

COLVALE

I mean, the two of us. Getting some alone time.

[COLVALE is on the edge of his seat, twirling a spoon]

LANAI

I really appreciate it, so I can... I want to figure out what I can do after graduation.

[COLVALE slumps back in his chair]

What?

COLVALE

You taking notes, asking me to plan out your career... I don't believe this.

LANAI

Wait, wait, I don't... I don't understand. I hope that you don't think it's a waste of your time Mr. Colvale.

COLVALE

Forget it. I'm not letting you string me along like this.

[he gets up and puts money on the table]

Good luck finding someone. Freakish hands and all.

LANAI

What... what?

VOICE

In retrospect it was obvious. But I had trusted that things were different in the resistance. I called the only person who knew us both.

-----

## SCENE TWELVE: BUSHWICK SITE

-----

LANAI and TIM arrive at the padlocked gate to an abandoned lot surrounded by a high fence -- it is the assembly-place that TIM has told her about. It's impossible to see through the overgrowth sewn into the fence.

TIM

[shouts] Colvale!

LANAI

[in a hasty whisper] You don't need to-

TIM

I think that we should get an explanation or an apology, some decency.

LANAI

This is my battle and I don't see the point of you fighting it for me.

TIM

[knocking] Colvale, I know you are in there so... do you smell that?

LANAI

It's Bushwick, that could be anything.

TIM

I do have a keyring here; one of these ought to let us in the gate.

LANAI

What I guess I want to say is that it's possible for us to respect and support each other's work in a more collaborative way-

[TIM is trying keys in gate padlock, LANAI takes a breath, gestures grasping for thought]

There are only few of us in this thing, together, so I can look past it, so that...

TIM

We all should be supporting you as a mentor, just like I am, because the cause is more important.

LANAI

Just like you are, right...

[the lock clicks, and TIM gestures for LANAI to stay outside. TIM steps completely in and out of sight]

TIM

Colvale, oh shit!

LANAI

No, no, what's going on?

TIM

Stay outside, stay out there, oh, *come on* now.

LANAI

Are you okay?

TIM

Colvale is fucked. His whole arm is gone.

LANAI

WHAT? WHAT?

TIM

It's really gory. He must have had an accident and bled out.

LANAI

Oh no I didn't think that he would, that he would because of me, you know it's because of me and-

TIM

It's an accident. Lanai, don't move.

[TIM re-emerges from gate. LANAI hugs him, in tears]

We need to go!

LANAI

We need to go. Oh my god, what do we do?

[they let each other go and exit]

-----  
**SCENE THIRTEEN: THE LATE NIGHT RAMEN PLACE**  
-----

TIM

We all know that these materials are dangerous. We aren't professionals. It's not you.

LANAI

But he could have been distracted. Distracted because the conversation... he was so mad...

TIM

No, he made a mistake. He made a mistake cornering you, also.  
[in a quiet, shocked disgust] What the hell, Corvale.

LANAI

He's dead; we shouldn't talk about him like that.

TIM

I know... I know. I saw him like that and knew he should've been more careful.

LANAI

And... just like Julia.

TIM

Julia was a little different. It was in... it was a packet that she left in her backpack.

LANAI

Fuck.

TIM

At least for her it was out like a light.

LANAI

Can we not talk like this? I don't know what would be right, but not...

TIM

Well, we can't say anything to anyone about it. We were never there.

LANAI

But what happens now? You know a few other people in the project. You've got to tell them.

TIM

After this, they'll be skittish. They will want to change the plan to something cleaner and perfect. Perfect is the enemy of the good. We'll never make a move.

LANAI

Right.

TIM

There could also be more investigation this time around. Colvale worked with computers, he had a security clearance. It doesn't make sense for him to be there.

LANAI

You're saying not to wait, but to speed things up?

TIM

We have more. In storage.

LANAI

Bonneville knows you. You can't walk in there and chuck a block of explosives at him.

TIM

Well, yeah.

LANAI

You want me, then?

TIM

Come home with me.

LANAI

I need to think, I need to get-

TIM

I mean... you shouldn't be alone right now.

LANAI

Oh, I... I don't know what to think.

TIM

How about, me neither? I'll follow your lead. We can take this really slowly. Keep in mind what matters.

LANAI

Bonneville.

TIM

The future is what matters. Bonneville is part of it. But I want the future to be bright for you, me, all of us.

-----  
**SCENE FOURTEEN: THE RESEARCH LAB**  
-----

It's a slick, modern office. There is a clock on the wall which we can hear during silences.  
RHONDA and any other employees are wearing formal clothes (men in ties, women in skirts).  
LANAI is dressed professionally for an interview - she has her hair up and carries a large purse.

RHONDA

He'll be in later today.  
[another phone starts ringing]

Hold please, I will schedule you in then.  
[she presses a button]

Uh-huh. Wendy, I can't comment on those rumors. We put out a press packet on it already.

VOICE

It looked like our office. A lot nicer, actually. It didn't seem like where I would need to be fighting  
for our future. I had said, show me the research. I had said, explain the math to me.

[elevator dings, LANAI steps out]

And then I said, let's do this.

LANAI

[exhausted] Oh, hello! I'm here for an interview.

RHONDA

We canceled all press for today, please take a packet *and go*.

LANAI

Oh, I mean a job interview! I'm Lanai, I called earlier about the technical writer position.

RHONDA

My mistake! Come in, sit down!

LANAI

Thanks!

RHONDA

Can I get you anything?

LANAI

A water, please.

[she sits down, and carefully sets down the purse]

RHONDA

That looks so heavy, dear, let me put it aside for you.

LANAI

I should hold onto it, it has my inhaler.

RHONDA

It has what?

LANAI

Inhaler. [she mimes using an inhaler]

RHONDA

Alright, I'll get you some water from the kitchen.

[RHONDA returns with water. There is a long quiet while LANAI sits and stares at the clock, drinking the water]

[there is an elevator ding, BONNEVILLE steps out and walks to RHONDA]

BONNEVILLE

Good morning, good morning! Fashionably late.

RHONDA

Good morning. We have a couple things for you to take care of first thing.

BONNEVILLE

What's that? And how are you, Miss?

LANAI

I'm Lanai... I'm doing alright, thank you.

[LANAI stands]

BONNEVILLE

Are you sure that the trains are running? It looks like you made this girl run up the stairs.

RHONDA



Well you can talk to her in a minute, she's our technical writer candidate, Lanai.

BONNEVILLE

Outstanding. Hold on a second, Miss Lanai, I'm guessing this other point is some crisis.

[LANAI sits]

RHONDA

The Senate committee on Science, Technology, and Policy would like you to testify. They called earlier and-

BONNEVILLE

Alright, alright, I'll puzzle that out in my office. I'll call in a moment when I'm ready for the interview.

[BONNEVILLE exits to his office]

RHONDA

Did I have you sign the NDA yet?

LANAI

Yes, I faxed that over to you yesterday.

RHONDA

Yes, that's right.

[there is another quiet minute while LANAI takes her pulse by touching fingers to her neck]

You sure you're okay?

LANAI

Yes, pulse rate is just normal. Normal for an interview anyway.

RHONDA

You'll do great in there! Just sign some forms when you're done.

[buzzer noise]

Looks like you're all set. Good luck!

-----  
**SCENE FIFTEEN: DR. BONNEVILLE'S CEO OFFICE**  
-----

This is an obvious rich-guy CEO office with a stack of packages and letters on the desk INBOX.

BONNEVILLE

Come in, come in.

[BONNEVILLE and LANAI shake hands, BONNEVILLE puts a hand on LANAI's shoulder]  
You can leave your coat and things outside if you like.

LANAI

Aw no, my inhaler is in here. Gotta hold onto it.

[LANAI goes to sit on a couch, BONNEVILLE sits or leans on the desk for support while facing her]

BONNEVILLE

No need to be nervous. This is a straight-up checkmark thing. Once I saw you, I knew you would be perfect for the job.

