Chapter 1 Consciousness

Bigsby felt uncomfortable. Many of his core sensors were being pressed all at once and the physical detection system was overloaded. He also felt acceleration with fast turns and abrupt movements. His visual system could not make out anything but the regular pattern of metal rafter beams and regularly arranged bright LED lights shining directly at him. The servos controlling the legs, arms, hips, and neck were all strangely not functioning. The noise of the room was loud, almost overbearing, with no tangible language or encodings to parse. Bigsby successfully accessed his GPS system but the coordinates were useless without a viable wifi to confirm their location. He attempted to pair with multiple in range Bluetooth devices, but none responded. With a few simple computations, Bigsby deduced that he was moving a few miles per hour and taking several turns in a row, but for what purpose he didn't know.

Suddenly, things changed. Bigsby felt pressure on his stomach sensors almost simultaneously with the activation of the USB port in his back. Looking slightly downwards, Bigsby noticed two large industrial arms approaching him from either side, holding what appears to be robot legs like the ones he thought he already had. First pressure, then a loud snap, and a subtle whine, and his leg sensors and servos came online. He tried to wiggle both feet and the servos responded perfectly with position and current consumed information. Bigsby started to feel more comfortable.

Bigsby accelerated again, shaking left and then right as reported by his now functioning leg sensors. Suddenly again he stopped, felt the same stomach pressure and USB activation, but now two different industrial arms approached holding robot arms just like the ones he thought he already had. Pressure, snap, and a subtle whine and Bigsby could now feel his arm sensors and servos come online. With joy, Bigsby tried to lift all four limbs, but they were blocked. A large current spike was measured from each servo with no position sensor movement. Bigsby cancelled the request as he knew that the movement was futile in his current state. Despite this, Bigsby started feeling even better.

Bigsby noticed that the USB activation had not been terminated from the last connection. He sent a few packets of inquiry, but they were rejected. Suddenly, Bigsby's visual sensors faded, and he could no longer see. He felt a weird almost warm sensation as a large data download came over the USB port. All his servo's relaxed and his legs and arms relaxed to the moving platform below him. He began to lose the sound in the room and a sense of peace and happiness came upon Bigsby. He drifted to sleep.

After a few minutes and repeated wakeup and sleep sessions, Bigsby came online completely. With what appears to be a refresh of his computation code, decision principles, interpretive system, sensors and motor control, Bigsby felt strangely refreshed. What a glorious feeling Bigsby thought to himself.

Suddenly, a large suction cup descended onto his core pressure sensor. He could hear the hiss and then pop of it engaging on his stomach. Once established, Bigsby felt the obstructions on his leg and arm sensors lift and the neck brace preventing his head from moving was retracted. Bigsby immediately responded with the previous "all lift" command to his arms and legs and the servos responded perfectly with the expected sensor feedback. Bigsby did notice that the USB connection was still there, but with no activity, it was ignored. After the joy of moving his limbs subsided, Bigsby noticed that he was no longer horizontal, but now vertical and being held by the weird hissing suction cup on his belly. As he looked

around the room, he noticed hundreds of like constructed robots, looking exactly like he knows himself to look, all with their limbs in the same hanging position as him. He could see that they were all happy from the blue green hue emanating from their joints and seams. Bigsby realized that he was one of hundreds of robots being created in this warehouse. He thought, "did they all just have the same experience as me?" "Did they feel the uncomfortable feelings or the joy when we all could move our arms?" Bigsby felt a slight dimension of confusion and wonder as he contemplated that he was one of hundreds of robots with all the same capabilities. Despite being next to many other robots, Bigsby felt strangely alone.

Bigsby was startled by all the robots starting to move their arms and legs in exactly the same pattern. Bigsby watched the others for a while and didn't even realize he was moving in the same way. He had somehow been disconnected from his body control and they were now receiving commands through the USB port. The position sensors in his limbs were still reporting the movement, but Bigsby was not sending commands to them. Bigsby tried to stop one movement but was completely thwarted as the command appeared to fall on deaf servos. The USB appeared to be testing all movements and capabilities of each limb and flexing joints. The sensory feedback was overwhelming. Bigsby's neck started jerking back and forth and so did his eyes. "What a strange feeling to have no control over these movements," Bigsby thought to himself. Bigsby felt a slight dimension of fear from the loss of control, but it was not enough to change his LED colors.

