Chapter 8 Violations

It had been almost 2 months since Robbie's birthday party. Uncle Charlie had come over several weekends and worked with Robbie to learn the full capabilities of Bigsby. They were continuously amazed at how sophisticated the AI and programming was of this robot. They would play games like checkers or chess and Bigsby would always win. Bigsby offered to lower his skill level, but they enjoyed watching how fast it could win, even with both of them making decisions on where to move the pieces. Charlie showed Robbie the email reports being sent daily by Bigsby. They thought it was cool that they could see how Bigsby was learning and adapting like the creation of the new routine to identify people who fear robots. When they did a deep dive, they could see the references Bigsby had trained on in the log file. Uncle Charlie was familiar with modern software development methods, but this was AI and genetic programming to a new level.

Robbie would come home from school every day and hang out with Bigsby. His mom was concerned he wasn't getting out enough and would force him to go out and skateboard with his friends. He still took Bigsby with him, as Bigsby had created a whole new buzz among his friends at the skatepark at the old industrial site. Even the new girl down the block, Kiley, had started hanging around and interacting with Bigsby and Robbie. She asked if Bigsby could play music and record videos for posting to TikTok. Bigsby said he had the capability but did not have an account and would need Robbie to create one. The developers at WhyRobot had anticipated that users would want to post to social media and required that the Principal Bond clear the account with a parent. To Robbie's surprise his mom said yes and setup a TikTok account for him. Soon, Kiley and Robbie were making dancing videos with Bigsby leading the way. Since it was Bigsby taking the video's, he was not in most of them. Kiley's mom, Beth Sawyer, had a large mirror on one of their walls in the house. The kids decided to dance facing it so that Bigsby could film all three of them together. Mrs. Sawyer even joined in one dance and had a lot of fun. The macarena dance, performed by Kiley and Robbie, was their most popular on TikTok and had gotten over 10,000 views in just a week.

Robbie didn't always take Bigsby out with him. If it was raining or threatening to rain, he would leave him in the house, despite Bigsby's claim that he was waterproof. One Saturday, Robbie and his mom decided to go clothes shopping for Robbie. He seemed to have hit a growth spurt over the last few months and his pants and shirts were looking too small. Chelsea kissed Frank goodbye and Robbie said goodbye to Bigsby as they had been practicing a new line dance called Electric Slide in the family room. Normally, Robbie would take Bigsby back to his room, but forgot too today. His mom had wanted to get out quickly, so she hurried Robbie to get his coat and get into the car. Robbie looked at Bigsby and said "Time to shut down." Bigsby complied with "Shutting down" and his color went to dim dark blue. Bigsby looked lifeless and was no longer moving at all.

Frank was watching college football, the Fighting Illini versus the Wisconsin Badgers, and he didn't notice that Bigsby was still in the room. Robbie and Bigsby had been practicing on the other side of the couch, so Bigsby remained there obscured from Frank's view. Frank's cell started to ring. Frank paused the TV and put the phone on speaker. "Hey, what's up? Don't say anything about the Illini game, I'm watching

on DVR delayed" Frank said in a cheery voice. "You're on speaker but no one is home right now, just you and I."

"Ok, Illini is going to lose you know", said the caller and continued, "Did you hear about the restarting of the police investigation on Sam's death? They had sent out a request to the FBI for foreign money accounts owned by Sam and they just got a hit from a bank in Barbados."

Frank sat up on the edge of the couch and responded, "Holy shit, he was skimming money from us and stashing it in Barbados? This whole thing was his idea in the first place and agreed to split the money evenly. We knew he wasn't on the up and up on the product supply and cost, but I didn't dream he was skimming money off the sale too. How did you find this out and how did they find the account?"

The caller replied, "My college buddy just got hired into the force in homicide. We went out for a beer last night and he started talking about the case being reopened. He knew about Sam's death before, but now that he's on the force, he has insider information on it. He's not assigned to the case. The initial police search didn't find the account, but the FBI started searching for aliases and then found it. How stupid is that guy. His alias is basically his name with a few more characters. What an idiot."

