

Science Fiction

Fast Times at Fairmont High

By Vernor Vinge



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Juan kept the little blue pills in an unseen corner of his bedroom. They really were tiny, the custom creation of a lab that saw no need for inert fillers, or handsome packaging. And Juan was pretty sure they were blue, except that as a matter of principle he tried not to look at them, even when he was off-line. Just one pill a week gave him the edge he needed....

* * * *

Final exam week was always chaos at Fairmont Junior High. The school's motto was "Trying hard not to become obsolete"—and the kids figured that applied to the faculty more than anyone else. This semester they got through the first morning—Ms. Wilson's math exam—without a hitch, but already in the afternoon the staff was tweaking things around: Principal Alcalde scheduled a physical assembly during what should have been student prep time.

Almost all the eighth grade was piled into the creaky wooden meeting hall. Once this place had been used for horse shows. Juan thought he could still smell something of that. Tiny windows looked out on the hills surrounding the campus. Sunlight spiked down through vents and skylights. In some ways, the room was weird even without enhancement.

Principal Alcalde marched in, looking as dire and driven as ever. He gestured to his audience, requesting visual consensus. In Juan's eyes, the room lighting mellowed and the deepest shadows disappeared.

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"Betcha the Alcalde is gonna call off the nakedness exam." Bertie Todd was grinning the way he did when someone else had a problem. "I hear there are parents with Big Objections."

"You got a bet," said Juan. "You know how Mr. Alcalde is about nakedness."

"Heh. True." Bertie's image slouched back in the chair next to Juan.

Principal Alcalde was into a long speech, about the fast-changing world and the need for Fairmont to revolutionize itself from semester to semester. At the same time they must never forget the central role of modern education which was to teach the kids how to learn, how to pose questions, how to be adaptable—all without losing their moral compass.

It was very old stuff. Juan listened with a small part of his attention; mostly, he was looking around the audience. This was a physical assembly, so almost everybody except Bertie Todd was really here. Bertie was remote from Chicago, one of the few commuter students. His parents paid a lot more for virtual enrollment, but Fairmont Schools did have a good reputation. Of the truly present—well, the fresh thirteen-year-old faces were mostly real. Mr. Alcalde's consensus imagery didn't allow cosmetics or faked clothes. And yet ... such rules could not be perfectly enforced. Juan widened his vision, allowed deviations and defacements in the view. There couldn't be too much of that or the Alcalde would have thrown a fit, but there were ghosts and graffiti floating around the room. The scaredy-cat ones flickered on-and-off in a fraction of a second, or were super-subtle perversions. But some of them—the two-headed phantom that danced behind

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the Principal's podium—lasted gloating seconds. Mr. Alcalde could probably see some of the japery, but his rule seemed to be that as long as the students didn't *appear* to see the disrespect, then he wouldn't either.

Okay, platitudes taken care of, Mr. Alcalde got down to business: "This morning, you did the math exam. Most of you have already received your grades. Ms. Wilson tells me that she's pleased with your work; the results will make only small changes in the rest of this week's schedule. Tomorrow morning will be the vocational exam." Oh yeah. Be ready to learn something dull, but learn it very, very fast. Most kids hated that, but with the little blue pills, Juan knew he could whack it. "Soon you'll begin the two concurrent exams. You'll have the rest of finals week to work on them. I'll make the details public later in this assembly. In general terms: There will be an unlimited exam, where you may use any legally available resources—"

"All *right!*" Bertie's voice came softly in Juan's ear. All across the hall similar sentiments were expressed, a kind of communal sigh.

Mr. Alcalde's dark features creased in a rare smile. "That just means we expect something extraordinarily good from you." To pass the exam, a team had to bring in three times tuition per team member. So even though they could use any help they could recruit, most students didn't have the money to buy their way to a passing grade.

"The two concurrent exams will overlap the usual testing in visual communication, language, and unaided skills. Some of your parents have asked for more concurrency, but all the

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teachers feel that when you're thirteen years old, it's better to concentrate on doing a few things well. You'll have plenty of time for jumble lore in the future. Your other concurrent exam will be—Miss Washington?”

