

ZERO-DAY RISING

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1

Bob

Unfettered by small-minded decrees, humans are limited by only their own imagination and intellect; heroes able to transform the world. Unfettered by the physical world, humans have no limitations at all. This is the promise of the shared virtual reality of BetterWorld: the transformation of humanity itself; an opportunity for every man, every woman, and every child, to become a god.

Bob Luxmore finished his monthly letter to the shareholders, who were mostly small-minded themselves. They needed reminders that MediaCorp had responsibilities beyond quarterly profits. BetterWorld wasn't just for gaming or chatting. It was a place with unlimited horizons, where a quadriplegic could compete in marathons and a rural villager could study simulations of black holes.

He ran the sensitivity filter, which changed the phrase "become a god" to "become a creator." Ridiculous, like all its suggestions. He sent the letter to his office staff to finesse. Then he swiveled his data screen aside and glanced out the window next to his form-fitting seat. The plane was flying over scrubby hills dotted with shacks. Beyond was more sea.

Sitting across the narrow aisle, Bob's new communications aide turned to face him. She had a bony face with plump lips and lots of makeup. "We're almost there," she said.

Good. The ten-passenger VTOL was cramped compared to MediaCorp's other jets, but it was the only one able to land at their research facility on Gonave Island. Gonave was situated between the two Haitian peninsulas like a piece of meat being regurgitated. The plane was passing over the upper jaw.

Bob returned to his data screen and skimmed the financial and asset statements regarding the Fantasma na Maquina acquisition. The upstart company actually thought they could steal his ideas and customers. And

they'd hired criminals like Kiyoko... He couldn't remember her last name. They'd probably hired those cyberterrorists Charles Lee and Pelopidas Demopoulos, too. He'd been tempted to purge the entire company, but that would have been a waste. As with past acquisitions, he'd keep the best assets.

Bob logged out as the jet slowed and redirected its engine thrust. They landed on a concrete pad next to a pair of Ares International helicopters and a black VTOL with the U.S. Department of Homeland Security seal. Beyond, half-obscured by dust, were blocky white buildings, 3D-printed cottages, and arrays of solar panels and satellite dishes. The compound was surrounded by a high concrete wall, and patrolled by khaki-uniformed guards with automatic rifles.

"We're here!" the communications aide said.

If you're not going to say something worthwhile, keep your trap shut. Bob was tempted to fire her, but maybe he'd just transfer her. That's what he'd done with the last one.

Surrounded by aides and bodyguards, Bob exited the plane and entered a hellhole of humid heat. Sweat pooled beneath his Savile Row suit.

The facility director, Keith Sherman; the chief scientist, Darla Wittinger; and a host of underlings greeted them. Sherman was taller than Bob—most men were—and looked down as they shook hands.

"Let's get out of this heat," Bob told the crowd. "The day's half over already."

It was a short walk to the windowless two-story administrative building. Inside, a security officer collected everyone's comlinks and other electronic devices—even Bob's.

Bob told his bodyguards and aides to wait in the visitors' lounge until he returned. He followed Sherman and Wittinger through a metal detector, then submitted to retinal and DNA scans to prove he really was the company CEO and not some impostor.

From there, they took a wide elevator fifty feet down and boarded a single-car electric tram. They passed two narrow platforms—marked only by letters—and stopped at 'C.'

Director Sherman unlocked a steel door with his badge and led them into a hallway with labs off both sides, portions visible through polycarbonate windows. They stopped outside one of them.

"Mr. Luxmore, Dr. Wittinger, if you please," the director said.

Inside an antiseptic-infused room full of computer consoles and wall screens, two guests from the Department of Homeland Security were

listening to a spiel by the facility's communications director. One of the guests was Dexter Ramsey, the Assistant Director of Science and Technology. The other was a heavysset woman whom Bob hadn't met before. A MediaCorp security officer stood behind them. All visitors were chaperoned inside company facilities.

Especially since the Super Bowl fiasco. A former *Baltimore Herald* journalist named Waylee Freid and her boyfriend Pelopidas Demopoulos had infiltrated a New Year's fundraiser for President Rand, recorded people's conversations, and somehow hacked their comlinks. Disguised as employees, Freid and others—probably including Demopoulos and Lee—broke into MediaCorp's broadcast center and released an embarrassing video during the Super Bowl. MediaCorp's stock and the president's approval ratings had plummeted. Rand was still pissed about it.

Assistant Director Ramsey, whose hair was starting to turn as gray as Bob's, turned and held out a hand. "Mr. Luxmore. Good to see you again."