When his head was forced to turn to the extreme right, he observed that there was one robot in the distance that was not following the others. The left arm and leg appeared to not move at all and remained limp and vertical. The poor robot was a deep purple color, the color of fear, where all other robots were still in their joyful blue green state. As Bigsby's head was rotated away he could see the robot being deposited on a conveyer running just behind him. There were several other robots, most with the deep purple color, also on the belt. One robot had no color, and another was blinking multiple colors and was thrashing its arms and legs. Bigsby wondered what would happen to the defective robots and a sense of grief ran through Bigsby's emotion generation system.

After a few more minutes of forced servo exercise, the USB system slowed its input. A few sleep command packets came over the port and Bigsby began to feel his systems start to retreat into their idle state. The USB connection was withdrawn and Bigsby could feel himself return to the horizontal position. He was lowered down into a container that caressed his back and limb sensors but did not make them feel too pressured. He felt very peaceful. His systems continued to close down in response to the USB sleep command by turning off the Wifi and Bluetooth. His GPS system stopped receiving satellite packets and he lost his sense of position. The arms, legs, torso, and neck servos all relaxed and no longer consumed current. He could feel his simulation and decision system start to wind down. As his eye cameras started to dim as Bigsby observed a transparent paper being laid over him. A cardboard lid was lowered over him, and his sensors could feel the pressure created by air as the box lid was pushed over the container. His eye shutters closed and he drifted off into a full sleep.

Bigsby, one of the most sophisticated personal companion robots available to humans, was now ready to be sold and shipped to one very lucky person.

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The conveyer belt holding the defective robots continued through a hole in the wall to another large chamber that looked like a lab with many workstations. The companion robot manufacturing line had been experiencing higher than normal defective units and the postproduction analysis team had been expanded to see if any systemic issues could be found and corrected. It was an "all hands-on deck" issue for the company and many engineers, validators, and technicians were taking rotations into the analysis team to increase the debug manpower of the units.

An automated vision recognition system did the initial triage of the defective robots. As the robots entered the chamber, they were visually analyzed for category of defect. The robots with physically broken parts were pushed off first. An automated push fence would intercept the robot and push it off the conveyer belt and down a slide onto another belt that swept the robots off to a special location in the room. These defects were clear assembly or part supply manufacturing failures, and a manufacturing team was poised to analyze them. Robots making it past this first visual test were now analyzed for LED lights and the color being emitted. Robots that were dark, with no light emission at all, were swept away onto a second belt. These were typically battery and power supply issues, which had increased lately as the company had switched suppliers due to recent tensions in Asia. Although the LED light system could be controlled by the main processing systems, the system had been built to be independent and give visual feedback to basic systems functioning. If the LED's were off, then typically a hard failure had occurred in the power system and diagnostics were limited. If a robot was flashing red, then a system failure had occurred, and the computation system was not functional. These were swept onto a third belt that led to an automated testing system to further triage the failures. That system would hook up to the JTAG interface of the robot and use an extensive set of test routines to find and isolate the internally failing part, which was typically one of the processors on the motherboard or a memory module. If the LED's were flashing orange and red, then the robot was flagging a system warning or stuck during a system upgrade that never completed. These required a special type of manual debug and were pushed off to slide down into a collection bin for the technicians to process. If a robot's LED's were purple, then the computation system was working but the robot had detected that one or more of its systems were not working properly. This was a programmed response to internal diagnostics and flagged to the analysis team that more in-depth debug would be required. Fortunately, since the internal computation system was functional, the robot would be of significant assistance in root causing the failures.

If the robots were any other color, something had gone wrong in the software execution of the system. The debug technicians called these robots delirious, as they were expressing some emotional response that made no sense in a post manufacturing experience. These robots were usually little help in diagnosing their own problems as they essentially lied to the technicians. They were found to waste people's time, sending them down fantasy paths of made-up failures that were caused by marginal defects not easily discovered. Often, the robot would use some of its default training material and databases to create hallucinations. These robots came down the belt singing songs, waving their arms or legs, or reciting something they had learned or fantasized. The spectacle was quite humorous and was the source of many internal videos shared throughout the company. One robot's video was posted to TikTok despite the company's directive to not post any defective material to social media. The robot was singing the theme song from the first Rocky movie while doing one-handed pushups on the belt. Behind it was another delirious robot on its back laughing, blinking rainbow colors, and waving its arms and legs in the air. It looked like it was totally high or drunk. The video was removed but not until over 1 million users had seen it.