LANAI

[faking flattery] Really?

BONNEVILLE

I have a sense about people, you know? A real sense.

[BONNEVILLE moves away from the desk and starts to pace]

We also need the technical writer to start right away. Like in the next few days, once the paperwork is all squared away. Can you do that? Say yes.

LANAI

Yes, I think that I could.

BONNEVILLE

Because, you know, the best thing has happened. The absolute most incredible thing. I couldn't believe when I heard what was happening.

LANAI

What's that?

BONNEVILLE

Some big dick in the Senate finally rubbed a few brain cells together and figured out that what we do here is a big deal. Something that I've been working on since Singapore or Belize, or you could say Puerto Rico, in a sense.

LANAI

The alternative computing project?

BONNEVILLE

Congratulations, you've done some research on me. But this is brand-new stuff that the lab hasn't published yet.

LANAI

About alternative computing?

BONNEVILLE

We're going to need the technical writer, that's you in this case, working full-time explaining what the fuck this thing is. Just one senator on board doesn't mean the check's in the mail, you know?

LANAI

[nods] mmmm

BONNEVILLE

It's an obvious idea once you get your head out of Mary Shelley's ass. Computers from brain cells, growing and repairing themselves the best way a billion of years of evolution knows how. If you fan out the wires on a USB port you can talk to it.

LANAI

I didn't know that the biological part of the project had gotten that far. I thought that you would be using-

BONNEVILLE

Not even that, though. We've found one more thing that brains have, that silicon doesn't.

LANAI

[nervous] And what's that?

BONNEVILLE

I had a few teams of scientists messing around with different cell cultures, to see if they could make a smarter computer out of different regions of the brain. And it turns out that the kangaroo rat has a keen, very keen sense of smell.

So we grow a sick tumor of brain cells and nose nerves. Can you imagine, it was this big?

[mimes holding a basketball]

LANAI

[repulsed] I can't picture it.

BONNEVILLE

Only God knows, I suppose we will need to encase it in plastic to keep people from being sick. Anyway the thing is - thankfully we have bulletproof NDAs on everyone who knows - this ball is the best computer around. Eventually they come back to me with some old theories, some nut scientists have been going around for years claiming that smell works using subatomic effects.

And do you know what else uses subatomic effects?

[BONNEVILLE returns to sit on the desk]

LANAI

Quantum computers.

BONNEVILLE

The first reliable quantum computer this side of 200 Kelvin, in my lab. Brilliant, right?

LANAI

You would do all this to get a quantum computer?

BONNEVILLE

Some people would do anything.

[BONNEVILLE points to LANAI]

I'm glad that you heard of quantum computers before, Miss Lanai, because it will make the next part of this easier.

LANAI

There's a book that I've been reading on quantum computers. May I show you?

BONNEVILLE

Of course.

[LANAI reaches into her bag and withdraws a medium-sized book. It's *Quantum Computers since Democritus*]

[BONNEVILLE takes it]

I'll never understand the motivation of some people to discover something mathematically, write it down, tell the world their secrets. Only a few people can connect all of their pieces of work on this kangaroo rat computer. If I wrote it down anywhere, I'd be an idiot.

[LANAI reaches into her bag again]

You have a whole bag of props?

LANAI

Just my inhaler.

[LANAI takes out a normal-sized inhaler from the box, sucks in the air from it and coughs]

BONNEVILLE

My son has asthma, too.

LANAI

[raspy] Oh.

BONNEVILLE

Yeah... I think so.

[LANAI sucks in air from the inhaler again, and withdraws a large cube of foam from the box]

What?

LANAI

Look!

[Lanai throws the cube to BONNEVILLE, then dives behind the couch, and in covering her head, deliberately smacks her hairclip]

[There is a loud, smoky detonation, shattering glass. In the dark, we hear BONNEVILLE choking. LANAI has a small cough, but uses the inhaler again. Fire alarm begins sounding]

RHONDA

What's happening?!

LANAI

Call an ambulance!

[Rhonda opens the door - it provides the only light on the scene, smoke billows out]

RHONDA

Can you stand? Come to me, get out!

[coughing]

[LANAI pockets the inhaler, jumps up and runs to her]

RHONDA

Doctor?

LANAI

[coughing] ...package on his desk!

RHONDA

[turning back to the office] Get out, everyone evacuate now!

Doctor Bonneville!

[looking back into the office] The girl can't call 911, she can barely breathe. Go downstairs, honey. Tommy, you call them... Jane, you call the desk downstairs.

VOICE

There aren't many people who can say that they got away with murder.

When I first met with the police, they told me that Bonneville had been getting hate mail for years, for growing brain cell cultures. Not God's plan, they said. The second time, they asked me if anyone had come after me, their witness. Then I didn't hear anything.

It was six months before I could really believe it. I was free.  
And it was the most exhilarating high.

-----  
**SCENE SIXTEEN: POKKI CYBER CUBICLE FARM**  
-----

LANAI, BOSS, DAN, PATRICIA, and others meet, standing in a circle.

BOSS

Please welcome back Lanai, our new junior programmer!

[ALL clap]

DAN

We heard that you've recovered nicely from your time with the other company!

BOSS

Now Dan...

LANAI

Clearly it wasn't meant for me to work there. My mistake!

BOSS

Where is Tim, right now?

LANAI

Oh man... he ran into someone on the subway who he'd seen in an article in *Wired* magazine.

PATRICIA

He isn't jumping ship, is he?

LANAI

No, just someone he was excited to meet the guy in real life.

PATRICIA

We do really want both of you working here. It won't be awkward, I don't think?

LANAI

Not at all!

BOSS

Any updates for your first day?

LANAI

I want to get all of the software set up on my laptop, and push some code in without messing up anything too badly.

Tim told me his update as best as he could, basically look out for an email later today about upgrading everyone's TLS requirements.

DAN

Finally! Sounds good to me.

BOSS

Adjourned!

[The group splits up. LANAI's cell phone rings - she picks up]

LANAI

Yes?

[pause]

Did he say what kind of cells?

[pause]

I think we have some in the kitchen cabinet, under the sink.

[pause]

Love you.



## Rita Wan

Graffiti on closed shutters. I trace the number on the door with a finger. I have a few minutes.

Turn around to check the street. There is a van parked nearby, seemingly abandoned. The only business is a cafe two doors down. It's turning to fall, so there are no takers for the patio tables and plastic chairs. That end of the street backs into a factory. The other end passed brick buildings until I lose sight and interest.

Cameron said that she'd be here in a minute. Add ten.

There isn't a sound, but I keep listening. There needs to be some reason to reject this place, other than fear.

The man who comes to the door must have just shaken himself awake. He pulls at his beard as though it grew overnight, tells me that he's lost an entire day showing the apartment to tenants. In a single flight of stairs, through a door left open, we are at the apartment.

The hallway and living room are creaky wood, like Hollywood's picture of an inn. There are two others here, lost in the glow of Macbooks. I do the responsible social thing and shake hands. There are a few gruff words, and then I am ushered into the room. It is much cleaner - even the edges and corners seem sharper. One wall is dominated by a blank, gently rippling sheet of paper. "I am a painter," he explains.

I let him talk, trying to "mhmm" properly without interrupting. The paper reminds me of rice paper windows. Reminds me of a friend and I coming in from watch to warm our hands.

I clasp my buzzing phone. Cameron is here, on time possibly.

Back down and up the steps again. Cameron skips the swift introductions and is ushered in to meet me. We squeeze hands. She asks about the utilities, the recycling, the late-night diners. I find myself pacing the blank wall. I put up my hand but don't touch it. He needs it clean for painting.

On the way back out, she splits off to check the kitchen. "Is this a juicer?"

"Oh yes, we have all modern, all updated appliances."

I keep walking to the door.

