

Things Not Seen

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Her screen was slightly unbalanced toward green. It dulled reds, making it appear as if Dr. Herrera's face was streaked with chocolate syrup. Ginnie Erickson glanced at the security robot, which squatted near her hip, cabled into her workstation. "Hold it, please." The image froze. She hit a few keystrokes, until the blood was vivid red. "Take it at half speed." Herrera's head moved forward a bit, as though he were trying to peer through his gouged eyes, and he began to slump in his chair. "Quarter speed."

The viewpoint shifted crazily until Ralph Herrera filled the screen. Diagnostics—blood pressure, pulse—scrolled under the image of the dying scientist, measurements taken by the robot as it made itself into a temporary heart-lung machine, hooked to Herrera's circulatory system and oxygenating his blood.

Too late. His brain was scrambled by the ice pick that had stabbed through his eyes. The security robot was not equipped with an EEG, or it could have registered its charge's brain-death and saved itself some trouble.

"Stop," Ginnie said. There was nothing striking left in the robot's memory until ten minutes later, when Drobisch, the security chief, arrived. She might have continued in fast scan, but Drobisch was standing behind her. She'd seen that part already. The digital recording would show his hasty arrival, shirttail untucked, gun in hand. He would bend over the corpse and say, "Shit. Damn it, Herrera, if you've cost me my job—" It did not seem politic to play forward to that point.

"So what's wrong with the stupid machine?" Drobisch asked.

"I don't know. Give me some time."

"Time? Time?" She suspected he was related to someone, somewhere. Surely there was no other reason a twit like him could hold his job.

"It's a very complicated stupid machine." She turned to the robot. "You're a complicated machine, aren't you?"

"Yes," said the robot, its pleasant voice coming from a speaker in its chest. She'd known the guy who recorded its core model vocabulary. He said it had taken a week, but the results were worth it, easy enough on the ears that she'd dated the voice's original for two months. She was only slightly miffed that in her six years of working with robots, no one had ever suggested her voice would make a good model.

"So simplify it," said Drobisch. "The stupid thing says Herrera came in, sat down, and suddenly had blood and eyeballs all over himself. It's a stupid waste of money. And it's useless to the company until we figure out what's wrong with it."

"The back of my neck is warm enough, though, thanks," she said. Drobisch stared at her. "Could you stop breathing down it for a while? You're making me itch."

"I think I'll watch."

"Then could you tell me why the company is into investigating this thing? Why don't you leave it to the cops?"

"It's company business."

"What in the world was he working on? Why did he even need a guard robot?"

"Forget that, missy. It's classified."

"It might help me know who was after him."

"That's none of your business. Your business is to figure out what's wrong with the stupid robot. Period. So do it."

Finally she ran the robot's memory forward through its entire futile attempt to keep Herrera alive. Drobish squirmed and left before the playback reached his arrival at the scene. Ginnie had the little office back to herself.

She stretched, sighed, and told the robot, "Let's take it from the top. Eleven P.M.. Friday night."

Four hours later she hadn't gotten anywhere. Interrogating the robot and examining its visual memory gave her the same result: a headache. She leaned on the desk, flexing her tired wrists.

"When did the last person leave the lab besides Herrera?"

"Eight forty-six P.M., seventeen seconds," said the robot.

"That was Jane Yonamura?" "Yes."

"No one besides Dr. Herrera was in the lab between then and when Drobisch arrived at eleven twenty-six?"

"That is correct."

"Did Herrera look nervous?" "Please contextually define 'nervous.' "

"Did he do anything unusual during that period?"

"He died."

Ginnie smiled. Literal-minded program. Others might anthropomorphize the robot, despite its resemblance to a large garbage can bristling with mechanical limbs and extrusions. She knew it was a sophisticated computer program housed in a wheeled mechanism. Real artificial intelligence was still down the road.

"Did he do anything unusual during the last period he was alone, before he died?"

"He spent 87 percent of that period in the bathroom. These percentages are in the normal range for Dr. Herrera's late-night activities since I was assigned to guard him."

"Why were you assigned to guard him?"

"That information is classified."

"What was he working on?"

"That information is classified."

Ginnie shook her head and looked at her notes. *Yonamura leaves, 8:46:17 P.M. Herrera goes to*

john, 11:08:51. H. Back, 11:15:02. H. dead, 11:15:43. Drobisch arrives, 11:26:25. It was odd that Herrera was murdered right after he got back from the bathroom, but that didn't help. Did someone sneak into the lab during the six minutes scientist and robot were away? Possible, but it didn't explain how the robot didn't see that person murder the scientist in plain sight.

