

# 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."

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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.

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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."

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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.

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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.

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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.

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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-”

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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.

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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."