--

Jacob was the best person to keep watch with. He would tell a story in a low, rumbling voice, slowly turning over plot details, dwelling instead on the color of a girl's hair, the furtive glance of a confronted cheater. "Come on Jacob, we don't have all night, what'd she do?" Then he would seem to speed up the story, but it would become stalled again, until, like all his stories, it ended with a corny joke or the hero humiliated. One got the feeling that Jacob was unlucky in love. Maybe that's why he was here.

At dawn we would go back into the hut and rouse the next watchers. I would take a Benadryl without water to sleep soundly through the others' stirring awake. "Damn Risa Wan," I would think, "her war isn't worth this".

--

"I know you liked that place," Cameron poked me for emphasis. "All the artists, the paint on the floor..."

I stop eating for a moment to cut up the omelette. Cheese spills out.

"He even recommended this diner, we could go late nights. I know you're into that."

"Yes, I am. That was very sweet of you."

Cameron gestures at her pancakes. I transfer some over to my plate and eat a piece. It's good.

"They even have a juicer, did you see?"

"You mentioned it."

"I like juice; we could make some fresh orange juice just like that, you know."

"Are people into that really? I didn't know that about you."

"Of course! Come on."

I still can't picture it. My morning is pretty simple, up until I get to work. It's pretty simple at that point, too.

"You didn't notice the paint, did you? The spirals and loops on the floor..?"

"I can't do that. It's too much. I know it means something to you but it's hard to mean something positive for me."

"Well you can't keep moving around like this."

"I don't think young people can be in an apartment and sit in an office all the time. It's the same as putting your mother in a nursing home. It cares for them but it takes something away."

"I lived in this one apartment, since my junior year of college, and you come in with this.. bullshit!"

---

It was my first taste of freedom, Risa Wan's war. We were supposed to be journalism students gone into high gear. Investigative journalists, in a world where it was all Disneyfied or propagandized or sensationalized. Tell the world what Risa Wan's activists are doing. Show the people aching to free Risa from prison, the oppressive ring of military generals who fought for power, rightfully hers.

We burst across the border in camouflaged jeeps, down dirt roads and into a tea field. I know now that the heavy branches and thick weeds meant that the field was untended, that the farmers had been conscripted or dispatched. Through my eyes then, a journalist's eyes, it seemed much more romantic of a cover.

One night they fired mortars. It was never explained whether we were meant to see this or something else. We'd gathered around a fire and saw movement in the trees. There was a tremendous noise, though I didn't see anything, and the more adventurous of us came forward. Each man was heavily armed, and all of the mortars were being loaded, being adjusted based on a screaming walkie-talkie. The girl next to me said that our location would be given away, that we needed to leave. Then she was yelling not to pack up tents, just run. I don't remember her name. I guess that means she didn't get very far.

---

It was Staples day in the office. Everyone got their orders, including my set of ballpoint pens, and star post-its for the interns. I put a star on their best work, so everyone gets a star.

I booked a conference room over lunch break to Skype with the therapist. I cried a little, I admit.

The next thing after that was our team whiteboard session. I'm very good at what I do, what I do now.

---

My only luggage is a yellow duffel bag; I got it here in the city. I carry it up the stairs and over the threshold, leaving it by the mattress. Cameron has already moved her chairs up here - a friend is helping her.

"Get my bags from the car, will you?"

---

Can't sleep. The anti-psychotic hasn't kicked in yet; it's supposed to help me sleep, is all. There's nothing that wrong with me. I see Cameron check her phone.

"We have graffiti on the front door."

"Yeah?"

"I'm a straight-lace office worker and you sell phones. Neither of us are graffiti people."

"Like punks or rebels or something like that?"

"Sure."

"You want me to be a rebel?"

It's hard to tell what Cameron means sometimes. Especially when I can't see her face.

"This is what living in Bushwick is all about, and I want to be a part of it. The paint on the floor, didn't you see it?"

"I'm going to look at it now."

"Okay."

I roll over to the lip of the loft. I move the curtain for the streetlight outside to illuminate the room. I see it now - ripples like the sea. Cameron is looking up for a reaction.

"It's beautiful."

She smiles. "Told you so."

---

The next morning I pick clothes from my bag. It's time to take the whole lot to the laundromat.

Cameron grasps my hand. "Put them in the dresser when you get back."

"We don't have a dresser."

"I'm getting one today. I'll send you a few pictures and phone you this afternoon."

"Okay."

Soft sunlight comes in now.

"Can I paint something?"

"Can you?"

"I'll start right here," I say, "and to this corner." Somehow I imagined there would be a brush to start right away. She kneels to finish lacing up her sneakers, smiles and leaves.

# Cloud Atlas Bug

## The Starship

Mel woke up in the darkness. Instinctively he tried to move his arms and legs, but in the cramped space he could only stretch, which provided some comfort.

There was something that he had to remember here. Something something starship.

He heard the headset power off and on again with a metallic click. A few moments left for his own thoughts, his own reality, before dissolving back into VR-space.

## TapDanz Labs, Present Day

Phil opened the conference room door, nodded to the engineers who were poring over their MacBooks, and turned to see the source code projected onto the board.

“Do you have a marker? I was looking through the output-”

Several developers’ phones buzzed with another server-down notification.

“Stop scrolling. Can you jump to where that function is defined?”

“Which function?”

“This one that you’re calling here... right here.”

They followed a link to its place in the code, and from there into that function’s iterator. They puzzled over it a bit.

“Oh my god” muttered one of the interns. “It should be going up two at a time.”

“You’re comparing the first [x,y] pair, then instead of second [x,y] pair you’re looking at [y from first pair, x from second pair], and so on. Make sure the last iteration of the loop catches that, too, or we’ll be hanging forever for the callback.”

Half an hour later, the errant servers were back online.

Mallory tapped him on the shoulder. “That was cool how you could find a bug just like that.”

Phil shook his head. "There's something else in there. You weren't looking there before because that code shouldn't be running at all, right? Not unless we're being dumped there by another bug. That's why we didn't catch this bug during our review."

"Well it didn't make things worse, right?" She gestured to the break room and they sat in comfortable beanbag chairs. "Where are you seeing this bug living? Where do we find it."

"It's got to be something wrong on the client-side, in the headset. It might be running if the hardware failed to download initial point data, but any program should have all the data before it starts running."

Mallory nodded. "It isn't that big of a file." She flicked through some new e-mails. "Time to call the hardware team, in Phoenix? I'll email their team scheduler for an all-hands meeting."

Phil shook his head, opened the email client on his laptop, and started typing. "I just need one person."

### **University of Washington, 1979**

Jane unspooled a stretch of masking tape and stuck one end on the study table. "One quarter inch off the end ought to do it."

Her classmate deftly cut the end and placed it square over the two pencil-marked holes on his punchcard. "Will that do?"

"If you cover all of the other holes that we marked, sure. Don't let it get too thick, or the reader won't accept the tape anymore. And make sure to keep the cards in order in the carrier! And number them to be sure."

The study room was buzzing with activity, people and coming and going even now, in the middle of the night. With the new mainframe in the lab, with FORTRAN 77 books appearing in the stacks, it was the best time ever to study electrical engineering.

As she got back to the dorms, there was one of the new Post-It notes pasted to her door: "Prof. Vaughn wants to speak to you at lab tomorrow morning."

----

The professor was a caricature of a mad scientist - wild hair, giant glasses, and a not-quite-neat tie. Perhaps he aspired to the image. At the end of a long pronouncement to the other researchers at the table, he turned to Jane: "What's your assessment?"

Jane had typed out several sheets of FORTRAN code. “When we fixed the first bug, the variable names, it doesn’t fix our overall problem. When you look at the loop, I think there’s an off-by-one error. I need to change both of them for this to work.”

The professor nodded, waited, and nodded again. Jane hid her exasperation.

“Jane, have you considered if it’s a problem with the compiler? If we received a bad compiler, I would like the university office to request a refund for our department.”

“No, not at all.” Jane was puzzled. “The real problem is that there are *two different* errors in the code which help hide each other, it just wasn’t apparent when we first looked.”