Another thing she couldn't understand was how Herrera could sit still while someone jabbed an ice pick through his eyes. She flinched just thinking about it. If he'd been drugged—but she'd been told blood workups hadn't found anything.

The robot had been instructed to tell her nothing that would reveal the nature of Herrera's work, but he had done nothing confidential in the hour and a half after his assistant left: there were no holes in what it told her. The robot's memory could be edited by a programmer, but any such edit would be recorded in deeply encrypted codes.

She'd checked them. Its memories had not been touched in more than two months.

Her eyes stung. Either she was feeling sympathetic pains, or she'd been working too long.

"Off," she told the robot. She left it cabled into her computer so she could start again first thing in the morning.

George looked up from her book when Ginnie let herself in. "Long day," she commented. Ginnie grunted at her twin sister, the one named after their mother's native state. Their father was from Virginia: the family joke was that Ginnie—Virginia—was Daddy's girl, and Georgia was their mother's favorite. It was a durable enough joke that Ginnie worked with computers, like her father, and George did medical research, like her mother.

The other family joke was how lucky they were no one was from New Jersey.

"You're telling me." Ginnie hung her jacket on her side of the closet. "Hey, this is your umbrella. Keep it on your side!"

"Picky, picky. Fabulous mood you're in tonight." George was her double—wide-hipped, narrow-waisted, with too much dark curly hair to keep under perfect control. Every time Ginnie looked at her, she wanted to brush her own hair.

"You ever have some jerk leaning on you about some impossible task, and you'll be allowed to comment."

George grinned. She worked at their mother's lab, so she was always expected to put in late hours. But they'd recently finished a major project and were taking some time off. "What's up?"

"Get this. You know the guy who got killed the other day? The security robot completely flaked, didn't record the murder. I'm supposed to figure out what went wrong with it."

"Oh, now, that's interesting. Think you'll find out who killed him?"

Ginnie walked past her sister into the kitchenette. "That's 'none of my business.' I'm just supposed to find why the security robot screwed up." She took down a bowl and a box of raisin bran.

"Robots and computers. Very dull. The murder of Ralph Hen-era, that's interesting. Hey, he's a fellow CalTech alum. You should catch his murderer to avenge the glory of our alma mater. And that's not a

real dinner, you know."

Ginnie put the milk back in the refrigerator. "Tough. You cook a real dinner, I'll be glad to eat it."

"You order out for a real dinner, I'll be glad to warm it up in the microwave. So, the murder. Who offed him?"

"I don't know. Everything's very hush-hush. Drobisch—he's the security idiot, he's got to really be sweating his job—won't tell me why. Maybe he's not in on it either, I don't know. I don't know Herrera's work, I don't know his social life, I don't know if he had negatives of Drobisch in bed with his German shepherd. I just have to find the bug." She took a big spoonful of cereal. "Of course, the idea that they spent so much money for a security droid that can't even spot a murderer is probably reason enough. But then, they're hiding the robot from the cops."

"I hate it when you talk with your mouth full. That's what I'd sound like, if I didn't have any manners. It's not a pretty thought, you know."

Ginnie crunched her cereal.

"Means, motive, opportunity," George said. Ginnie noticed belatedly that the novel George was reading was a Nero Wolfe. "You must know something we can deduce from."

"Opportunity, I don't understand. Motive, I haven't a clue. Means, an ice pick right into the brains and swirled around a bit."

"Ugh. Can the ice pick be traced?"

"That's something for the cops to do. I doubt it, though. I got a pretty good look at it in the robot's visual memory. It was an ordinary Sears ice pick."

"Fingerprints?"

"Smudged palm prints, from what I hear."

"Could be his, if he tried to pull it out. What makes you think the robot didn't do it? Aren't you worried to be around the thing?"

Ginnie shook her head. "I made sure to ask about that. There was brain matter on the ice pick. It would have got on the murderer's hands. There was none on the grasping limbs the robot could have used to hold the weapon, only blood and vitreous goop from the eyes. Anyway, the angle of entry was all wrong for a killer as short as the robot. Just right for a human murderer."

George marked her place in the Nero Wolfe and put it aside. "You're not bright enough to figure out the opportunity, and the means are mundane, if ugly. We'll have to work on motive."

Ginnie poured more cereal in her bowl. "I don't have to come home for this abuse, you know. I can go back to work and get it from Drobisch."

"I'm better at it, though."

"Only because you have more practice, and perfect genes."

"Motive, motive. Did you know this guy at all from work?"

"No. He's just one of those people who comes in, works constantly, and goes home. He didn't exactly

hang out chatting in the cafeteria. He was working on something classified, they say."