Patsy Washington came to her feet, and Juan realized that she—like Bertie—was only present as imagery. Patsy was a San Diego student so she had no business being virtual at a physical assembly. *Hmm.* “Look,” she said. “Before you go on about these concurrent exams, I want to ask you about the naked skills test.”

Bertie gave Juan a grin. “This should be interesting.”

The Alcalde's gaze was impassive. “The ‘unaided skills’ test, Miss Washington. There is nothing whatsoever *naked* about it.”

“It might as well be, Mister.” Patsy was speaking in English now, and with none of the light mocking tone that made her a minor queen in her clique. It was her image and voice, but the words and body language were very un-Patsy. Juan probed the external network traffic. There was lots of it, but mostly simple query/response stuff, like you'd expect. A few sessions had been around for dozens of seconds; Bertie's remote was one of the two oldest. The other belonged Patsy Washington—at least it was tagged with her personal certificate. Identity hijacking was a major no-no at Fairmont, but if a parent was behind it there wasn't much the school could do. And Juan had met Patsy's father. Maybe it was just as well the Alcalde didn't have to talk to him in person. Patsy's image leaned clumsily through the chair in front of her. “In fact,” she continued, “it's worse than naked. All their

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lives, these—we—have had civilization around us. We're damned good at using that civilization. Now you theory-minded intellectuals figure it would be nice to jerk it all away and put us at risk."

"We are putting no one at risk ... Miss Washington." Mr. Alcalde was still speaking in Spanish. In fact, Spanish was the only language their principal had ever been heard to speak; the Alcalde was kind of a bizarre guy. "We at Fairmont consider unaided skills to be the ultimate fallback protection. We're not Amish here, but we believe that every human being should be able to survive in reasonable environments—without networks, even without computers."

"Next you'll be teaching rock-chipping!" said Patsy.

The Alcalde ignored the interruption. "Our graduates must be capable of doing well in outages, even in disasters. If they can't, we have not properly educated them!" He paused, glared all around the room. "But this is no survivalist school. We're not dropping you into a jungle. Your unaided skills test will be at a safe location our faculty have chosen—perhaps an Amish town, perhaps an obsolete suburb. Either way, you'll be doing good, in a safe environment. You may be surprised at the insights you get with such complete, old-fashioned simplicity."

Patsy had crossed her arms and was glaring back at the Alcalde. "That's nonsense, but okay. There's still the question. Your school brochure brags modern skills, and these concurrent exams are supposed to demonstrate that you've delivered. So how can you call an exam concurrent, if part of the time your students are stripped of all technology? Huh?"

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Mr. Alcalde stared at Patsy for a moment, his fingers tapping on the podium. Juan had the feeling that some intense discussion was going on between them. Patsy's Pa—assuming that's who it was—had gone considerably beyond the limits of acceptable behavior. Finally, the principal shook his head. "You miss-take our use of the word 'concurrent'. We don't mean that all team members work at the same time all the time, but simply that they multitask the exam in the midst of their other activities—just as people do with most real-world work nowadays." He shrugged. "In any case, you are free to skip the final examinations, and take your transcript elsewhere."

Patsy's image gave a little nod and abruptly sat down, looking very embarrassed; evidently her Pa had passed control back to her—now that he had used her image and made a fool of her. *Geez.*

Bertie looked faintly miffed, though Juan doubted this had anything to do with sympathy for Patsy.

After a moment, Mr. Alcalde continued, "Perhaps this is a good time to bring up the subject of body piercings and drugs." He gave a long look all around. It seemed to Juan that his gaze hung an instant in his direction. *Caray, he suspects about the pills!* "As you know, all forms of body piercings are forbidden at Fairmont Schools. When you're grown, you can decide for yourself—but while you are here, no piercings, not even ear- or eye-rings, are allowed. And internal piercings are grounds for immediate dismissal. Even if you are very frightened of the unaided skills test, do *not* try to fool us with implants or drugs."

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No one raised a question about this, but Juan could see the flicker of communications lasers glinting off dust in the air, muttered conversation and private imagery being exchanged. The Alcalde ignored it all. "Let me describe the second of the concurrent exams, and then you'll be free to go. We call this exam a 'local' project: You may use your own computing resources and even a local network. However, your team members must work physically together. Remote presence is not allowed. External support—contact with the global net—is not permitted."