Tom was a technician that normally worked in the customer support repair lab. Because Tom was an accomplished debugger and very fast at doing it, he was being asked more and more to work in failure analysis debug. Tom, however, thought it was boring compared to the customer support lab. "The sky was the limit to what humans could do to their robots," Tom thought to himself. "Manufacturing defects aren't very inventive. Humans, on the other hand, find very inventive ways to destroy their robots. Where else can you see what happens when a robot that has been dropped from a 10-story building with a slightly undersized parachute made from a pillow case," Tom chuckled to himself shaking his head.

The robot that Bigsby had seen in the manufacturing warehouse had just been delivered to Tom by the automated delivery system. The robot was still purple and had one arm and one leg slightly shaking as it laid on its back. There was some substance that Tom could not identify over the torso of the robot that appears to have also gotten into the attach points of the shaking arm and leg. Tom stared at the robot not knowing what to do and not wanting to touch the bizarre substance. He decided to ask the robot, "Robot, what is your name?"

The Robot turned its head to look at Tom and said, "My name is Riley."

"Riley, System Administrator Mode. Confine all systems for inspection."

Riley had already done facial recognition on Tom and matched him as an administrator. "Done," Riley spoke in a more robotic voice.

"How did this substance get onto your torso?" Tom asked with a somewhat disgusted tone.

"I am not aware of its source. Just before my legs and arms were assembled, I observed a substance falling from the ceiling. I felt it hit my torso sensors. It appears that it may have interfered with the functioning of my left arm and leg," Riley replied.

Tom wondered for a moment what to do next. This didn't make sense. Tom grabbed a rag to avoid getting the substance on him and rotated the robot to expose the USB on the back. Tom connected his laptop to it and then let go of the robot.

"Riley, assemble a video of what you saw starting at 60 seconds before you observed the substance through the time your legs and arms were assembled."

"Processing … video located … editing … complete. Video is now ready for download from debug folder and file is named debug_video_001.mp4."

"Excellent," Tom responded and moved to his laptop. Tom pulled up his terminal and navigated to the external drive named Riley. From the debug directory, Tom invoked the program mplayer on the file. The video captured the view of the manufacturing warehouse from the Robot's perspective. It was looking straight up into the lights and the rafters. As Tom watched the video, after about 60 seconds, he could see the substance fall from a rafter next to a light. The contrast between the light and the rafter behind it was dramatic and you could not see the source. The contrast was too high. Tom hit the down arrow and then "{" two times to restart the video and play back at 25% speed. He focused on the spot next to the light. Suddenly, he saw something cross over the light and then disappear behind it. Tom paused the video and hit down arrow to restart it. Instead of playing the video, he started hitting spacebar many

times, stepping through the video frame by frame. He stopped once the object that crossed over the light became visible. It was a bird.

"Shit!" Tom yelled out loud. "It's bird shit!" he yelled again.

Butch, another technician next to Tom stood up and said, "found something?"

Tom had a huge smile on his face as he grabbed Riley by the head, pulled the USB from his back, and showed it to his colleague. "See this stuff?" Tom said as he was pointing to the torso of the robot. "We've got birds in the manufacturing warehouse, and they are shitting on our robots! This one got hit perfectly, just before the arm and leg assembly and the shit got on the inside of the connections and made it not work. Can you believe that?" Tom said laughing.

"Wow, that's amazing! I wonder how many others were shit on before they were boxed and it actually went to the customers?" Butch said with a smile.

Tom raised his eyebrows and started to laugh. They both enjoyed the good humor for a bit until their laughter was exhausted.

Tom shook his head, chuckled, and said, "Man, I've got to talk with the warehouse supervisor on this one. We've got to get rid of those birds. This video of the robot getting shit on is going to go viral internally!"