"So it could be industrial sabotage." George frowned. "But why would a saboteur kill him in such a nasty way? Stabbing out his eyes. That seems so personal. Maybe symbolic. Like, oh, jealousy: 'You'll never look at another woman again!' "

"He doesn't sound like the lady-killer type," Ginnie said.

"That doesn't mean it couldn't have gone the other way around, right?"

"He's the kind of guy who spent all his time in the lab."

"So he was fooling around with someone in the lab, then. Was he married?" Ginnie shook her head. "So he's seeing someone at the lab, and she gets jealous. Maybe he isn't even fooling around on her. Maybe she's one of those crazed researchers who goes nuts after too much sleep deprivation."

"Maybe you are," Ginnie commented.

"Who's the last person who saw him alive?"

"His assistant, Jane Yonamura." "Ah-hah!"

"Oh, come on, she doesn't look the type."

"They never do," George said wisely. "What's her line of work?"

"That one I do know. Before she was assigned to Herrera, she ran the clone lab we use." Ginnie helped design roboticized diagnostic stations, translating Biolnnovation's doctors' expertise into programs that could detect increasingly fine signs of medical disorder. They went through scores of identical rabbits, mice, and monkeys, testing the devices. Until she'd been tabbed to find a bug in a robot she'd had no hand in programming, the most frustrating part of Ginnie's job had been waiting the months it could take for a mouse genetically predisposed to a heart disorder to mature into symptoms for her programs to find.

"Tell you what," George said. "Herrera went to Tech years before us, but I'll bet I know some people from there who knew him. I'll call around and get the scoop on him for you. You should talk to Yonamura. Either she's the murderer, or she knows the other woman who's the murderer, or if something on their project got him killed, she may know about that, too."

"Drobisch will never let her talk. And solving murders isn't my job."

"You're a spoilsport. I'm going to call around anyway."

Ginnie went to get more milk.

She threw the printouts aside. "Gah!"

"I beg your pardon?" said the robot.

"It was, um, an interjection," Ginnie said. "It wasn't directed at you. It was directed at this damn documentation."

The robot was silent. It knew it did not have to answer a comment made to damn documentation, she

thought.

Or to a lack of damn documentation.

Biolnnovations had only been able to obtain the non-proprietary parts of the robot's software from its designers, since for whatever reason they didn't want it known the robot had failed to prevent a murder. Ginnie had called the guy she'd dated, the one with the voice, but he had only worked on the robot's speech software. He was no help.

The software documentation the other company had supplied was terrible. She didn't think it had been tampered with to help preserve trade secrets. She'd written too much overly hasty documentation herself.

She was looking in particular for a programming kludge that might have been written in to fix a bug the earlier programmers couldn't find, what she called the Use a Bigger Hammer school of programming. She'd done it herself, though never as sleazily as the programmer who, faced with a program that unaccountably would sometimes add two and two to make five, inserted code that said, *If $2 + 2 = 5$, then $5 = 4$.*

Anything that obvious would leap out at her, but it wasn't likely to be that obvious.

She also had to look for sabotage. So far the robot appeared to work the way it was supposed to, with no signs of tampering.

If she were actually working on solving the murder, rather than trying to find an invisible bug in a Byzantine robot, that could be interesting.

She leaned back in her desk chair. It creaked. "I've been listening to George too much." The robot swiveled to focus its attention on her. "I'm going to check on something," she told it. "Don't go anywhere."

"Noted," said the robot.

"Not possible," Drobisch said. His desk was enormous, a monster of dark-stained wood and iron trim.

"She was the last living person to see the robot working. She might have noticed something that would help me."

"She didn't."

"You're not the computer expert. Let me talk to her."

"We're concerned about her safety."

So you do think Herrera got killed because of what he was working on, she thought. "Look, I just want to ask her questions about the robot's functioning. Something that might look like nothing to you, and to her, might be the clue I need."

Drobisch glowered at her.

She rose to go. "OK. Maybe I can find this glitch anyway. It probably doesn't matter. The cops will probably figure out that portable heart-lung machine you hooked to Herrera was the second one. If they guess there was a robot at the scene, they'll impound it, and it won't be my headache."

"Wait," Drobisch said. Her hand was on the doorknob. She turned. "You can talk to her. At lunch, tomorrow."

As she'd figured. If she found the bug before the cops knew about the robot, they could erase all its memory and know they could safely use it again when it was finally returned. "Thanks."

"I'll be sitting in. Maybe I can help you." The sullen tone of his voice was a warning.