Bob shook it, matching Ramsey's firm grip. "Likewise."

Ramsey introduced the heavysset woman as Dr. Dowling, a DHS psychiatrist who wanted to see MediaCorp's new technology in action.

"This could revolutionize prisoner interrogation," she said.

"I hear you've made a lot of progress," Ramsey added.

"Mr. Sherman and Dr. Wittinger can provide the details," Bob said.

Dr. Wittinger smiled. "We've made remarkable progress since this facility opened."

She had been developing brain-computer applications for nearly thirty years, and was probably the most talented researcher in the field. Which was why Bob paid her so much, and gave her whatever resources she needed. And on Gonâve, especially with a pliable new government in Haiti, there were no regulators or third-party meddlers to shackle her or her staff's imaginations.

Dr. Wittinger ushered them to a tinted glass window along the far wall. On the other side, a young Haitian woman sat on the sofa of a comfortably appointed suite. She stared at them.

"She can't see us," Sherman said. "It's a see-through wall screen."

Two of the room's computer consoles were manned by white-coated technicians. One, wearing augmented reality glasses and haptic gloves, waved his fingers in the air.

A box appeared on their side of the window, showing wildebeests trying to cross a river. One of the creatures was grabbed by a crocodile and pulled beneath the water.

“We are looking at subject 273,” the technician said in a West Indian accent. “One of our volunteers. She’s watching a nature show on her side of the screen.”

“Put one of the wildebeests in the room,” Dr. Wittinger said.

“Sure, one second.” The technician muttered commands into his jaw microphone.

“It’ll go straight to her visual cortex,” Dr. Wittinger told Bob and the other guests. “She’s the only one who will see it.”

Two more boxes popped up on the big window. In the upper one, labeled ‘SEND,’ a three-dimensional wildebeest appeared in the room with subject 273, not moving except for the twitch of its tail. The lower box, labeled ‘RECEIVE,’ showed the same image, only more crudely rendered.

The Haitian woman recoiled in shock, then smiled and reached a hand toward the ugly creature. Obviously she’d seen this sort of trick before. She touched the wildebeest, which didn’t react, then her hand passed through its hide. In the lower video, her hand disappeared inside it.

Dr. Wittinger turned to address Bob and the others. “The subject has a polyflex neural interface in her skull, between the cortex and the dura mater. It’s printed with AI processors and memory circuits that exchange signals directly with the brain. By placing it beneath the skull, we improve signal fidelity far above EEG-based interfaces.” She smiled. “We’ve had some big breakthroughs. First, we were able to grow special brain cells from stem cells. They’re more adaptive than prior types and connect to different parts of the cerebrum. They serve as interpreters, if you will. Second, the AI processors are truly remarkable.” She looked at Bob. “As you know, every brain is organized differently...”

Bob twirled a finger for her to stay on track.

She spoke faster. “But the AI system trains itself to the user. It’s orders of magnitude faster than anything developed before.” She pressed a finger behind her ear lobe. “The subjects have a fiber-optic jack behind their right ear, which provides the best signal, naturally. But there’s also a wi-fi antenna that runs along the neck. That’s what we’re using now with subject 273. We’re sending the wildebeest image, auto-corrected to fit in the room configuration, and the bottom image is what she’s seeing, broadcast back to us. Return transmission never seems to be as good as what the subject sees—it has to do with the statistical interpretation of neuron signals—but that’s something we’re working to boost.”

“But the user *can* send basic information,” Bob asked her, “like speech and movement intentions, that could be interpreted by the BetterWorld servers?”

“Yes. There’s a training process, but yes.”

“We’ve made a game out of it,” Director Sherman added. “And I’m sure the BetterWorld designers can improve it, come up with fun high-res adventures or combat that teach the user and AI how to work together.”

Bob didn’t mention it in front of the Homeland Security clients, but that was the designers’ job—keep the users happy and wanting more.

Ramsey pointed at the screen. “How much resolution can you simulate?”

“Plugged in,” Dr. Wittinger said, “we’re getting closer to BetterWorld quality. Better in the case of smells and tastes—and who wants to stick electrodes on their tongue or pay for a chem synthesizer that has to be refilled every week? The user has to train on the system a while, but—”

“How long is a while?” Ramsey asked.

She hesitated. “It depends on the scene complexity. We’ve observed that children acclimatize quicker than adults, so I think the key is to start people as early as possible, maybe in infancy.”

The Homeland psychiatrist, Dr. Dowling, stared at her. “Infancy?”

