

CHAPTER 18:

CHILD

The whole difference between construction and creation is exactly this: that a thing constructed can only be loved after it is constructed; but a thing created is loved before it exists.

— Charles Dickens

Riding in the black limousine towards Malibu, Sujata reflected on all that had happened from the night she deciphered the strange message from Professor Zhèng. Lieutenant Commander Mike Lee, her direct superior, was accompanying her. She smiled, looking at him. She had talked to him right after presenting her findings to General Thompson. Mike had reacted in the same way as he did in stressful situations, putting up a cool demeanor and making bad, semi-offensive jokes. Still, she enjoyed working with him for a lot of reasons. He was a professional, for whom his job, which reflected his dedication to his country, topped anything else. She suspected that his work was the reason he had never married. His witty personality calmed her the way an Explosive Ordnance Disposal specialist would defuse an activated bomb.

It had been nearly one year since Zhèng's spectacular death at the neuromimetic conference. Meanwhile, the Chinese had further entrenched within their borders. Now there were rare occasions when they sent anybody outside to interact with the rest of the world. Sujata was asked to monitor all these instances.

“You never know when some other bastard will turn into a hero,” General Kambe had told her when she was assigned this task.

She agreed. To the best of their knowledge, nobody had organized any significant resistance in China. The party, or the AI, had an iron grip over the population. Nobody had successfully established any attempt to communicate with the rest of the world systematically. Their government monitored everything. Everything had consequences. Satellite imaging showed that a large part of the population was being moved around. That had confirmed some early rumors that people were being arrested to such a large extent that concentration camps formed.

When hearing about their assignment, Mike had made fun of her. “You deserve it. You had to show off and decipher that old man’s nonsensical babbling. No good deed goes unpunished. You’ll do well to remember that you’re dragging me with you. So, I kindly ask you to deposit your genius persona somewhere in the attic and let us enjoy the rest of our lives, as short as they are, before the machines destroy the world.”

In the meantime, the US government had started yet another program to speed up the development of AIs across the nation, coordinating with other NATO members. They kept the reason for this under wraps. Most of the research institutes and businesses who were doing it didn’t know why the government, in particular, the Department of Defense (DoD), was suddenly so interested in accelerating this. The DoD had been sponsoring the development of AI for almost a century. There was always the expectation that whoever had the most powerful AI would achieve global military and economic supremacy. But this had been hypothetical until Zhèng’s message. The urgency of countering China’s success led to an unprecedented amount of tax money being poured into this research, which made it clear to Sujata that this had become the number one priority for the United States.

Still, despite all the efforts and despite the prospect of getting rich fast, so far, they were failing. Pretty much all the projects she’d visited were nowhere as powerful as the AI China supposedly had.

When did we fall behind like this? Sujata thought with a sigh. *We used to have, well, perhaps we still have, the best universities and private enterprises in the world. How come the Chinese have created such a powerful AI and we still seem to be incapable of more than dabbling in this research?*

Reeta Industries was one of their biggest disappointments. Especially the founder, the famous John Reeta.

Nothing but a pompous rich man used to get everything his way. Sujata scowled when she remembered the way he had treated her.

When she and Mike had visited them, John had been there to greet the government team. He had smelled the chance of milking the DoD, and turned the whole discussion into a marketing presentation, wrapping their mediocre piece of technology in a shiny package that made it look like the greatest thing since sliced bread. He had been so shallow that he hadn't much inquired about the purpose of this explosion in funding. Like a typical entrepreneur, he only cared about getting the money. And getting her. During their discussion, he had cornered Sujata alone in his office for a couple of minutes, in which he turned his bullshit machinery towards her, inviting her to dinner. She had felt like slapping him right there. Instead, she had remained calm and refused politely.

At the end of their chief engineer's presentation, she'd concluded that there wasn't much beyond smoke and mirrors. Sujata had looked at Mike and shaken her head a little. Mike had puckered his lips a bit longer than usual, signaling his agreement with her assessment. They had ended up not even disclosing Zhèng's message to Reeta. It would have been an unnecessary security risk. No help would come from his direction.

So now they were desperately looking around for something novel, something promising, something they could build fast, and something that might counter the MegaAI. Time was short. It was a miracle that China hadn't acted more aggressively so far. Nobody in the command chain understood why. They were grateful for whatever break they'd caught. After going

through the first tier of AI producers, they started churning through a few promising startups.

“A lot of conceited personalities, too many promises, too little value,” Mike had bitterly concluded on the plane to California.