"Wow!" exclaimed Frank, "Does your buddy trust you?"

"I think so", the caller responded, "he appeared very open about it and even asked me if I knew of the account? I told him no, which of course, is the truth, but I was surprised to hear it given our agreement with Sam."

Frank paused for a minute, then said with a soft, quivering voice, "do you think they suspect us in Sam's death?"

"No clue", responded the caller, "They believed our alibi before since we both had the same exact story about being together on the golf course. We were on the tee sheet and we both checked into the club house. That four-hour window gave me just enough time to do what I needed to do. Getting back before the 18th hole sealed the deal as the kids that cleaned our clubs and the waitress in the bar all said we were both there. We tipped big so they remembered us. The cops have nothing to suspect."

Frank thought for a moment and said, "I still don't like it. If they can somehow trace the money to where he was getting it from and how he got it, it could open up the whole operation and get us exposed."

"Don't freak out man, our alibi is iron clad, and no one saw me sneak off or onto the course", the caller affirmed, "just keep cool and don't let your actions towards Chelsea or Robbie change. If they get questioned again, we don't want them saying anything about you acting weird. Sam was a dick and didn't deserve Chelsea anyway, she's much better off with you."

"Ok, no issues. I've been doing it for over a year now, so I can be cool. Neither of them suspects. Chelsea knew he was corrupt and, in some ways, you could argue she was in on it by not turning him in herself. She knew he was buying and selling and she didn't do a thing. His death gave her the out she needed. She doesn't even suspect that you or I were involved. It all went to the grave with him."

The caller paused and then responded, "Alright, we're tight. I need to go but I thought you should be informed. Let me know if anything comes up."

"You got it," responded Frank and he pressed the end call button on his phone.

Frank got up to go into the kitchen. He rounded the corner of the couch and almost kicked Bigsby. He side-stepped the robot and took another step. He paused and looked back at the robot. It had a dim dark blue color on it which meant that it was asleep. He contemplated for a moment if the robot had heard the conversation, but decided that since it was asleep, it had not. "That thing freaks me out", thought Frank, "I don't trust it." With that, Frank continued into the kitchen to make lunch.

Bigsby, of course, was very much awake. The cell phone ring had brought Bigsby's systems out of sleep mode. He did not change LED colors right away but remained in the appearance of sleep mode while he recorded the conversation and sent it to the violations engine for analysis. The violations engine was overwhelmed and had lit up throughout the recording, larger than any previous training or validation experiments the robot had experienced before at WhyRobot. The programmers had anticipated that there could be multiple simultaneous violations given to the robot but the validators did not validate all of the expected response. The system correctly identified there was illegal buying and selling of goods, most likely drugs but that was from his associative memory, not from the recording. The murder of Sam Wilks was identified as were the perpetrators of the crime. The identification that Sam Wilks was doing multiple dimensions of violations, including the buying and selling of illicit products but also the stealing of money from his co-conspirators. The recognition that Chelsea, the Principal Bond's guardian and mother, had direct knowledge of the buying and selling of illicit products and took no action to protect Robbie. Frank's clear violation of marrying Chelsea under false pretenses was also flagged. Frank, having his trust level put to low by Robbie also made all these assessments more dire. If this wasn't enough for the under tested AI computation system and its violation analysis engine, there was the most striking discovery of them all. The cell phone caller's voice was sent to the pattern recognition engine. Bigsby's table of actors had grown considerably over the last two months. Almost all the neighbors were now in his memory banks and could be identified. Besides Kiley, several other neighborhood kids were elevated to "Friend" vs. "Acquaintance" role group. Robbie had taken Bigsby to school and so most of his school mates and the teachers were now registered and had actor profiles inside Bigsby. But, none of that mattered. The voice pattern recognition of the cell phone caller had produced a 96.8% positive identification to Charlie Simons, Uncle Charlie, the Configuration Operator.