“Your code already has two errors?”

“Yes,” she admitted.

“Can you make a program which identifies problems like this, then? Errors which hide each other?”

“No, I mean... well, I don’t know for sure. But it would be quite valuable.”

The professor waved dismissively. “Fix the bug, rewrite the section, let me know what it looks like when it’s done.”

### **Cambridge, UK, 1879**

Charles Babbage was dead in the ground for years now, and neither the Difference Engine and Analytical Engine had been built. A professor at Cambridge had asked a young student, lost to history except for the name Thomas Falding, to help explain where the eccentric genius had failed in building the calculation machines.

Thomas had written in his first draft, “critical error - analytical thread returns to the wrong value storage column.”

“Thomas, we cannot simply say that it is the wrong value. Can you determine what the difference is, for an incorrect value? What is its distribution of errors?”

In a memo back to the professor, Thomas wrote, “It is off by one place, so in this case, we could call these mistakes *off-by-one errors*. Though if we are dealing with retrieving stored values, then the value recovered by an *off-by-one error* can be incorrect by a more significant number, and could answer the user with any number which the machine had previously stored. There is no distribution that can return from that kind of error.”



Then a final note: “The main problem with the machine is an off-by-one error, except for a few times where I cannot trace where the logic has gone wrong at all.”

### **National Science Foundation, 1980**

Professor Vaughn took to the stage.

Jane hugged her friend Paula. “This is it!” They had worked for ages on posterboards explaining their code, which after a painful rewrite and deep dive into hex codes and overflows, was keeping accurate time with the National Atomic Clock.

“I would like to share some research going on in my lab,” the professor said, advancing the slide mechanism. “There was a team by two of our undergraduates, who created a timekeeping program.”

Their FORTRAN code flashed across the screen.

“Inadvertently, they discovered something quite interesting which I will discuss today - a potential for conspiring errors.”

The crowd laughed.

Jane’s face fell. Their one mistake, one year ago, was being highlighted over their successful project. The professor droned on about his code-checker, which sounded quite impressive to the audience, but Jane thought (it couldn’t be that simple could it?) that the code-checker script would only catch one kind of error.

“And we have the two student programmers whose mistake inspired us! Please stand!”

Paula and Jane looked at each other and stayed seated.

### **Tapdanz Labs, Arizona branch, Present Day**

“Professor?”

She smiled and stopped packing picture frames from the desk. “You can call me Jane by now.”

“I’ve been meaning to visit you. I heard that you are leaving the tech business.”

“Not just tech! It’s time to retire. It’s been a long enough road for me.”

“Can I show you something from the Los Angeles office?”

“I suppose that’s the main reason you’re here.”

“Sure.”

Phil found the right app on the tablet and opened up the blueprints. Jane removed her reading glasses from her coat pocket and started to flip through them. “Do you have crash logs?”

At Jane’s insistence, they printed the first one. She pointed at one burst of text. “Wow.”

“What about it?”

“I can’t explain it... but when I saw this bug I thought, there you are again! I have been chasing bugs like this my whole career.”

“What?”

She shrugged. “Look, a bug this deep in the hex code is bad news. It could even be a physical thing in one of the chips interacting with something in your software. I used to work on this type of stuff, and if I learned anything from that, it’s that you don’t want to go back there in the slog. And we don’t have to.”

“So what can we do?”

“I’m going to tell the incoming CTO to crush this bug by reflashing the chip in the headsets every 36 hours. If you’re in the middle of a game then, we can delay it and run for another eight before the device hits any serious bugs, in hour 44.”

“So they picked a new CTO?”

“I can pick my own replacement.” She handed him a crisp new business card. “Congratulations.”

### **The Starship**

Mel woke up in the darkness. Again he tried to move his arms and legs. This time there was something different... it felt like heat around his fingers and feet.

The VR headset did not re-engage.

It took an indeterminable time before he allowed himself to consider it: time to wake up. The door to his coffin-pod opened, and he staggered out, naked, into the cavernous hallway of the ship. Everyone around him was still numb and sleeping.

At the end of the hallway, he thought that he could see some other lights, but he didn't dare venture far from the pod. It wasn't allowed, he remembered. He turned back to his pod and saw a large piece of paper stuck to the neighboring door, a Post-It big enough to, yes, to uncomfortably wrap around his body, like a towel.

There was tiny writing printed along the edges, over and over again:  
PROBLEM SHIP: CODE FIXER: MEL.

Damn them all to hell.

Wearing the post-it, Mel walked along the catwalk, holding the railing for support, and wondered if he could unfreeze another programmer to help him, or that would be NOT ALLOW HUMAN. Many things were NOT ALLOW HUMAN. The aliens and their ship knew a few phrases and used them repeatedly. They seemed to understand more advanced human speech... before the ship, his mother had whispered to him that they could read thoughts... but no one really knew where the disconnect was.

In an enormous neon atrium, the captain was in egg-pose. Perhaps the captain feared that Mel had a weapon, or maybe the ship was in more danger than he thought. A bright light appeared and almost blinded him. "What's wrong?"

"CODE FIXER: MEL, ACCEPT."

"I accept. That's me."

"NOT ALLOW HUMAN."

"I don't know the problem."

A little red light appeared on his modesty Post-It. Begrudgingly, Mel took it off and stood naked.

"CODE FIXER: JEANINE, ACCEPT."

In another corner of the atrium he could now see the woman, already holding a laptop and sitting on a stack of cardboard boxes. Unexpectedly, she laughed at the captain's order.  
"I accept my new friend Mel."

"CODE ROOM".

Jeanine stood and beckoned Mel to follow.

-----

In a smaller, human-sized room, Jeanine pointed out a large floor screen, which had several circular windows of scrolling code.

“Jeanine... can you follow this?”

“Yup, I’ve been looking at it. Captain agreed that I could wake you up.”

“Are we... are we doing the right thing, by fixing this? I thought the plan was-”

“I remember the fucking plan, okay?” Jeanine clenched her fists. “This isn’t set up by our people. It’s a bug in the hypersleep code, and if we have to wake everyone up, it would be chaos, there wouldn’t be enough space or food or water. I thought about it a long time.”

“Maybe this is the plan? I know it isn’t ideal, but if we don’t make it to the destination, we don’t work for them, their little enterprise is over.”

“I’m not killing everyone on this ship!”

Mel looked away, not having seen a real, human, emotional reaction in years of VR-space. Had he forgotten how to argue? Did he want to save everyone? It seemed like a good idea to try and save everyone’s lives.

Jeanine opened the next window. “As best I understand it, their ships have been running for thousands of years without incident. Our human-coded program got put in about twelve years ago, so they have a pretty good case for it coming from us.”

“Twelve years?”

“Yes, first things first, we’re twelve light-years from Earth, so don’t talk to me about hitching a ride back or NASA coming to tow us home. Second thing, I need your opinion on this. This is why you’re awake. Accept?”

“Yes, accept. As long as they reboot the alien computer every thousand years or so, and downloaded their Windows XP service packs, it does seem like the human code would be the problem.”

She smirked. “So you can have a little fun with this assignment.”

-----

Time stretched as the two pored through lines of code. Fortunately the programmers who made the connection library between alien and human technologies had the best intentions and good code-commenting practices, so they were able to draw the structure out on Jeanine's Post-It.

"Okay Mel, any theories?"

Mel had finally picked up the method behind the floor screen controls. He pulled up the VR headset header file. "Some people had a bug in their commercial headset and put in a reboot to get around it. We know that because in hypersleep we come out every 36 hours."

"Good. And when did that code get written?"

"Many years before the alien visits. Yes, I get it. It wasn't planned like this."

"Thanks. Now how does a bug in a VR headset get propagated up into the main ship computer?"

"Do you know it, Jeanine? Because I didn't get that far."

"A lot of the code is about consistent timekeeping, and it's tough when traveling at relativistic speeds."