Indeed, they’d only seen gimmicks. *And gimmicks won’t withstand the MegaAI*, she thought, bothered by their inability to make progress.

Today they were checking out CogniPrescience, which, judging by the name and by the reaction specialists had had towards its founder, was likely a dead end too. Sujata remembered how Professor Ndikumana was treated with scorn and ridicule at the last neuromimetic conference. She had found the old man gentle and knowledgeable.

When the car pulled over near the entrance and the security guard approached them, Mike rolled his eyes. “What’s with these guys and security?” he asked rhetorically. “What in the world do they think they have that is so precious?”

Sujata said nothing. Somehow, she felt more hopeful. Perhaps it was just the memory of the positive energy the professor emanated.

“Professor, the DoD representatives are here to see you,” the guard announced on his cuff.

She couldn’t hear a reply, but the man nodded shortly, saluted, and signaled to the others to let the guests go.

When they reached the somewhat pretentious logo, Mike let out a small whistle. “I don’t know what we’re doing here,” he pouted.

“Don’t be hasty with your judgment,” Sujata smiled. She could not shake her good feeling.

Ian received them in his office, beaming. Sujata loved the Victorian-style atmosphere with wooden walls and ceiling, a large grid window, and a massive door. She noticed how the professor decorated it carefully with small, multicolored statuettes arranged on shelves and on his desk. It had a decent faux-leather sofa and a few chairs. Though the wood gave it a dark

aura, the place was strangely warm. Bookshelves with a thousand books covered one wall from top to bottom. The professor was certainly erudite, and he wanted the decor to remind visitors of his heritage that was both African and British.

“Professor,” Sujata saluted while Mike just nodded.

“Lieutenants. Welcome to our headquarters! Please, sit down,” Ian pointed them to the sofa. He sat back at his desk on a huge chair. “You must be tired after the trip. Can I offer you something to eat or drink?” Ian asked. “Please don’t be formal. We cook our food here. It is delicious.”

Sujata knew Mike was hungry, but she couldn’t think about food at this point. “Thank you. We would prefer to get down to business first,” she smiled.

“Alright,” Ian nodded politely. “From the little Cybersperse chat we had a couple of days ago, I must confess I don’t understand the purpose of your visit. I’ll do my best to cooperate.”

“That’s good to know,” Mike affirmed, scrutinizing him.

“Professor, as we mentioned in our call, the DoD is looking to speed up the development of AIs. This is a matter of national security.”

“Well, I understand that, but why do you think we can help? We here at CogniPrescience are in an early phase of researching a novel approach to AI. I can’t imagine how the DoD would benefit from that.”

“Perhaps you should let us be the judge of that,” Mike said, rather abruptly, drawing a reproachful look from Sujata.

“I think what Lieutenant Commander Lee means is that we’re looking exactly for that. Something original. Something that can give us an edge.”

“An edge for what? Combat?” Ian asked, still smiling, narrowing his eyes just a little.

“Not necessarily traditional combat,” Sujata jumped in before Mike could respond. She kept it vague. “For the last century, people have understood that the nation with the most capable AI has an edge. We want to be

that nation. We want a truly intelligent AI. Much more than anything we have achieved so far.”

“How often have we looked for that?” Ian asked with a shrug. “What’s changed now?”

“Something did change,” Sujata conceded, tilting her head a little. “We cannot disclose it just yet. Suffice it to say that this time we’re ready to invest significantly more than before.”

“I think you should know from the beginning that I’m not comfortable providing the fruits of my research to the military.” Ian lifted his hands apologetically. “I’m not doing this for money.”

Mike looked at Sujata as if to say, “Great, just what we needed. Another flower-power follower.” He smiled sarcastically and asked, “If not money, what *is* your motivation? I assure you that DoD funding would be plenty to achieve whatever goals you have, provided that they align with our own.”

“We’re doing work to change the world for the better,” Ian said in a serious tone. “I’m not naïve, you know. I understand perfectly that wars are sometimes necessary. Even the greatest pacifist out there cannot stand still when someone breaks into their house and kidnaps their children. Or worse. I leave the fight to you, to people who can do it much better than I ever could.”

“We all must contribute what we can,” Mike said, this time with no trace of sarcasm. “Your part is, we hope, a crucial advancement in your field.”

“Certain weapons are dangerous,” Ian shook his head. “I signed, along with thousands of other researchers, all the official open letters asking the UN to ban the use of AI for weaponry. It looks like our pleas fell on deaf ears. I pray that the efforts of the military around the world won’t mean the end of mankind.”