Jane Yonamura was a thin woman, older than Ginnie, though it was hard to judge: maybe thirty, maybe thirty-five. She sat across from Ginnie at the cafeteria table, not meeting her eyes. Ginnie remembered that that was a characteristic of Japanese politeness. Otherwise Yonamura seemed American enough.

"I'm sorry about Dr. Herrera," Ginnie said. "Had you known him long?" Drobisch shifted in the chair beside her. You can damn well put up with politenesses, she thought. Anyone would ask that.

"We worked together for two years," Yonamura said. "I knew him as well as you know most people you work with. It's difficult to get used to his absence."

"I'm very sorry," Ginnie said. Drobisch cleared his throat. Yonamura was silent.

"Did you notice anything unusual about the robot that night?"

"I really couldn't say, Ms. Erickson. I'm not an expert on such things. Dr. Herrera understood computers, but he was a very clever man. I'm an ordinary cellular biology expert; I only deal with computers and robots to the extent I need to for my work."

"That's what my sister always says, that she hates dealing with computers." Drobisch ostentatiously looked at his watch. "But she uses them more than she thinks about. I'm sure you noticed something."

"I can't think of anything."

"Well, you were working late." "We usually did."

Just working? Ginnie wondered. Probably. They had a robot watching them for the last several weeks. "Did you have the robot assist you in any way?" The robot had been instructed not to reveal anything about Herrera and Yonamura's work to her.

"No. Well, Dr. Herrera might have asked it to time some processes, or hold an instrument. Only very simple things."

"That's good. Did it have trouble understanding any of his instructions that night?"

"No. Let me think about that. No, I really don't think so. As I said, he never asked it to do very much. I'm not even certain he talked to it that night."

Now, you'd remember what Herrera did the night he was murdered, Ginnie thought. It was only five days ago, and it had been a memorable night. "It'd be a waste to have such a state-of-the-art robot around and not have it do anything to help out, wouldn't it? I mean, I wonder what the accountants thought about OK'ing such an expensive piece of machinery. I guess you guys were doing something important."

"I suppose someone thought so," said Yonamura, impassively.

Ginnie could hear Drobisch breathing. The man breathed loud. He must have practiced being noticeable.

"Did either of you talk to the robot? Did it say anything?"

"It might have. I don't recall."

"I was going to ask if it was showing any difficulties with language, or if it stuttered, or repeated itself. You don't remember if it spoke?"

"I don't," Yonamura said.

"What about its movements? Did it seem to have any trouble navigating?"

"Not to the best of my memory. It isn't something I'd have paid attention to."

"You're not getting anywhere here, Erickson," Drobisch said. "We all have work to do."

No kidding, I'm not, Ginnie thought. Yonamura was polite, but opaque: deliberately so, she was sure. That might have to do with Drobisch's presence. Perhaps.

"Thank you anyway," she told Yonamura, who smiled slightly and accepted Ginnie's handshake.

"It's driving me crazy," she told her sister. "Three days of this, and the robot makes no more sense than ever. No—the robot makes as much sense as ever. And it's probably got a hundred man-years of software in it. I could be looking forever." She rubbed her face, yawning. "If only they weren't too paranoid to bring in a team of people to look over the thing. The best way to spot a bug is to bring in a new perspective, but I can tell Drobisch doesn't even like having one person look at it."

"You saw Yonamura?" George asked.

"Oh, yeah. Speaking of brick walls, that woman's not going to talk about anything."

"Buried passions?"

"Buried everything. I can't guess what kind of secrets she's keeping. Maybe she just has more respect for non-disclosure agreements than I do."

"Hey, if you can't tell someone who shares your genetic material, who can you tell?" George said. "I'll never tell. Let them think I'm you."

"You wouldn't pass the retina ID check they made me take when I signed all those forms."

"So I won't let them stare deeply into my eyes. They'd never check. Even if they thought about you having a twin, the world's full of idiots who think twins have the same fingerprints and retina prints." As teenagers, George and Ginnie had read too much science fiction about clones, who were nothing but high-tech twins, not only having the same fingerprints, but lockstep personalities. They hated that. "Here's your surprise bonus today for having a nosy twin." George tossed a bound document on the kitchen table.

"What's this?"

"I drove over to Tech today to see if anyone had any old gossip about Herrera. Nothing. He had a girlfriend junior year from City College, but it didn't last." Ginnie snorted. She'd never thought much of guys who had to leave campus to get girlfriends. "So I looked up his doctoral dissertation, just so it wouldn't be a complete waste of time driving to Pasadena."

"It's always a waste of time driving to Pasadena," Ginnie said automatically, picking up the binder. "Induced Heuristics and Rote Learning in Mammals"? Sounds like a page-turner."