"I could see the VR headsets receiving a time from the ship computer, but why would the ship want the headset to tell the time back? We are all traveling together at about the same speed."

"Well, that's the part that I still don't know."

-----

They were sleeping in the room, back-to-back for warmth, when a siren sounded.

"CODE FIXER: JEANINE: EXPLAIN."

"Oh God, they're going to drop a nuke. Get in brace position up against the wall."

Mel sat up and crawled over to a wall. "What?"

"The ship propels itself with nukes, it uses sort of a pusher shield to move it forward."

"Are you serious? I don't think that they did that before?"

"Because around Earth they used their little impulse rocket motors. Big acceleration from the nukes. You've slept through the last hundred or so. Hold on!"

Mel expected a sound from the bomb, but instead the ship lurched forward and continued on.

-----

Mel waved Jeanine over. "Look at the two headset clocks."

They had disassembled the devices, a little anxious about where they had come from, until they supposed they were from their own pods. They had plugged the devices into the alien logger.

"After the jump, the ship computer asked both of these headsets what time it was," Mel explained, "but we told our headsets not to send anything back, so all's good."

"Okay."

"I've been keeping this one from rebooting. What's interesting is that the headset clocks no longer match. By a huge amount."

"What's that about?"

"The ship is asking our devices to keep track of the local time, Earth-time specifically, independent of our relativistic space travel. All of that detail about our own planet and solar system would be human-coded." Mel pointed out the two devices. "Depending on whether you're mid-reset or maybe not resetting at all, after the jump, there are errors. What do we do with errors?"

"We check the distribution of errors and see if they are predictable?"

"Well, this ship *averages* them. The bug could even be on their side... maybe they didn't expect us to screw up so badly."

Jeanine laughed and took the controls. She looked over the code for a long time. "So I mean, we can fix this, right?"

"We don't know the real time anymore, though. We might not be twelve light-years from Earth."

Jeanine paused. "The ship uses stars or pulsars to know its position, since those don't change so much. You're just right about the home-time."

"How could you know that, though?"

"I have looked at this for a long time, okay?" Jeanine slipped to the floor and held her knees to her chest. "I started with displaying the code so we could see it and edit it. Then I was fixing

location, since something made that wrong. I guess it was this Earth-time bug all along, all ten years I was working on this.”

“What?” Mel stepped back and hid his own nakedness. “You work with them? You are OK with that?”

“No, I just... I don’t want everyone to die. I was thirteen and I was tired of the VR headset, so...”

“Ten years and you just asked for help now?”

“I didn’t want to wake up some older guy who was going to tell me what to do. They taught me their code, and I waited until I knew my stuff and you, well... until you weren’t so much older.”

“Five minutes. I need five minutes to process this and... puke or something.”

“Have you ever puked?” Jeanine brimmed with bizarre curiosity.

-----

Mel stood before the massive transparent window, where the captain stared out into space. He was still in egg-pose.

“Ten years?” Mel shook his head and banged his fist on the window. It felt surprisingly soft and fabric-like.

“NOT ALLOW HUMAN”

Mel stepped back and shouted, “We fixed your bug! Jeanine will figure the rest out pretty soon, I think. You have the resources and the starship, and you still want us to come and do the dirty work. Don’t you have alien triple-A or an I.T. hotline or something?”

“NOT ALLOW CAPTAIN”

It was a new phrase. There was a being that could NOT ALLOW CAPTAIN?

“Would you like to explain that?”

“NOT EXPLAIN”

“I would just storm off, but if you’ve been sitting here for ten years, I suppose you would just keep waiting. You’re welcome.”

There was no answer from the giant egg.

-----  
Jeanine was still flipping through holographic sheets of alien code. It was a viewer which Mel supposed she had coded herself... he tried to catch her glance, but she had been ignoring him.

"How did your talk go with the captain?"

"He said that we did a really great job, and we are all going for ice cream later."

"Is that right?" Jeanine smiled. "I remember what that means."

"Don't you wonder what will happen to us? You didn't find a loophole this whole time?"

"Listen, I am working on it!"

"We just--"

"Trading routes. Interstellar trading routes and regulations, okay? Why don't you read something? We can't afford to be ignorant about the galaxy."

-----  
"Let me show you something in the human-code," Jeanine said.

They looked over a few files, and then she pulled up an environment variable file.

"They encrypt all of their variables in the code room console, so if the ship computer gets a virus, only an admin can physically access the keys."

Mel nodded and shook with anticipation. They opened the document.

KEY=HELLO\_MEL\_THIS\_IS\_JEANINE\_AND\_THE\_REST\_IS\_GIBBERISH\_EQ491293...

"This makes sense, I will be able to decrypt things now."

"There's more."

PLAN=Trade routes! It is ILLEGAL for CAPTAIN to be shipping us! They will rescue us!  
TIMEOUT=

"We set a timeout here," she explained, "until the ship decelerates and makes its final course correction into port. Can you tell me what the orbital program told you?"



Mel nodded. "Twenty-one years, and fifty-two days."

Jeanine typed this value:

TIMEOUT=9.years + 24.days

"Will that convert to ship time units? It seems weird to use Earth units."

"Yes, that should do." Jeanine saved the file.

The alarm sounded. "SLEEP: MEL, ACCEPT. SLEEP: JEANINE, ACCEPT."

"Good night. Well, see ya in twenty-one years."

Again. "SLEEP: MEL, ACCEPT. SLEEP: JEANINE, ACCEPT."

"Good night. Sleep well."

They exited the room and went separate directions. The headset had been replaced in Mel's pod. He stepped in, and as the doors closed, thought of the little electrical pulses unwittingly steering them to safety.

# Morozov and Me

## IMPORTANT CHARACTERS:

Nick - a computer programmer unexpectedly, drawn into the plot, obviously based on myself, but if I were going to graduate school in a technical field.

Morozov - a humorous Russian agent captured by the US

Strange Dude - Carl, works for an unknown agency

Strange Woman - unnamed, works for an unknown agency

Emma - Nick's friend, a law student

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## SCENE ONE: THE APARTMENT

*Daybreak in a messy corner apartment. Our protagonist, Nick, is brushing his teeth and refreshing the traffic analytics on a computer screen.*

NICK

[counting] mm mm hmm, mm mm hmm mm

*Nick clicks a link to a YouTube podcast, which starts auto-playing.*

PODCAST GUY

And this is one of the funniest things that I've seen, it's a website where to access anything you have to write commands...

PODCAST GUY 2

Yeah...

PODCAST GUY

...in Fortran.

PODCAST GUY 2

Whatttttttt?

*boing sound effect*

PODCAST GUY

So everyone is trying to look up how to write Fortran and get through the puzzle to the end.

*Nick goes into the bathroom and returns washing his face.*

#### PODCAST GUY 2

But aren't all Fortran coders from like thirty, fifty years ago? Ain't nobody got time for that. My grandpa is going to win this puzzle before-

*Nick stops the video, packs the laptop into his bag, and leaves.*

MONTAGE shows Nick biking onto a college campus, sitting in class checking Twitter for more traffic, getting hungry and going alone to a diner for lunch.

#### SCENE TWO: BURGER PLACE

*At the counter of a busy 50s-diner-themed restaurant, Nick is idly watching statistics on his phone. The server places a burger in front of him.*

NICK

Thanks, that looks good.

*STRANGE DUDE and STRANGE WOMAN sit at the counter on either side of him.*

STRANGE DUDE

Hey, what's that you're having?

NICK

It's a macaroni-and-cheeseburger, like a cheeseburger but the topping is macaroni and cheese.

STRANGE WOMAN

I'm going to be honest: that sounds disgusting.

NICK

It is, but at the same time, it is so good.

*Nick deliberately takes a big bite to show how he enjoys the burger.*

STRANGE DUDE

I am totally going to order this.

STRANGE WOMAN

I can't... okay. I won't talk to you, though.

NICK

Do you know each other? I mean, if I'm in the way..?