“That’s why we are here,” Sujata intervened. “We may ban the AI in our military all we want. Other countries won’t. The creation of nuclear weapons requires complicated and unstable components. AI development requires just a few geniuses. To implement software, one doesn’t need a

process that can be rigorously tracked. A bunch of people can do it in a basement. I am oversimplifying it, but the point remains.”

“So, you fear that China or Russia will get ahead,” Ian concluded. “The Chinese already have their MegaAI, which seems to perform miraculously well. Perhaps you should look for a similar approach. What we do here is different.”

“What *do* you do? Can you give us a demo?” Mike seemed to lose patience again.

“Oh, we have no demo to give. I’m not looking to woo investors, I’m not preparing to go public, and I don’t want my company to be acquired. CogniPrescience does not operate on the principles of a normal startup. I just want to create an AI. My way. And I want to have control over it.”

Sujata appreciated that the man had fire in him behind the friendly and appeasing attitude.

“Why? Do you want to rule the world?” Mike asked, leaning forward.

“Quite the opposite,” Ian started laughing in his usual way. “I want to prevent others from ruling the world. For that, we need to think of AI as a *being*. A sentient, ultra-intelligent, empathic, and loving being. Not a machine that does our bidding.”

Mike’s mouth flew open. Sujata realized he must think that the old man was crazy.

“You mentioned you’re in an early phase of your ambitious project,” Sujata tried to sound interested, although she’d started to feel rather disappointed.

“Yes. But it’s going well, oh, it’s going better than I had hoped a couple of years ago,” Ian beamed. “Are you familiar with my published work?”

“I’ve read most of your papers. I can’t say that I follow everything,” Sujata admitted. “My major is in AI, and I have a cursory knowledge of the most important cognitive science findings. You seemed to have synthesized

hundreds of theories and experiments, some of them rather old. At some point, I got lost.”

Ian laughed and didn't seem offended at all. “Oh, no surprise, no surprise. You, AI specialists, always live in your world of math, machine learning, and symbolic reasoning. I can perfectly understand why. You want results. Fast. Something that can be used and sold tomorrow. We've been working here on implementing my theory for a couple of decades. We're putting together a fundamentally new cognitive architecture, one that best resembles the most relevant structure and organization of the human mind. Not, and I must stress this, not of the human brain, per se. I can't promise results fast, nor do I have a specific domain to apply this AI in. Had my company been a real commercial enterprise, somebody would have bought us or, more likely, we'd be bankrupt by now. My approach is different. I'm shooting for the long-term, real deal. I can frankly say that we only started making progress about a year ago when a brilliant young man joined our team. He took our efforts to a different level. We started by implementing the mental representation structures, then the mechanics of perception and action, and recently we've integrated domain mapping and basic emotions.”

“Emotions?” Mike asked, surprised. “I thought people experimented with this idea some twenty years ago and it went nowhere.”

“Yes. We've abandoned a lot of good research directions. That doesn't mean they were wrong.” Ian stared at them, thinking about the next step. “Alright, I can show you what we are working on,” he said, standing up. “I'm sure you will conclude that we don't have something the DoD can use. Not in the near future, anyway.”

A few minutes later, having passed through security, they descended into what Sujata believed to be a large experimental lab.

“Lieutenants, this is our LIO, Lead Intelligence Officer,” Ian smiled. “I'm joking,” he continued, lifting his arms defensively when seeing François's surprised face. “We don't have too many titles here, just an informal hierarchy. If we did, that's what I would call Doctor François DeSousa.

He is the one to blame for our long-awaited progress. I don't know if we will ultimately succeed. I can only confidently say that we are now on the right track. This is his office, which we have lately turned into our main research lab, conference room, and teaching space."

Sujata looked at François's face. Yes, he was the French researcher who was mocked at the same conference the professor had been. *Well, what do you know ... what a small world*, she thought in surprise.

"François, this is Lieutenant Sujata Hopkins and Lieutenant Commander Mike Lee, from the US Department of Defense," Ian continued.

"Hello," François answered coldly.

Sujata understood their visit annoyed him. He was probably considering it just a waste of his precious time. "Doctor," she saluted. "I can see that you're busy, so we won't take much of your time. Professor Ndikumana promised to show us your research."

François raised one brow and looked at Ian, wondering if he had lost his mind. "Alright. Whatever," he shrugged.

Mike shook his head a little.