"I still say Yonamura did him in, but if they weren't hot and heavy, and it was sabotage, this could be a clue to whatever they were working on."

"It was twelve years ago," Ginnie said. "It could have nothing at all to do with whatever he was doing for the company." She flipped through the pages. "And it's really badly written. Do they make you write dissertations this way? Thank god I didn't go for a doctorate."

"I had a look at it," George said. "There's some theoretical stuff about ways to treat people who've lost abilities due to strokes or other brain trauma. "

"Like ice picks?"

"Ick. Like, say, someone has a microstroke, and can't tie his shoelaces anymore. Herrera thinks it should be possible to zap the whole subroutine for tying shoelaces into a brain."

"How?"

"I'm going to reread it. It's pretty thick going, and I never read much neurology. Most of this paper is about white rats and bunny rabbits. He only mentions people toward the end."

"That's the interesting part, though, isn't it?" Ginnie said. She squinted at a thicket of graphs relating in some way to brain chemicals she'd never heard of. "Programming human brains. Just think how a military organization would slaver over that."

"I have," George said. "So industrial sabotage goes back on the motive list. And so does international intrigue."

"Oh, great," said Ginnie. "Now I prefer the theory about a sex-crazed research assistant stabbing his eyes out."

"Either way, poor sap. Wonder if he saw it coming."

"It could explain why Yonamura is so quiet. This might be dangerous business to know anything about."

"If it's related to what Herrera was working on for Biolnnovations," said George.

"I'm going to ask around some more. Maybe he told someone what he was working on."

"Listen," Ginnie said. She knew she couldn't stop her sister from working a puzzle through to its finish. She was intrigued herself, but she was also feeling queasy. She reached across the table and took her twin's hand. "Be careful."

George smiled and squeezed her fingers.

She was running the robot's memory through the last ten minutes before Herrera's death. The picture jiggled as the robot trundled through the hallway behind the scientist. Herrera went into the end stall of the men's room; the robot focused on the door. Someone had taped an old Gary Larson cartoon to it, so yellowed it was brown: it showed a laboratory filled with dead cats in lab coats. Curiosity, it seemed, had killed them.

Herrera came out of the stall and walked briskly out of the bathroom. He did not stop to wash his hands. Ginnie shook her head. The robot had to hurry to keep up. He stopped at the lab door, and the robot

preceded him into the room and took up its customary position in the corner opposite the door, from which it could see everything. Herrera walked into the room and sat at his terminal. She isolated the keyboard in closeup. The keys Herrera hit were *A, 6, Caps Lock, Shift, J, Y, Delete, G, H, 2, Tab*. The sequence looked nonsensical. She frowned.

That was the point the door suddenly slammed shut; the robot glanced at the source of the sound, only for an instant.

Gore was running from Herrera's eyes when it glanced back.

Someone cleared his throat behind her. "You have two days."

"Two days until what?"

"I've spoken to your department," Drobisch said. "Your supervisor agrees they're overextended in salary base. He may not be able to keep you on."

"Wait a minute."

"I've told him, of course, that since you've been on loan to the security department, we'd like to help. We might be able to squeeze out some money to move into their budget. Out of gratitude. If we were grateful."

This was nearly a subtle move. She should be impressed. "Come on. We're not talking about a payroll program. There are reams of code in this robot. You can't expect one programmer to find a bug in a week!"

"There are a lot of programmers. Biolnnovations can't be expected to employ them all." Drobisch looked smug. He turned on his heel and left.

"Damn it!"

He was setting her up to be the fall guy. Not his fault the security robot didn't work: the company employed idiot programmers who couldn't work the thing. No matter she'd hardly seen the robot before the murder. She suspected Drobisch was in a position to alter her employment records.

He was right about one thing. Southern California, which ten years ago had looked like a bottomless pool of employment for good programmers, was finally saturated with them. And even when you lived with your sister, rents were outrageous. It took both of them to afford a two-bedroom place. The cost of water alone could break her, if she went long without a job.

She might even have to move to New Jersey.

"Damn it."

"We're not going to talk about me finding a new roommate," George said firmly. "We're going to solve this mystery."

Ginnie was lying on the sofa, her arms wrapped around a cushion, thinking. "If I have to move out, Mom will want you to move back with her."

"Not a chance. I love Mom and all, but give me a break. It's nice not to have talked to her for a week, for a change."

"You haven't told her? Good. She'd just worry. Did you find out anything about Yonamura?"

"No." George bit her lip. "I'm afraid I sort of wasted today. I wish I'd known Drobisch was going to lean on you."

"Well, you didn't know."