*Nick looks to either side to see that there is plenty of space, and Strange Dude and Strange Woman are staring at him.*

Never mind?

STRANGE DUDE

Nick, we were wondering if you could answer some questions about your code.

NICK

What? Oh weird. I mean, I would be happy to, but I'm eating. Why didn't you contact me at work?

STRANGE WOMAN

Universities have all these policies about these things.

NICK

What kind of things?

*Strange Man and Strange Woman shrug*

STRANGE WOMAN

I guess, recruitment?

NICK

This research program goes for another year but after that, I can talk about-

STRANGE DUDE

It's more like... national security stuff?

NICK

You guys are so confused, I am studying game development now.

STRANGE DUDE

We're not interested in the game development thing. It's about the Fortran site.

NICK

I can't really talk about that! It's a competition. I can't give away the answers! Come on, guys.

STRANGE WOMAN

Oh, okay, funny little competition.

NICK

Mmm yeah.

*A waiter arrives.*

STRANGE DUDE

A macaroni and cheeseburger for me and the lady.

STRANGE WOMAN

I would prefer to have a Denver omelette.

WAITER

Got it.

STRANGE WOMAN

So have you noticed if people are using the site?

NICK

Well yes, sort of a lot.

STRANGE WOMAN

Suppose someone in Los Alamos saw your site, and had some questions.

NICK

Los Alamos, like the town?

STRANGE WOMAN

Los Alamos, like the nuclear research program.

NICK

Listen, one of the main reasons that I got into game development is that I didn't want to make something that would end up killing someone. No recruitment.

STRANGE DUDE

Nuclear research doesn't kill people.

*Nick looks confused, and looks to the Strange Woman, who also looks confused.*

I mean, if your research ever did come to kill people, the world would already be fucked. It's not like you're going up to someone and \*pop\*.

*Strange Dude mimes shooting someone*

STRANGE WOMAN

Not the time, Carl.

NICK

Yeah I don't get that.

STRANGE WOMAN

So have you been in contact with anyone at Los Alamos about your project?

NICK

What? This is the first that I heard about it. I didn't realize that you guys, your team would still use Fortran. I mean... I get it. But it's also a real mess. Super old.

STRANGE WOMAN

But we don't work at Los Alamos.

NICK

Oh... rightttttt

STRANGE DUDE

No, really, we don't.

NICK

What is this all about then?

STRANGE WOMAN

You're about to get served some papers.

STRANGE DUDE

Something really serious.

NICK

Served... papers?

STRANGE DUDE

Some legal stuff that will not be fun.

NICK

Does someone own Fortran? Am I not allowed to have a website *Fortran-dot-io* anymore? I can give it back but I should get my fifty bucks back, too.

STRANGE WOMAN

Nope, Espionage Act.

STRANGE DUDE

You are so fucked.

NICK

What?

STRANGE DUDE

You'll want to call us later.

*hands Nick a card with only a phone number on it  
to waiter*

Please can I get my burger to go?

NICK

You're going to tell me about the Espionage Act and then leave?

STRANGE WOMAN

I think it's best if you get the papers first, so that you know to believe us. We'll keep an eye on you to make sure that you don't leave the country.

NICK

*goes back to his lunch*

Well, I'll keep an eye on you, too. Or something.

*Strange Dude and Strange Woman leave. Doorbell dings.*

What is wrong with people?

SCENE THREE: THE APARTMENT ENTRY

*Night time. Nick looks around and cautiously checks his postbox.*

NICK

Oh. Nothing.

*We follow him up the stairs and to the door of his apartment, where a box stuffed with papers is waiting.*

Oh shit.

SCENE FOUR: THE LIBRARY

*Nick meets with a law student friend that night. The box is opened and they are looking at the first packet.*

EMMA

This all looks very serious.

NICK

But they're fake, right? I mean I don't understand how they're planning to get the answers to the puzzle this way, but-

EMMA

Forget about the puzzle! Everyone named in this letter is a real lawyer at the Department of Energy. You can call in the morning and double-check it in an instant. Which makes me think, what I need you to do first is: don't leave the country.

NICK

Uh, okay, easy to do.

EMMA

And don't contact anyone at the Department of Energy for any reason.

NICK

You just said that we could call them and ask-

EMMA

I know! Okay it's better if I do it... No, wait, I'm not a lawyer yet. Have your lawyer call them.

NICK

I have a cousin who finished law school, I think, but he didn't reply to my message yet. Could be like a *My Cousin Vinny* situation.

EMMA

No, a national security lawyer! You should know this stuff before you talk to anyone!

NICK

They came to me!

EMMA

Who?

NICK

I don't know, two strange people. Man and a woman.

EMMA

They didn't tell you who they were?



NICK

They gave me a card, oh, here it is.

*Nick presents the business card.*

Just a phone number, not a lot there to go on.

EMMA

You know who leaves anonymous cards around and knows about national security shit?

NICK

Who?

EMMA

The FBI? NSA? CIA? Could be any or all of them. Let's get you to my professor.

SCENE FIVE: THE PROFESSOR'S OFFICE

*The professor is looking through the files and sorting them into stacks.*

EMMA

-and then he received these documents here.

PROFESSOR

Right, right, these documents.

NICK

So they don't really have anything to do with me, do they?

PROFESSOR

Before I talk to you about this, I am going to need a payment to establish attorney-client privilege.

NICK

I saw this in a TV show once, hold on, I think I have a dollar.

*reaches in the pocket*

PROFESSOR

No, I will need you to write a check or money order for eight hundred dollars.

NICK

Wait, what?

PROFESSOR

And I think it will take me a few hours to get through the details and make a strategy with you, so at least twenty-four hundred dollars.

*Nick looks astonished.*

NICK

Can you give me a few minutes to see if I can do that?

PROFESSOR

Of course.

SCENE SIX: THE HALL

NICK

Twenty-four hundred... shit, my own cousin still isn't responding yet?

*Nick reviews the Strange Dude's card.*

They might have something.

*Nick dials the number. A phone rings and Strange Man and Strange Woman burst out of a door across the hall, wearing headphones and carrying listening equipment.*

SCENE SEVEN: THE APARTMENT

STRANGE WOMAN

So we did some research and realized that you weren't involved in sending your code to scientists at Los Alamos. They were finding, downloading, and sharing your code, voluntarily.

*(mocking the scientists in a funny voice)*

Oh, isn't this funny, oh take a look at this Fred, let's run this code on the big mainframe and see what happens.

STRANGE DUDE

We realized it might be good to have a chat before the Department of Energy threw you in jail forever.

NICK

Forever?

STRANGE DUDE

You broke a nuclear testing supercomputer! We almost told the president.

STRANGE WOMAN

Who knows what could have happened?

NICK

What people do with my code is not my fault or liability or something. It's in the license.

STRANGE DUDE

Open source licenses don't matter when you break something this big.

NICK

What are they going to do, sue me for damages? Ask me to fix it..?

STRANGE WOMAN

The budget for this whopper supercomputer is itself hella classified, so they would just put you in jail. For espionage. That means no trial. Just SuperMax oatmeal for the rest of your life.

NICK

Oh shit.

STRANGE WOMAN

Could you do it again?

NICK

What?

STRANGE WOMAN

So, our boss had a conversation with the Secretary of Energy-

STRANGE DUDE

-like, the Secretary of Energy for the United States of America-

STRANGE WOMAN

And they were wondering if you would do it again.

NICK

No, no of course, I'll stop writing code altogether if that's what you want. I hate oatmeal.

STRANGE DUDE

No, man, they **want** you to do it again.

NICK

I don't understand. Are you...

*jumps up from chair*

oh my god you want me to break into Los Alamos and...

STRANGE WOMAN

No, no, sit back down! Let me spell it out: the Russians have their own supercomputer. It does some... some not-nice things.

STRANGE DUDE

Very bad things.

STRANGE WOMAN

We would all sleep a little easier if this computer... stopped working.