"Damn," said Bertie, totally dipped. "Of all the artificial, unworkable, idiotic—"

"So we can't collaborate, Bertie."

"We'll see about that!" Bertie bounced to his feet and waved for recognition.

"Ah, Mr. Todd?"

"Yes, sir." Bertie's public voice was meek and agreeable. "As you know, I'm a commuter student. I have lots of friends here, people I know as well as anyone. But of course, almost none of that is face to face since I live in Chicago. How can we handle my situation? I'd really hate to be excused from this important part of the finals just because I lack a physical presence here in San Diego. I'd be happy to accept a limited link, and do my best even with that handicap."

Mr. Alcalde nodded. "There will be no need, Mr. Todd. You are at a disadvantage, and we'll take that into account. We've negotiated a collaboration with the Andersen Academy at Saint Charles. They will"—

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Andersen Academy at Saint Charles? Oh, in Illinois, a short automobile drive for Bertie. The Andersen people had long experience with team projects ... back into prehistory in fact, the twentieth century. In principle they were far superior to Fairmont, but their academy was really more like a senior high school. Their students were seventeen, eighteen years old. Poor Bertie.

Juan picked up the thread of Mr. Alcalde's speech:—"They will be happy to accomodate you." Glimmer of a smile. "In fact, I think they are very interested in learning what our better students can do."

Bertie's face twisted into a taut smile, and his image dropped back onto the chair beside Juan. He made no additional comment, not even privately to Juan....

The rest of the assembly was mostly about changes in exam content, mainly caused by the current state of outside resources—experts and technologies—that the school was importing for the nonconcurrent exams. All of it could have been done without this assembly; the Alcalde just had this thing about face-to-face meetings. Juan filed away all the announcements and changes, and concentrated on the unhappy possibility that now loomed over his week: Bertie Todd had been his best friend for almost two semesters now. Mostly he was super fun and an amazing team partner. But sometimes he'd go into a tight-lipped rage, often about things that Juan had no control over. *Like now*. If this were one of Bertie's Great Freeze Outs, he might not talk to Juan at all—for days.

* * * *

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The eighth-grade mob broke out of the assembly just before 4:00pm, way past the end of the normal class day. The kids milled about on the lawn outside the meeting hall. It was so near the end of the semester. There was warm sunlight. Summer and the new movie-game season were just a few days off. But *caray*, there were still finals to get through and everyone knew that, too. So while they joked and gossiped and goofed around, they were also reading the exam changes and doing some heavy planning.

Juan tagged along behind Bertie Todd's image as the other moved through the crowd. Bertie was dropping hints all around about the unlimited project he was planning. The communication link from Bertie to Juan was filled with cold silence, but he was being all charming toward kids who'd never helped him a tenth as much as Juan Orozco. Juan could hear part of what was going on; the other boys weren't freezing him out. They thought Juan was part of the party. And most of them were more than pleased by Bertie's interest. For no-holds-barred collaboration, Bertram Todd was the best there was at Fairmont Junior High. Bertie was claiming high-level contacts, maybe with Intel's idea farm, maybe with software co-ops in China. He had something for everyone, and a hint that they might score far more than a good grade.

Some of them even asked Juan for details. They just assumed that he was already part of Bertie's scheme for the unlimited. Juan smiled weakly, and tried to seem knowing and secretive.

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Bertie stopped at the corner of the lawn, where the junior high abutted the driveway and the elementary school. The eighth graders carefully kept off the little kids' territory; you don't mess with fifth graders.

Along the driveway, cars were pulling up for students. Down by the bikestand, others were departing on bikes and unicycles. Everyone seemed to be laughing and talking and planning.

At the corner of the lawn, Juan and Bertie were all alone for a moment. In fact, it was Juan all alone. For an instant, he considered turning off the consensus that made Bertie seem so visibly here. *Caray*, why not turn it all off: There. The sun was still bright and warm, the day still full of springtime. Bertie was gone, but there was still the other kids, mainly down by the bikestand. Of course, now the fancy towers of Fairmont School were the ordinary wood buildings of the old horse yard and the plascrete of the new school, all brown and gray against the tans and greens of the hills around.