"Yeah, but if you lose your job—I was talking to some Lloydies about Herrera, back when he lived there. You know he lived in Lloyd House, just like I did?"

"No. Small world." Ginnie had an old college friend who'd dropped out of physics and started a small import business up in Oregon. Maybe he could use a programmer to make the shipping end of it more efficient. If she could get used to living with pine trees. Or maybe she could get a job on the loading dock. She hugged the cushion to her cheek.

"They were telling me stories about his Ditch Day stack. It was pretty memorable."

On Senior Ditch Day at CalTech, the seniors set puzzles, called "stacks," for the underclassmen to solve. The underclassmen had to solve the puzzle to gain entry to the senior's room. If they didn't find a "bribe"—usually junk food—waiting for them there, they had the right to counterstack the senior's room, giving her a taste of her own medicine.

Ginnie, distracted by killer finals, had simply thrown together a quiz for her stack. When the group trying to get into her room answered some trivia questions on her computer and solved what she'd thought was a fairly knotty programming puzzle, the computer told them where they could find her room key. She'd left a keg of beer and ten pounds of chocolate in the room, and when she got back from her Ditch Day trip to Disneyland, she found nothing but candy wrappers remaining of the bribe.

. She still regretted not taking the time to come up with a finesse stack, something the underclassmen would bash their brains against all day but which would be obvious, in light of the clues, when they found out what it was.

"They got to his room and found a video monitor and a joystick outside the door," George said. "And a note that just said, 'Get the key or solve why it can't be done.'"

"Sounds like a good one," Ginnie said, interested despite herself.

"When they turned on the video monitor, it showed the interior of his room, like the camera was next to the door. It looked ordinary enough, but the floor was entirely cleared, and in the middle of it was the room key, and this little cart, with an arm in front and an antenna sticking up.

"Yeah, one of them picked up the joystick and moved it around, and the cart turned around with it. One button on the joystick raised and lowered the arm, and the other made the cart go forward or backward. The arm had a magnet on it, and there was a washer taped to the key, so the magnet could pick it up."

"Too easy. There's a catch."

"You bet. It looked like the idea was to maneuver the cart over to the door with the key, and get it to push it out under the door. But they couldn't quite get the cart to work right. It'd start toward the door, and suddenly veer off in the wrong direction. Or it would stop moving. Or the key would fall off."

"Some kind of kink programmed into the cart's movement."

"They thought of that. They plotted all the unexplained movements and looked for a pattern. Like, if you

turn it 180 degrees to the left, maybe it would go backward. Well, it did sometimes, and it didn't sometimes."

"So it had random error programmed into it, and that's why they couldn't get it to work?"

"But how do you 'prove' that? It's a finesse stack: there has to be something big and deceptively obvious they can point to, or Herrera's screwed it up. They're starting to get very annoyed, because they can see the room and they don't see a bribe in it. These are students who are seriously looking forward to skipping the counterstack and just trashing his room if they solve the stack. It looks like he expected it to be impossible to solve, and that's not fair."

"What did it turn out to be?" Ginnie asked.

"Think about it. There are three components of the puzzle they can look at: there's the remote-controlled cart, and the joystick, and the video monitor/ camera setup. They can't get to the cart, except by experimenting with the joystick and watching on the monitor." "The joystick."

"They took it apart, carefully, and looked at it. Nothing funny in the joystick that they could see."

"The monitor?"

"It was late in the day when this one bright freshman began to wonder if the monitor was showing them the whole story. Some big-shot junior guy had the joystick, but she finally talked him into handing it to her. She moved the cart all the way to the back wall, and started to make it go back and forth, against the wall, as fast as she could."

"What did that prove?"

"In the middle of the room, the cart blinked out of existence on the video monitor. She moved it back, and half of it was gone. Then it came back again."

"You've lost me."

"Remember when we were kids watching a weather report, and the reporter was wearing a green tie, and you could see Indiana right through it?"

"I—oh! It was a chroma key setup!"

"She pounded on the door and shouted 'Open up, Ralph!' and Herrera opened the door from the inside. The whole back wall of the room was draped in green, he'd painted the floor green, and he was wearing a green bodysuit and a green hood."

"Yep. She'd proved why they couldn't get the key. It was one of those old-fashioned setups that screened out greens, the kind they used when they wanted it to look like the weather guy was standing in front of a weather map or a live shot of a sunset or something."

"I suppose he could find all the equipment for that on campus," Ginnie said.

"Actually, I think he salvaged it from a station that was upgrading its technology. Just like on the weather report, where the camera saw green, the chroma key showed a video image he'd taken earlier instead, of the normal back and floor of the room. So in his green cover-up, he was invisible to the camera. As long as he stayed behind the cart, from camera view, he could mess with its movements without being detected."