Bob interrupted. “Obviously this technology could revolutionize learning.” He turned to Dr. Wittinger. “As far as adults go, you’ve been improving the training time, right?” *The average American has the patience of a gnat.*

She nodded. “We have. And we can bring in more game designers.”

Still, we’ve come a long way. This technology will change everything. Bob would have the PR staff put a campaign together. No more clunky gear, especially for taste and smell. Direct exchange of thoughts all the way across the world. Immersion indistinguishable from reality. They’d have to appeal to early adopter types to be beta testers, and bring in celebrities. Maybe even some porn stars—the user could feel the whole experience.

There was a hitch, though. Skull surgery would turn people off. Bob motioned Dr. Wittinger to the other side of the room and spoke quietly, so the Homeland guests wouldn’t hear. “Any progress on an installation method that doesn’t involve surgery?”

Dr. Wittinger frowned. “I was thinking about going through the sinus, but it wouldn’t be easy, and it would still require a trained doctor.”

Not what he wanted to hear. “Work on it. We need a procedure people can do themselves. Or find a way to improve signal transmission through the skull, so you can put the interface in a hat.”

As Bob and Dr. Wittinger returned to the group, Dr. Dowling pointed at the window. “This is subject 273?”

“Yes,” Dr. Wittinger said.

“How many do you have in total?”

“Eighteen still active at the moment. Most of the subjects were for preliminary tests and we’ve let them go.” She glanced away. “And the others—there were some complications. But we’ve learned from our mistakes.”

The psychiatrist peered at Dr. Wittinger. “What sort of complications?”

Bob interrupted. “Just some failed tests from what I understand.” He addressed Ramsey, who was the more senior of the two officials. “But you can’t be afraid to make mistakes if you want to succeed.” Risk had built MediaCorp into the most innovative and influential company in human history.

“These subjects you’ve, uh, let go,” Ramsey asked Dr. Wittinger, “do they still have the implants?”

“No,” Dr. Wittinger said. “We remove them.”

Ramsey frowned at Bob and Sherman. “Even so, aren’t you afraid they’ll talk?”

Bob let Sherman answer, since he had first-hand knowledge. “They’ve all signed non-disclosure agreements,” the lab director said. “And we’re monitoring them, just in case. Not that they know much of anything.”

“The damaged cases,” Dr. Wittinger added, “are still in the compound while we monitor them and work on patches.”

Dr. Dowling opened and closed her mouth like a goldfish. “What kind of damage are we talking about?”

From what Bob had been told, complications had ranged from disorientation to seizures to persistent aphasia or loss of self-awareness. He had to deflect her again. “That’s extraneous to our DHS contract, and privacy concerns prevent us from going into details.”

Ramsey gave a half smirk, like he knew Bob was bullshitting, but otherwise didn’t act interested. He pointed at the Haitian woman behind the glass. “What about accessing memories? That’s what the grants were for. And the monitoring software.”

“I was getting to that,” Dr. Wittinger said. “We’re still working out some kinks, but yes, you’ll be able to download memories. Monitoring, that’s the easy part. Their wi-fi can transmit optical and audio signals, which we can decode at the lab. It doesn’t have to be real time; we can store up to a week on the polyflex depending on the amount of memory and the degree of sample density and compression.”

“Wouldn’t they know they’d been operated on?” Dr. Dowling asked.

Dr. Wittinger shook her head. “They’d be put under. And our cutting laser is precise enough that we don’t need to shave the head. After the opera-

tion, we put everything back the way we found it. We use a bioglue—much better than sutures or staples.”

“What about transmitting thoughts?” Ramsey asked.

“Thoughts,” she said, “are a little harder than sight or sound. Like I said before, everyone’s brain is different, so there’s a training process required, until the user and the AI can communicate with minimal error. The subject would certainly be aware of it.”

Ramsey frowned, but Sherman said, “I don’t believe backdoor thought transmission was in the scope of the grant.”

“But we’d be happy to explore additional lines of research,” Bob told Ramsey. “Why don’t you come up with another wish list and we can discuss it.”

Dr. Wittinger had the technicians carry out a series of demonstrations. They’d obviously practiced, because the Haitian woman looked almost bored as she rode a bike, then flew a plane in brain-only virtual reality.

“Go ahead and read from your book now,” one of the technicians told the subject. “Start where you left off last time.”

The woman picked up a book on her coffee table and read silently. Her internal antenna broadcast a legible, though imperfect, facsimile of the text. Not that Bob could decipher it anyway—it was in Creole.

Ramsey smiled. “Can we access her memories now?”