Ian stepped further into the lab, where a black divider was hiding something. With a theatrical move, Ian pulled it to the side. "And here we have CARLA," he said with a smile. "We all refer to it as if it was a woman. Sometimes I forget her name stands for Conscious Affective Reasoning and Learning Android."

Sujata thought that *she* indeed looked like a woman. One who had a little spark in her eyes, while she turned her head to look at the professor as if she recognized him, and almost as if she were fond of him. Mike threw up his arms in frustration, no doubt thinking that he was witnessing another combination of circuits, simple software, and mechanical contrivances. Sujata was intrigued. The android moved back to her current preoccupation, which was watching what seemed to be a classic cartoon on a large screen.

The volume was very low, so she assumed they transmitted the audio portion to the android by other means. She moved closer to get a better look at the screen.

“It’s *Bambi*,” she smiled, remembering her mother’s insistence on showing her this cartoon. “Do you believe she is advanced enough to understand it?” she asked the professor.

“Certainly not,” Ian admitted. He started pacing around, gesticulating as if he were in a classroom. “She lacks too many structures that are a must for her to comprehend a cartoon. She doesn’t have any language understanding or production capabilities. That’s why, for the time being, we feed her the audio separately, to serve as general background noise, so that it’s not disruptive to us. She is like a two-month-old baby. She interacts with the surrounding environment all the time, without a clear idea of what’s going on.”

François stepped forward. “But she understands something!” he said, excited. “A lot. She can correlate many of the images with her physics engine structures. For example, when the fawn slides on ice, alarm bells go into her equilibrium processing structures. She *understands* the concept of balance because she has gone through it herself. She *emotes*. Her mind structures associated with pleasure or fear flare up when the right scene comes up. Also, at this very moment, she knows we are here, yet she directs her attention to the cartoon. These are already incredible achievements.”

“But why ... *Bambi*?” Sujata asked, genuinely curious.

“Well, we can’t read her stories yet,” Ian answered. “We certainly don’t want to overwhelm her yet with a full Cybersperse immersive experience. This classic cartoon is a very gentle creation. So much so that nowadays almost no kid wants to watch it. There’s little action, only a few evil characters, only a little drama. It shows love, children playing, and nature’s beauty. I would consider it the culmination of our efforts if she were to understand it.”

He paused, then continued his explanation. “We cannot show her any more advanced cartoons because they involve cruelty, more sophisticated hyperbole, satire, and so on. We certainly don’t want her to believe that

it's alright for Tom the cat to hit himself in the head with a sledgehammer bouncing back from a tire. And we don't want her to think that such actions have no consequences, since Tom seems to be just fine a couple of seconds after. Children are already incredibly adept at separating fiction from reality. CARLA is not there yet. She requires attention, calibration of her parameters, rewriting, and adaptation of her structures. Normal babies are born equipped with a lot of mental structures. We are trying to reproduce those in CARLA. Every minute of the day, we have about one hundred researchers monitoring what's going on in her head and tweaking her all the time. I'm amazed at how little room for change there is to keep her more or less normal. Just a tiny deviation and her mind goes off the rails."

Sujata wanted to get a better look at the android, so she gestured toward Ian and François. "May I?"

Ian invited her with a nod. She approached slowly. CARLA had a very peculiar face, not beautiful, but one that was hard to forget. Indeed, the engineers had done an impressive job. You would need to cut her open to see that you weren't dealing with a real person.

When Sujata was about two meters away, CARLA turned around suddenly, startled. They locked eyes. In that fraction of a second, Sujata understood she would always remember that moment. CARLA couldn't talk or scream, but her stare spoke volumes. It was like she'd borrowed the eyes of the deer characters in her cartoon, gazing at Sujata innocently, scared and reproachful at the same time. She lifted her hand, slowly, hesitantly, and reached for Sujata's face. Her touch was gentle and her skin unexpectedly warm. CARLA seemed fascinated by Sujata's beauty. She seemed pensive, wise, yet immature. CARLA then took Sujata's hand and dragged her to her toys with a face that Sujata could swear showed happiness.

These people are crafting a child, Sujata thought, speechless. *A beautiful child in the body of an adult.* She felt the need to caress her, too. *Are you good or are you evil? Are you going to grow up into a Mother Teresa, or an Elizabeth Báthory?* she wondered.

She looked at Mike, whose mouth was still open. He nodded gently towards her as if he were saying, “This is interesting. Not sure how we can use it, but it’s at least something original.” They finally had one project that was worth following.

“Professor,” Sujata looked at Ian and smiled, “after CARLA and I are done playing, I would like to take you up on your offer to sample some of that delicious food.”