"Not bad."

"There's this big lump covered with green cloth in the back of the room, and he rips it off: champagne on ice, this big pastry spread, the works. He sort of cheated by not having actually ditched on Ditch Day, but he sounds like an OK guy. It's too bad he's dead." George sighed. "He had chocolate eclairs for them. I never solved a stack that got me chocolate eclairs."

"Huh." Ginnie sat up and put the cushion down. "So there was one other factor in his stack puzzle, besides the cart, and the joystick, and the camera and monitor."

"Which is?"

"Him. Herrera."

"Good morning, Erickson," Drobisch said.

"Morning," she said, smiling.

She seemed awfully confident for someone who would be canned in eight hours, he thought. She wasn't bad-looking, but she had an attitude problem. "This is your last day, you know."

She smiled again and walked the other way down the hall. He put her out of his mind.

"Good morning, Mr. Drobisch." "Morning," he grunted. He was almost at his office when he turned around. Who was that? Red suit jacket, blue jeans, brown hair. Erickson? Hadn't he already seen her?

Drobisch hated déjà vu in the morning. He decided he needed another cup of coffee. Yonamura could not be allowed to talk to anyone. He'd spend today making sure she knew that. It was an aggravation: no wonder he was distracted.

"This is to distract it." Ginnie held up the sound synthesizer. "It has about twenty seconds of silence programmed in before it shouts bloody murder. So timing's important on this experiment."

"Got it," George said. "You want me to walk over and sit in this chair? That's it?"

"That's it. Do it as smoothly as you can. Take even steps."

"OK. Ready when you say."

"Now," said Ginnie. The robot was cabled to her workstation, on idle. She toggled it on with the joystick she'd rigged.

George walked across the room. The robot watched. She sat.

Ginnie waited a beat. Then she walked across the room, toward George. As she neared her twin, the sound synthesizer cried "Help! Burglar! Murder! Stop!" The robot swiveled toward the alarm. Ginnie toggled it back to idle.

"Let's see what we've got," she said. "You wait outside. I don't want it to see you again."

She turned the robot on again. "When did you last see me?" she asked.

"At 9:09 this morning."

"What did I do?"

"You entered this room. You walked to the northeast corner and sat down."

"How many times did I cross the room to the northeast corner this morning?"

"Once."

"Once?"

"Correct."

"Do you know what you've got, robot? You've got some let-five-equal-four code. You've got a kludge, and I know who else knew that. Maybe two people who knew that."

"Do you require a response from me?"

"No, thanks. I've already got everything from you that I need." She turned the robot back to idle and hit the codes on her keyboard that would allow her to erase its memory of the morning's experiment. They could find traces of the editing, but maybe they wouldn't bother. With any luck, the robot would be in the scrap heap tomorrow.

"You can come back in."

"Good," said George. She shut the door behind her. "All your coworkers are staring at me. I think they're wondering why you're spending your morning standing outside your office. Did you get what you needed?"

"Yes," said Ginnie. "I'm almost certain what happened. I just need to pry Drobisch loose from Yonamura long enough to talk to her."

"Oh, that sounds like fun. Remember third grade, when we'd confuse Ms. Jefferson who was who?" George picked up Ginnie's extension. "Drobisch, please." Pause. "He's not in his office? You'd better page him and tell him to come see Virginia Erickson right now. No, this will not wait. Now!" She slammed the receiver down.

"How will you hold him?"

"I'll threaten a civil suit for wrongful termination of employment. I can double talk on that for at least half an hour."

"I owe you several."

"Nineteen, now. But who's keeping track?"

Yonamura was peering into a microscope and did not look up. "Mr. Drobisch, we've nothing to talk about. I've told you everything I know."

"I don't need you to tell me everything, Dr. Yonamura."

"Ms. Erickson?" Yonamura pushed her hair back. "I don't think it's a good idea for you to be here."

"Is it bugged?"

"Bugged? Oh, you mean a microphone. No, I don't—I don't think so. I think I found it." She avoided Ginnee's eye, as she had the first time they met. "I really have nothing to tell you about your robot."

"I want to mention a couple of things to you. I want to know if I'm understanding things right. If I do, you have nothing to worry about from me."

Yonamura was silent, watching her. "I've seen Dr. Herrera's dissertation. It was about an idea called 'induced heuristics.' I don't know what you brought to the project, but I want to guess. I want to guess you can force-grow clones to early maturity."

"I don't know why you think so." "You might want to know that I've discovered a bug in the robot after all. Actually, I've discovered the programming fix that covers up a bug." Yonamura folded her hands in her lap and waited.