But he hadn't bothered to down the audio link, and out of the thin air, there was Bertie's voice, finally acknowledging Juan's existence. "So, have you decided who you're gonna team with for the local project?"

The question shocked Juan into bringing back full imagery. Bertie had turned back to face him, and was grinning with good humor—a gaze that might have fooled anyone who didn't really know him. "Look, Bertie, I'm really sorry you can't be on a local team out here. Mr. Alcalde is a *mutha* for sticking you with the Andersen crowd. But—" Inspiration struck. "You could fly out *here* for the exam! See, you could

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stay at my house. We'd whack that local exam dead!" Suddenly a big problem was a great opportunity. *If I can just sell Ma on this.*

But Bertie dismissed the idea with an offhand wave. "Hey, don't worry about it. I can put up with those Andersen guys. And in the meantime, I bet I can help you with the local exam." His face took on a sly look. "You know what I got on Wilson's math exam."

"Y-yeah, an A. That's great. You got all ten questions."

Ten questions, most of them harder than the old Putnam exam problems had ever been. And in Ms. Wilson's exam, you weren't allowed to collaborate, or search beyond the classroom. Juan had gotten a C+, knocking down four of the questions. The little blue pills didn't help much with pure math, but it was kind of neat how all Ms. Wilson's talk about heuristics and symbol software finally paid off. Those problems would have stumped some of the smartest twentieth-century students, but with the right kind of practice and good software even an ordinary kid like Juan Orozco had a good chance of solving them. Two Fairmont students had cracked all ten problems.

Bertie's grin broadened, a morph that stretched his face into a cartoonish leer. Juan knew that Bertie Todd was a dud at abstract problem solving. It was in getting the right answers out of *other* people that he was a star. "... Oh. You slipped out of isolation." That wouldn't be hard to do, considering that Bertie was already coming in from outside.

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"I would never say that, Juan my boy. But if I did, and I didn't get caught ... wouldn't that just prove that all this 'isolated skills' stuff is academic crap?"

"I-I guess," said Juan. In some ways, Bertie had unusual notions about right and wrong. "But it would be more fun if you could just come out here to San Diego."

Bertie's smile faded a fraction; the Great Freeze Out could be reinstated in an instant.

Juan shrugged, and tried to pretend that his invitation had never been made. "Okay, but can I still be on your unlimited team?"

"Ah, let's see how things work out. We've got at least twelve hours before the unlimited team selections have to be final, right? I think it's more important that ... you get yourself a good start on the local team exercise."

Juan should have seen it coming. Bertie was Mister Quid Pro Quo, only sometimes it took a while to figure out what he was demanding. "So who you do you think I should be matching up with?" Hopefully, someone dumb enough that they wouldn't guess Juan's special edge. "The Rackhams are good, and we have complementary skills."

Bertie looked judicious. "Don and Brad are okay, but you've read the grading spec. Part of your score in the local test depends on face-to-face cooperation with someone really different." He made as though he was looking across the campus lawn.

Juan turned to follow his gaze. There was some kind of soccer variant being played beyond the assembly hall—senior high students who wouldn't have finals for another two

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weeks. There were still a few clumps of junior high kids, probably planning for the locals. None of them were people Juan knew well. "Look over by the main entrance," said Bertie. "I'm thinking you should break out of narrow thinking. I'm thinking you should ask Miriam Gu."

Ay caray! "Gu?" Miss Stuckup Perfection.

"Yes, c'mon. See, she's already noticed you."

"But—" In fact, Gu and her friends were looking in their direction.

"Look, Juan, I've collaborated with all sorts—from Intel engineers in geriatric homes to full-time members of Pratchett belief circles. If I can do that, you—"

"But that's all virtual. I can't worked face to face with—"

Bertie was already urging him across the lawn. "View it as a test of whether you belong on my unlimited team. Miri Gu doesn't have your, ah, quickness with interfaces," he looked significantly at Juan. "But I've been watching her. She max'd Ms. Wilson's exam and I don't think she cheated to do it. She's a whiz at languages. Yes, she's just as much of a snob as you think. Heh, even her friends don't really like her. But she has no special reason to be hostile, Juan. After all, you're no boyo. You're a 'well-socialized, career-oriented student', just the sort she knows she should like. And see, she's walking this way."