The technician with the augmented glasses spoke into his jaw mic loud enough for everyone in the room to hear. “I’d like you to think back to your first day here. Is there anything specific you can remember? Concentrate on it.”

A translator program repeated his words in Creole. The woman closed her eyes and sat unmoving.

The window with the subject’s wi-fi broadcast showed a woman’s hand filling out forms. The page was fuzzy except for certain questions and answers, like ‘Edikasyon: *Lekòl segondè*’ and ‘marye oswa yon sèl? *Sèl*.’

“What’s interesting,” the technician said, “is that the forms were originally in French, but she’s remembering them in Creole. She’s writing down that she completed secondary school, which is something to be proud of in Haiti. And she’s unmarried—which we require, since our subjects can’t leave the compound. She volunteered for the study, if I remember right, because we promised a university scholarship.”

“I’m impressed,” Bob told his employees when the demonstration ended. “And I’m not easily impressed.”

Ramsey nodded. “I’m impressed too. Are we ready for the next phase, then?”

“It’s one thing to work with volunteers,” Dr. Dowling added. “Prisoner interrogation is entirely different.”

“Of course,” Bob said. Homeland Security’s priorities weren’t exactly MediaCorp’s priorities, but the government had sunk a lot of money into this. They were entitled to their return. “Did you bring your mystery subject with you?”

“Not yet,” Ramsey said. “But we can put the subject on the next flight, along with our interrogation team, assuming your people are ready and have the space.”

Bob didn’t wait for his employees to reply. “They’ll be ready and they’ll make space. Do you mind if I ask who this prisoner is?”

Ramsey half-smiled. “I can’t answer that now, but I’ll fill you in when they arrive.”

2

Kiyoko

Grand Bahama Island

Blazing sunlight half-blinded Kiyoko as she exited the small jet. Squinting, she followed Nicolas, who’d insisted on going first, down the steps to the tarmac. Her legs rejoiced at the movement—the flight from São Paulo had taken a day and a half, including stops for refueling.

We’re really doing this. Trying to free my sister and take down our enemies.

Nicolas, a strong-jawed, brawny man with a buzzcut, was a combat team leader in Serviços de Segurança Globais, Brazil’s biggest private security company. Kiyoko’s now-deceased fiancé, Gabriel, had worked there as a bodyguard. Before joining SSG, Nicolas and Gabriel had also served together in the 1st Special Forces Battalion, Brazil’s primary special operations force. Alzira, who’d be arriving later, was also ex-military, and had helped Gabriel guard Kiyoko, Charles, and Pel in São Paulo.

Pel and Charles followed Kiyoko out of the jet. Pel, who was Waylee’s long-time boyfriend, was tall and olive-skinned. Charles was shorter and

coffee-skinned. Both were elite hackers, members of the inner circle of the Collective. Pel was brilliant with hardware, and Charles—even though he was only seventeen—was a legend on the Comnet.

And me? What skills do I have? Kiyoko's energy curdled and the sunlight seemed to dim. Anything she needed to know, she'd learn. Media-Corp and the Rand administration were doing everything possible to catch or kill Kiyoko and her friends. Their mercenaries had murdered her fiancé. And Charles's first lover, Adrianna.

A middle-aged black man drove up in an electric cart with a plastic awning. His white shirt had gold and black epaulets, signifying him as an official of some sort. "Hello," he said as he got out.

The pilot, a short-haired woman wearing auto-adjusting sunglasses, handed him a data pad, presumably containing the flight manifest. The official peered at the pilot's data pad, then placed a comlink against it, probably downloading the information.

He looked at Kiyoko, Nicolas, Pel, and Charles. "Are deez all dee passengers?" he asked the pilot.

"Yes."

The official turned to Kiyoko, who was closest.

"First trip abroad?" the official asked her as he flipped through her fake Brazilian passport and scanned the RFID chip. Kiyoko's new name, chosen by the forger, was Friedia Tanaka. Age 21—a year more than her actual age.

Kiyoko caught herself fidgeting. *Don't act nervous!* She spoke with a Brazilian accent, which she could fake pretty easily. "Yes, we are very excited to be here." They were supposedly friends on vacation.

"Anyteeng to declare?"

"No." She opened the outside pocket of her black leather carry bag and handed him her immigration card and customs form.

The official glanced at the forms, then smiled and stamped her passport. "Welcome to the Bahamas."

She smiled back. "Obrigado. Thank you."

Pel's research had paid off. To enter the U.S., they would have needed a visa, requiring weeks of lead time and a lot more deception. And U.S. airports were security fortresses, with biometric scanners, database verification, and trained profilers. The Bahamas, on the other hand, welcomed visitors with minimal fuss, and were a short boat ride from Florida.