"I think when they were designing the robot, it had a glitch that made it think it had seen the same thing more than once. A sort of robot *deja vu*. If you rolled a ball in front of it, it might think it saw that ball roll by twice, or, worst case, it might get stuck in a loop and see nothing but that ball roll by, an infinite number of times. That would be a problem."

"I suppose it would. It's not my specialty."

"Dr. Herrera understood computers, though. And perception, and behavior. He needed all of that for the work you were doing, didn't he? You grow the clones, he works on their brains."

"Dr. Herrera's work was classified. And difficult. Even if I were at liberty to explain it to you, I wouldn't be able to."

"That's OK. I'll make a crude guess. Herrera was inventing a way to put behaviors into empty brains. Like the brains of force-grown clones. It's the only thing I can think of that explains why Herrera's still alive. Are you in contact with him? Do you know where he is?"

Yonamura leapt to her feet. "Ms. Erickson! Dr. Herrera is dead! How can you say—"

"Settle down! I'm just babbling nonsense. Not even worth repeating outside this room. Just let me finish. If you two were working on a project to turn blank-minded clones into programmed zombies, and if he wanted out—if he didn't like what he thought was going to be done with it, but he was afraid Biolnnovations or its clients would go after him if he ran—you could use the robot's little undocumented feature."

Ginnie licked her lips. Her mouth was dry. She'd tried not to think through the implications of her solution, but she couldn't avoid it now. Yonamura looked like she wanted to run.

Ginnie said, "Here's where I get really nonsensical: You've developed a way to force clones to rapid maturity. You've made a Herrera clone, all grown up but no mind to speak of. With his neurochemicals and electronics and whatever, Herrera gives it a simple program: stand on this toilet until tapped on the shoulder, leave the bathroom, walk down a hall, go into a room, sit in a chair, hit some random computer keys, wait.

"The real Herrera, dressed identically, follows immediately behind the clone, careful to walk the same way the clone was programmed to.

"Now, here's the beauty part: he knows, maybe from noticing the way it perceived little cloned,

behavior-programmed bunnies, that the robot discounts anything it believes it's identically seen, immediately before. Completely discounts it. Doesn't perceive it. That's how its programmers kludged the deja vu bug."

Yonamura sat, slowly.

"All he needs is to distract the robot long enough to stab into his clone's nearly blank brain, incidentally destroying the clone's unique retina patterns, in case anyone thought to check. If he ducks out of sight quickly enough, when the robot's first-aid functions take over, it won't have time to see him escape. While its kludge kept it from perceiving him come in."

"You can't prove any of this," Yonamura said quietly.

"They didn't put the robot on him to guard him from the competition, did they? That was a side-benefit, but they really wanted to make sure he didn't try anything funny. The robot was there to report if he did, and to intimidate him so he wouldn't try it in the first place."

"That's what we thought." Yonamura's tone was even.

Ginnie had to work to keep her own voice low. "Our advantage is that Drobisch wants to bury any evidence that might show Herrera's death was his fault. If you stay quiet, you may be OK."

"Dr. Herrera was the only person who fully understood his theories. I'm counting on them not watching me quite as closely. I'd planned to get away as soon as he had enough time to cover his tracks. We weren't counting on the fraud never being discovered. We only hoped, if they thought a competitor had killed him, that it would give him enough time."

"I hope it does. I don't want to know how much money is involved in this. I don't want to know which governments would pay for this technology. I do have one question."

"What?" asked Dr. Yonamura. "Herrera's techniques—were they only useful on blank brains? Or could they be used on your brain, or mine?" Yonamura looked Ginnie directly in the eye. She said nothing.

George was gone when Ginnie returned. It took less than half an hour to find the kludge in the robot's code, now that she knew what to look for. She made a simple deletion. Then she packed her personal effects.

"Erickson!" Drobisch thundered. He stormed through her doorway. "You are finished at this company. You are finished everywhere. Your work record shows inefficiencies that—"

"You're right, Mr. Drobisch," Ginnie said. She nodded at the security robot, which stared unmoving at the doorway, watching images of Drobisch storm in again, and again, and again. "I not only didn't find the glitch in the security robot, but the bug seems to have gotten worse. It's a mess."

"Goddamn stupid machine! I told them not to—"

"You were right. Under the circumstances, I think I should give my notice." She picked up her box of personal items and squeezed past him as he gaped at her.

Would Drobisch be more interested in burying anything that would make him look bad to his superiors than he was in following her? It was a fair bet.

Oregon or New Jersey? She wondered which one Herrera would choose. ^