True enough, though Gu and company were walking even more slowly than Juan. "Yeah, and she's not happy about it either. What's going on?"

"Heh. See that little video-geek behind her? She dared Miri Gu to ask you."

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Juan was guessing now: "And you put her up to that, didn't you?"

"Sure. But Annette—the video-geek—doesn't know it was me. She and I collaborate a lot, but she thinks I'm some old lady in Armonk.... Annette likes to gossip a lot about us kids, and my 'little old lady' character plays along." Bertie's voice went high-pitched and quavery: "'Oh, that sweet Orozco boy, I do think your friend Miriam would like him so.'"

Geez, Bertie!

They walked toward each other, step by painful step, until they were almost in arms' reach. Juan had turned off all imagery for a moment. Shed of fantasy, they were pretty ordinary-looking kids: Annette the video-geek was short and pimply-faced, with hair that hadn't seen a comb so far this month. Miriam Gu was about three inches taller than Juan. Too tall. Her skin was as dark as Juan's, but with a golden undertone. Close-cut black hair framed a wide face and very symmetrical features. She wore an expensive, Epiphany-brand blouse. The high-rate laser ports were perfectly hidden in the embroidery. Rich kids had clothes like this, usually with broad gaming stripes. This blouse had no gaming stripes; it was light and simple and probably had more computing power than all the clothes Juan owned. You had to be sharp to wear a shirt like this properly.

Just now, Miri looked as though she was tasting something bad. *You don't like what you see either, huh?* But Miri got in the first word: "Juan Orozco. People say you're a clever kid, quick with interfaces." She paused and gave a little shrug. "So, wanna collaborate on the local exam?"

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Bertie pulled a monstrous face at her, and Juan realized that Bertie was sending only to him. "Okay," said Bertie, "just be nice, Juan. Say how you were thinking she and you would make a team with grade points right from the start."

The words caught in Juan's throat. Miriam Gu was just too much. "Maybe," he replied to her. "Depends on what you can bring to it. Talents? Ideas?"

Her eyes narrowed. "I have both. In particular, my project concept is a killer. It really could make Fairmont Schools 'the rose of North County'." That was the school board's phrase. The Alcalde and the board wanted these local projects to show that Fairmont was a good neighbor, not like some of the schools in Downtown and El Cajon.

Juan shrugged. "Well, um, that's good. We'd be the kind of high-contrast team the Alcalde likes." *I really don't want to do this.* "Let's talk about it more some time."

Annette the video-geek put in: "That won't do at all! You need to team up soonest!" She flickered through various pop-culture images as she spoke, finally settled on the heroine student from Spielberg/Rowling. She grabbed the background imagery at the same time, and Fairmont Schools was transformed into a fairytale castle. It was the same set they had used at last fall's Hallowe'en pageant. Most of the parents had been enchanted, though as far as the kids were concerned, Fairmont Schools failed the fantasy test in one big way: Here in real-life Southern California, the muggles ran the show.

Miriam turned to glare at her friend, now a brown-haired little English witch. "Will you shut *down*, Annette!" Then back

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to Juan: "But she's right, Orozco. We gotta decide tonight. How about this: You come by my place at 6pm tonight and we talk."

Bertie was smiling with smug satisfaction.

"Well, yuh," said Juan. "But ... in person?"

"Of course. This *is* a local-team project."

"Yeah, okay then. I'll come over." *There must be some way out of this.* What was Bertie up to?

She took a step forward and held out her hand. "Shake."

He reached out and shook it. The little electric shock was surely his imagination, but the sudden burst of information was not: two emphatic sentences sparkling across his vision.

Miriam Gu and her friends turned away, and walked back along the driveway. There was the sound of muffled giggling. He watched them for a moment. The video-geek was going full-tilt, picture and sound from a million old movies and news stories. Annette could retrieve and arrange video archives so easily that imaging came as naturally to her as speech. Annette was a type of genius. *Or maybe there are other flavors of little blue pills.*

Dumboso. Juan turned away from them and started toward the bikestand.

"So what did Miri Gu tell you?" *when she shook hands.* Bertie's tone was casual.