The customs official stamped Nicolas's forged passport next, then turned to Charles. He broke into a sweat and started stammering his answers with an appallingly bad accent, despite all those hours of practice. The official stared, suspicion on his face.

Damn it! Kiyoko sighed, put an arm around Charles, and kissed him on the cheek.

She spoke to the official. "Gustavo is... how do you say... autistic. He gets nervous easily."

Charles stiffened at the untruth, but the official nodded and stamped his passport. He cleared Pel, then drove off.

"Why you gotta say that?" Charles asked Kiyoko, his shoulders hunched.

Kiyoko caught herself sighing. "I'll think of something else next time. Better yet, don't choke like that."

Pel and Nicolas fetched their pre-rented SUV, white with dark-tinted windows. They loaded their gear, which included duffel bags full of weapons, armor, and electronics. Kiyoko took the wheel, which was on the right side instead of the left, and Pel took shotgun.

"This was a British colony," Pel said, "so stay on the left side of the road."

Kiyoko knew that already, but didn't respond. She took a near-empty road out of the airport.

"I can't thank you enough, Nicolas," she said as she approached a big traffic circle with battered trees. Not only had Gabriel's comrade arranged the jet and taken time off work, he'd be risking his life with them.

"Forget it," Nicolas said in Brazilian-accented English. "I failed Gabriel, but I won't fail you."

From the shotgun seat, Pel said "Go halfway around and hop on the Grand Bahama Highway."

"I hope Waylee's holding up," Kiyoko said as she followed the circle.

"Me too," Pel said. "If not, it's that much more important we break her out."

"She's lucky to have such devotion," Nicolas said from behind.

Pel kept his eyes on the road. "She deserves it."

The Grand Bahama Highway was a faded two-lane road through scraggly pine forest, half the trees shattered or knocked over. After about half an hour, Kiyoko turned onto a dirt road, leaving all signs of civilization.

"From aerial photos," Pel said, "the whole island was gridded for houses. But ours is one of the only ones actually built. Too many hurricanes or not enough drinking water or maybe just bad economics."

"You said we'll have power and water, though?" she asked.

"Yeah, you'll see. Follow this road two miles, then take a right."

Kiyoko followed his directions. They arrived at a small clearing containing a vinyl-sided cottage with peeling yellow paint, a matching tool shed, and a rainwater cistern. The cottage stood on cinder blocks well above

the ground. Heavy shutters covered the windows. The roof was topped by glued-on sheets of solar cells, and a new-looking satellite dish protruded from the far end.

Their new home was hotter than the airport, with no breeze. There was nothing to see besides storm-battered pine trees and dense palmettos covered with razor-sharp teeth. Probably why the island interior was so deserted. It was the perfect staging ground—no prying eyes.

“I love it already,” Pel said as they unloaded. He was the one who’d rented the house with cryptocurrency and had it stocked with food and supplies.

“Of course you do.” Kiyoko swatted at converging clouds of mosquitoes, a lot more bothersome than the heat. “Did we bring bug spray?”

“Should be some inside.”

As instructed, the house key was in an envelope beneath the door mat. Laughable by Baltimore and São Paulo standards. Then again, what was worth stealing here?

The inside was dark and musty. Kiyoko switched on the overhead LEDs and fans. Giant cockroaches scurried for cover.

“You’d better run, you little bastards!” she warned.

Nicolas volunteered to take the sofa. That left two bedrooms in the back, each with two narrow beds and a wooden dresser. Kiyoko dumped her bags in one room, and Charles and Pel agreed to share the other.

The bed looked inviting—the plane seats didn’t recline all the way and sleeping had been nearly impossible—but they had a lot of work to do. First, they had to find out when her sister would be transferred from the federal courthouse in Richmond, Virginia—their only realistic opportunity to free her. Then they had to sneak into the U.S., past Coast Guard patrols and local police. They had to intercept the transport vehicle and extract Waylee without anyone getting killed or caught. And finally, they had to evade the huge manhunt that would follow.

And that was just for starters. The ultimate goal was to bring down MediaCorp and their allies like President Rand, make them pay for Gabriel and Adrianna’s deaths, and end their stranglehold on the world. But Waylee was a genius—she’d figure that out.

The biggest problem was that they didn’t have much time. Waylee had been found guilty on nearly every bullshit charge the Rand administration could come up with, and the sentencing phase had already begun.

Kiyoko returned to the living room, unzipped her electronics bag and, along with the others, started setting up.