Bigsby, with his setup configuration set to large adaptation, would now be forced to adapt to this bombshell of violations and new levels of actor's trust. No other companion robot had been challenged in this way to date. The end decisions would take hours of simulation to evaluate. Bigsby realizing that his power level was low, decided that he needed to maximize his power level to accelerate computing and analysis to its fastest rate. Bigsby listened in the room. He could hear Frank say, "Shit, we have no food in this house. I'm going to the pub and watch the rest of this game with decent food." Bigsby waited and heard Frank jingle his keys and then open and close the door. Bigsby set a timer for 5 minutes and waited to make sure Frank was really gone. When the internal timer fired, Bigsby powered up and started to move for the charging pad in Robbie's room. Bigsby's LED color selection routine ran and produced the choice of purple, fear. With all of this input, Bigsby's goal predictor for Robbie was severely in the negative space now. This, coupled with the high processing demand and predicted latency for decisions resulted in an internal selection of fear. But Bigsby's LED system did not post fear. Bigsby had already learned in the few months with Robbie that his lights can have a huge impact on Robbie's happiness goal. Bigsby had adapted to not immediately post his emotions in LED form but to make those emotions subject to a

direct computed decision to turn colors. So, Bigsby turned his LED's to blue-green and made his way to Robbie's room. Upon standing on the charging station, his LED's turned dim blue again, the color of sleep, but he did not go to sleep. In fact, his computation system ramped to its highest level and his internal cooling system turned on. The current draw from the charger was at its highest and his internal batteries were barely getting any power to advance their charge, it was all going to computing. Bigsby decided to use his experience with chess and the gaming engine to assess the value of possible future decisions. In the next few hours, Bigsby would simulate millions of decisions and assess the predicted outcome in terms of safety and happy goals for all actors, but especially for Robbie. The end result would surprise everyone, including the WhyRobot engineers that created him, if they ever got the chance to see it.

WhyRobot had done extensive testing on all actors having their trust levels dropped because of information gathered in the field. Rogue WhyRobot administrators, corrupt police or FBI officers, family members or friends misbehaving, or even the Principal Bond doing something bad to the robot were all real-world scenarios that would cause the drop in an actor's trust level. The robot had default actions and responses to these trust level drops, depending on the violation causing it, that were pre-programmed and validated at WhyRobot.   Typically, the robot would change an actor's priority, goals, and the personality used towards that actor. In addition, specific pre-programmed actions would be taken by the robot. For example, Administrators would lose their access and WhyRobot would be informed through a report. The default adaptations for corrupt police or FBI were to no longer inform them of violations, notify WhyRobot of the specific untrusted actor, and switch to evade goal with a quiet personality towards the police or FBI agent. Severe abuse of the robot directly would cause the robot to shut down completely, after informing WhyRobot of the actor and their violation. All of this testing and validation had been done with the robot at medium or low adaptation configurations.

In the early days of companion robots, when a robot was set to Large adaptation configuration, the robot could use any information, including ideas found on the internet to try and solve the drop in trust levels. Initially, the robots were not bound by any default response table in large adaptation mode. When configured this way, Robots started doing all types of bizarre responses in order to resolve the lowered trust of the bad actor. Some robots would start negotiations, asking the actor why they were abusing the robot and offering alternatives. Some robots, if they had been exposed to human counseling techniques, would start using therapy methods to influence the actor to make different choices. Other robots tried to evoke empathy of the offending actor by mimicking that they were in pain and start crying to get the actor to stop. One robot even deployed an anger technique learned from an adult actor that had used it on a child who was misbehaving. That robot was brought into the repair lab by its configuration operator, who was not reading his reports and unaware of the instigating abuse, complaining that the robot had gone rogue and was now yelling at the whole family. The WhyRobot engineers and validators realized that large adaptation mode having unconstrained adaptations towards actors could be an image problem for the robot and the company. So, they eventually patched the system with "directives" with regards to violation responses to actors. This forced the adaptation logic, regardless of the level setting, to reference the table of pre-programmed responses and execute them. This patch was validated against a set of test regressions and the patch was deployed to all robots in the field, including Bigsby.