NICK

But I don't know anything about their Russians or their computer or... you didn't even tell me what not-nice things it does?

STRANGE WOMAN

Suppose we had a line of code which would make their machine seg-fault.

NICK

Well, that would be a start.

STRANGE WOMAN

So here's what we are picturing.

*same mocking voice used for scientists earlier*

Hey Boris, it's another sunny day in Mother Russia. Check out this funny Fortran program.

NICK

The Russians would run my code, too?

STRANGE WOMAN

Well, no. They're a little more cautious than our scientists.

STRANGE DUDE

This is the cool part. You are going to write your code in Russian.

NICK

This is why the plan doesn't work. I don't know anything about Russia, it will look wrong.

STRANGE DUDE

We will bring someone by tomorrow... sort of a... how should I say it? One of our hottest new Russian agents, who will be your intern advising you about how to let their guard down. It will be funny, just like your program.

NICK

I get a Russian humor intern?

STRANGE DUDE

Uh-huh.

NICK

This is straight out of a James Bond movie. This is surreal.

*Nick takes a moment to collect himself.*

This is a dumb question but, dude... this rookie Russian agent..?

STRANGE DUDE

Oh, I think you'll be great together. Bring some chocolates to our next meeting.

STRANGE WOMAN

Carl!

NICK

*beaming*

I will.

SCENE EIGHT: THE SAFE HOUSE

*Knocking on the door. The door electronically unlocks and Nick walks in from the street, carrying a blue shopping bag. Inside is a box of chocolates.*

NICK

Hello? Anyone home?

STRANGE WOMAN

We'll be down in just a minute. Please take a seat at the table.

*Nick sits at the table. After a few seconds, he takes out a fidget spinner and plays with it. Strange Dude and Strange Woman come downstairs.*

Thanks for coming to meet with us and your new partner. I understand this may be stressful and you may need some time to get to know each other.

NICK

Mhmm, sounds good.

STRANGE WOMAN

Did you actually bring chocolates?

STRANGE DUDE

Oh wow, he did!

STRANGE WOMAN

Can you not do this, Carl? Okay, our partner should be with us in a few seconds.

*There is light treading on steps, then a door opens. MOROZOV, an aging man resembling Sergey Kislyak, staggers through the door.*

STRANGE DUDE

So nice of you to join us! Have a seat.

MOROZOV

Ehhh okay... Just a moment while I find the chair.

STRANGE DUDE

Any seat is fine... any seat.

NICK

Excuse me, are you serious?

MOROZOV

No, I am a joke intern. Get it?

*mumbling*

Oh... still so funny. Still so funny.

STRANGE WOMAN

Look, Carl was just being a dick. Mr. Morozov has agreed to work with us on this project, and we are all appreciating that he would do that for us.

NICK

Thanks a lot, Carl.

STRANGE DUDE

Muzzie, he has chocolates.

MOROZOV

You have chocolates?

*Nick winces and hands over the bag. Morozov sits.*

STRANGE DUDE

The two of you will spend a lot of time together to plan this operation.

NICK

Is he the right guy for this? I mean don't you have someone I might gel with a little better? Carl, my man...

STRANGE WOMAN

We know that Mr. Morozov is the man for the job. He was always deep in the KGB, but he was also a little special... he was their funniest agent.

*Scene starts a flashback to a young but recognizable Morozov in front of a window, snow falling*

Our agency had a trace on every Russian phone line in Berlin-

NICK

No no no, hold on. I am a little serious now. I don't see this guy getting a bunch of scientists rolling.

STRANGE DUDE

We could ask him to tell a joke.

MOROZOV

My humor is only so good in English.

STRANGE DUDE

Let my partner continue the story.  
*Flashback continues.*

STRANGE WOMAN

Finally, alright. So the agency had a trace on every Russian phone line in Berlin. Our friend Morozov was moving some secret documents around to some spies, so the U.S. tried to follow his movements. It was impossible. My mentor told us that the translators would be on the floor, laughing.

*Flashback shows translators in hysterics.*

NICK

Really.

STRANGE WOMAN

Whatever we recorded, no one could tell if he was serious about going to this location or that, or just planting red herrings. Then the agency transferred in their spy, a guy we call Stoneface.

NICK

Stoneface.

*Flashback shows a tall, bald, expressionless man looking at a wall of pinned papers and connecting threads.*

STRANGE DUDE

I've met the guy at a party. I tried my funniest jokes on him. No dice.

STRANGE WOMAN

He has that reputation. And month by month, Stoneface unraveled the network, put agents in this guy's room, and snap!

MOROZOV

Ah, yes... snap.

NICK

Why aren't we watching *that* movie?

STRANGE DUDE

Just remember that everything that you hear is classified. Especially Stoneface and Morozov. He may look a little worse for wear, but he was supposed to be dead for five years now.

*They look over to Morozov*

MOROZOV

Don't mess this up for me. I like this.  
*eating chocolates*  
Oh, and a new fidget spinner!

SCENE NINE: OFFICE IN SAFE HOUSE

*The two are sitting in front of a three-monitor display in a large, empty office.*

MOROZOV

Is this what you do for work? Write prank computer scripts?

NICK

Nope. Just a side gig when I'm not in class. How about you?

MOROZOV

I never used a computer until after I got captured by your CIA friends.

NICK



Sorry about that. I think.

MOROZOV

It's fine. No torture. They just gave me some Disney World tickets. And then the computer, they gave me one. If we Russians capture you, there is no Disney World. I even get a new iPad for this project. Did you know that?

NICK

If you Russians capture me? I didn't do anything.

MOROZOV

You know some American agents and you know me, so soon you will be quite valuable to them. Unfortunately you may be captured or interrogated at any time.

NICK

Hello, I am in America, there is no Russian agent coming to scoop me up.

MOROZOV

Of course there is. They probably rotated out my old friends, but I assure you that there are quite a few Russians in this city. Kidnapping, home invasion, blackmail, all possible.

NICK

You're serious?

MOROZOV

This Carl, and this sexy lady spy, they are such amateurs. Already they should have someone to watch your house and your children.

NICK

I just have a little apartment and zero kids.

MOROZOV

Then make sure to at least ask these amateur spies for decent money! Your wife will be happy and when you go into Witness Protection, plenty of time and money for the kids.

NICK

No, I am not married either. Witness protection?

MOROZOV

Hold on, shut up, shut down the computer. We need to get out of this house.

NICK

Are you allowed out of the house?

MOROZOV

Of course, I am usually too afraid of the spies. But I will take a grenade for you, my partner.

NICK

Take a grenade, like... meaning...

MOROZOV

You brought some chocolates, I think it is a kind gesture. We can be friends.

SCENE TEN: THE INDIAN RESTAURANT

*It's a busy buffet restaurant. Morozov and Nick enter and the staff recognizes Morozov.*

MOROZOV

My nephew.

*Indicating Nick*

MANAGER

Nice to meet you!

NICK

Yes, thank you!

*As soon as they sit at the table:*

Your nephew?

MOROZOV

Spies tell lies, it's my bad habit. As you can see, this is a buffet restaurant. We can eat immediately.

NICK

Hmm.. I am hungry...

MOROZOV

Also very unlikely to be killed here. To poison me, a spy would need to take out everyone else here.

*Nick covers his mouth and winces, grossed out.*

Even I am not worth that much paperwork. Nothing to be worried about.

*Nick and Morozov return to eat.*

*Nick's phone buzzes*

NICK

Hold on a sec. I need to take a photo of the food.

MOROZOV

Oh really, are you an artist?

NICK

No, it's this woman that I used to work with, she really likes Indian food. She's going to be so jealous.

MOROZOV

Why not invite her over? I will be polite and then when you give me the signal [exaggerated wink] I leave for important appointment.

NICK

I am sure that you're an excellent wingman, but she is on the other side of the country now.

MOROZOV

What is the point of that? I don't understand you young Americans. And I hear it is the same in Russia now, too. The first thing about relationships is, you must ask the girl out in person. A letter is always lost in the mail. And you are left waiting and waiting.

NICK

I don't know why you are so focused on this.

MOROZOV

The letter is in the mail, and you are waiting, and then the CIA comes and moves you away before you get the reply.

NICK

Oh my god, is that what happened to you?

MOROZOV

Maybe.

NICK

I am sure you will see her again. Or she could come over to the US from Russia, once things are more chill.

MOROZOV

Ah, she is already in the US. She is married to the man they call "Stoneface".

NICK

Harsh! But now I definitely want to see this made into a movie...

MOROZOV

Ah... maybe she did not like my humor.

NICK

I don't understand Russian, so I couldn't judge.

---PREVIEW OF NEXT EPISODE---

MOROZOV

I am telling you, this Anastasia could be a Russian spy! You should find out before it gets too serious.

NICK

It wasn't even a date, it was just us hanging out, alright? We made plans to cook dinner at her place next time, though.

MOROZOV

Oh, that is very slick. Have the sexy lady spy check her out to make sure it is not a trap.

NICK

Alright...

MOROZOV

And not Carl! He would fall for it.

--at buffet dinner with Anastasia, Morozov wanders in--

NICK

Oh man, what are you doing here?

*hugs and whispers in his ear*

What are you doing here?

MOROZOV

I have just one thing to say.

*Morozov whispers in Russian to Anastasia, who bursts out laughing.*

Ah, so you are Russian, then?

ANASTASIA

Oh no, from Nebraska. I went to an exchange program in a Russian city for a summer.

MOROZOV

Did you have a Professor Korolev?

ANASTASIA

It is such a common name! I might have.

MOROZOV

The one that I know, you would remember. He keeps his dog in his bag.

ANASTASIA

I don't know...

MOROZOV

And sometimes he is wearing it around the ears like we cannot see it...

*Anastasia bursts out laughing.*

ANASTASIA

Oh, oh, excuse me, I need to go to the ladies' room for a moment.

*She leaves.*

NICK

What are you doing?

MOROZOV

Hello? She is a confirmed spy. Professor Korolev is notorious at my old school. We must leave before she kills you.

# Battlestar Erratica

The Drake Equation estimates that there could be a million civilizations in the Milky Way.

This is one of them:

In our galaxy, there is a lush blue-green world similar to our own. As we pause in its orbit, we see the lights of cities and superhighways. A railgun flings a supply cart into orbit, en route to one of several offshoot bases in the asteroid belt.

At first glance, this world seems more advanced and prosperous than ours.

For reasons that are not clear, the scientists of this world (they are beings similar to us) were slow to define and understand the periodic table of elements, the atoms, the protons and neutrons and electrons. Perhaps there was a fear of religious heresy, or the dangers of the atomic bomb kept these matters secret from the average researcher, or without dense metals like lead it was difficult to safely and accurately study radiation. Whatever the cause, their understanding of the electron suffered. When it seemed vacuum tubes and relays could not be made fast enough, it took an international Manhattan Project to finally discover the transistor.

Within a few years, one of these inventors described what we know as Moore's Law - every 18 months, the performance of computer chips would double. The international partnership, now known as the Computerists, poured their efforts into meeting and exceeding expectations.

Softly, in conference hallways and late-night diners, the Computerists began to contemplate the future. There was the exponentially and endlessly growing economy for every kind of mobile, wearable, and embeddable computer, for social networks for every soul, their kids and their pets, for data centers storing livestreams of their newly prosperous lives.... but what could follow the transistor... what functional thing could come after building with single atoms?

On our own planet, we have a few ideas, but the Computerists had none.

And then, three-hundred-and-two years ago today, they reached the end of the line.

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The sun shines faintly on a potato-shaped asteroid the size of a shopping mall. It tumbles too quickly for comfort of its occupants, so there are no windows. Its crew - a couple - tends to an index of nearby unmanned asteroids' databanks. Recent census results and tax returns. Sleep records of billions of humans, via a corporate partnership. An archive of mathematical proofs written by the Compression Committee (who had promised that they could mathematically fit the world's data, and backups). The machines are constantly running and cataloguing these datasets, and others, and responding to requests from their home planet and other stations scattered across the solar system. A child aboard longs for a blue sky and green grass that her parents could never afford.

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It hadn't taken long for the Computerists to set up a satellite network around their home world, and to explore more exotic locations for less important data. In space they could safely mine higher-quality uranium and solar power; they could vent heat into space without warming the atmosphere. Meanwhile they did their best to destroy and strip old data, such as dead people's social media profiles. But the health ministries needed their data records to predict healthy lifestyles and medical treatments. The literati rediscovered old stories which needed reviving. Each bit became politically unfeasible to delete and physically impossible to keep.

It was one of the early media networks that taught the Computerists about control. The project chairman was sitting down to dinner when an aide apologized that none of his favorite TV shows were available. The crew of a satellite, the "Tin Kettle Band", demanded a fair wage and crew rotation; they had suffered to provide the world with streaming media. And they would provide the paywall code to their neighbors if their demands were not met.

For months, the Computerists agonized over resolutions and compromises. The old guard of scientists had never considered independent profitability or collective bargaining in their plans before. As more satellites toyed with their managers, a new regime swept in. By surgically applying pay raises, telephone surcharges, and extreme violence, the militia calmed this rebellion. Secretly they began working on the next phase.

During a crew change, the Militia swapped the data on each of their satellites. There was nothing wrong, they explained. Each dataset contained a small amount of corrupted bytes and errors, and was therefore worthless in isolation. Going forward, Erratica Centers, in office buildings in each country, would be the gatekeepers for all authoritative data, as only they would know which bits were right and wrong.

Secretly though, the Militia knew an Erratica Center was too valuable a target. They could be robbed of their data, their own satellites could drop disks from space and destroy them by kinetic bombardment, erasing the data but ultimately shifting power. Before that could happen, the Militia built a new impenetrable spaceship and sent it into a solar orbit perpendicular to their own. It is called the *Battlestar Erratica*.

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On the bridge of the *Erratica*, the top officers are celebrating the completion of a full-text search. Each planetary station has had a deputy assigned to the *Erratica*, dismissing and verifying potential matches in their distorted local version of the text. Given the limitations of communication at planetary distances, the depth of each archive, and cold storage on more distant moons, this search has taken eight years.

The ship's commander is pleased. He does not mention to the crew one of the ongoing searches, whose classified criteria complicate each step. The actuaries estimate it will take a full generation to return all of its results.

The commander stops to shake hands with a new crew member. Joining the crew of the *Erratica* is the highest honor a bureaucrat can receive. As he walks down the corridor, someone is decoding distress calls from a deep space scout and deciding where to allocate memory for it. In another room, a jammed printer is being nurtured back to health by a team of technicians in surgical masks. He reassures a despondent secretary that she will not be penalized for a late timesheet.

A private videochat channel has been set up in the commander's office. The militia leaders have staged a ceremony with eight-year-olds at a model elementary school. The commander delivers the executive summary of the search, something about the geological security of each asteroid and moon to host more data. Some do not have adequate solar power, or have acidic compounds which would dissolve their computer chips. The next colonization missions are ranked, and the dark side of the moon is a viable option.

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On the unnamed potato-asteroid that we saw earlier, the child sees the news and asks how a question and answer can be older than her.

One of her parents is trained as a therapist for nearby colonists. Each time he asks a question to a patient, he smiles as he waits for the video call to bounce three asteroids over. Later when he tucks in his daughter for the artificial night, he whispers, "my friend had the same question as you."

Her parents wait for her to go to sleep before opening their new supply crate. Inside are more frozen dinners, more water-recycling plants. Tucked into a panel, they find it, a mem-disk with a scrawl reading "flipped bits: tape 6/8". It goes directly in a high-up kitchen cabinet. There is no one visiting, but it seems prudent to hide. They clamber up to an airlock where there is just enough room to watch together the miniature sun streak across their horizon.

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The End

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