How could he answer that question without getting Bertie dipped all over again? "It's strange. She said if she and I team, she doesn't want anyone remote participating."

"Sure, it *is* a local exam. Just show me the message."

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"That's the strange part. She guessed that you were still hanging around. She said, in particular, if I show you the message or let you participate, she'll find out and she'll drop the exam, even if it means getting an F." And in fact, that was the entire content of the message. It had a kind of nonnegotiable flavor that Juan envied.

They walked in silence the rest of the way to Juan's bicycle. Bertie's face was drawn down disapprovingly. Not a good sign. Juan hopped on his bike and pedaled off on New Pala, up over the ridge, and onto the long downslope toward home. Bertie's image conjured up a flying carpet, clambered aboard and ghosted along beside him. It was nicely done, the shadow following perfectly along over the gravel of the road shoulder. Of course, Bertie's faerie overlay blocked a good bit of Juan's visual field, including the most natural line of sight to see real traffic. Why couldn't he float along on Juan's other shoulder, or just be a voice? Juan shifted the image toward transparency and hoped Bertie would not guess at the change.

"C'mon, Bertie. I did what you asked. Let's talk about the unlimited exam. I'm sure I can be a help with that." *If you'll just let me on the team.*

Bertie was silent a second longer, considering. Then he nodded and gave an easy laugh. "Sure, Juan. We can use you on the unlimited team. You'll be a big help."

Suddenly the afternoon was a happy place.

They coasted down the steepening roadway. The wind that blew through Juan's hair and over his arms was something that was impossible to do artificially, at least without gaming

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stripes. The whole of the valley was spread out before him now, hazy in the bright sun. It was almost two miles to the next rise, the run up to Fallbrook. And he was on Bertie's unlimited team. "So what's our unlimited project going to be, Bertie?"

"Heh. How do you like my flying carpet, Juan?" He flew a lazy loop around Juan. "What really makes it possible?"

Juan squinted at him. "My contact lenses? Smart clothes?" Certainly the lense displays would be useless without a wearable computer to do the graphics.

"That's just the final output device. But how does my imaging get to you almost wherever you are?" He looked expectantly at Juan.

C'mon, Bertie! But aloud, Juan said: "Okay, that's the worldwide network."

"Yeah, you're essentially right, though the long-haul networks have been around since forever. What gives us flexibility are the network nodes that are scattered all through the environment. See, look around you!" Bertie must have pinged on the sites nearest Juan: There were suddenly dozens of virtual gleams, in the rocks by the road, in the cars as they passed closest to him, on Juan's own clothing.

Bertie gestured again, and the hills were alive with thousands of gleams, nodes that were two or three forwarding hops away. "Okay, Bertie! Yes, the local nets are important."

But Bertie was on a roll. "Darn right they are. Thumb-sized gadgets with very-low power wireless, just enough to establish location—and then even lower power shortrange

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lasers, steered exactly on to the targeted receivers. Nowadays, it's all so slick that unless you look close—or have a network sniffer—you almost can't even see that it's going on. How many free-standing nodes do you think there are in an improved part of town, Juan?"

That sort of question had a concrete answer. "Well, right now, the front lawn of Fairmont schools has ... 247 loose ones."

"Right," said Bertie. "And what's the most expensive thing about that?"

Juan laughed. "Cleaning up the network trash, of course!" The gadgets broke, or wore out, or they didn't get enough light to keep their batteries going. They were cheap; setting out new ones was easy. But if that's all you did, after a few months you'd have metallic garbage—hard, ugly, and generally toxic—all over the place.

Juan abruptly stopped laughing "Wow, Bertie. That's the project? Bio-degradable network nodes? That's off-scale!"

"Yup! Any progress toward organic nodes would be worth an A. And we might luck out. I'm plugged into all the right groups. Kistler at MIT, he doesn't know it, but one of his graduate students is actually a committee—and I'm on the committee." The Kistler people were cutting edge in organic substitution research, but just now they were stalled. The other relevant pieces involved idea markets in India, and some Siberian guys who hardly talked to anyone.

Juan thought a moment. "Hey, Bertie, I bet that literature survey I did for you last month might really help on this!" Bertie looked blank. "You remember, all my analysis on

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electron transfer during organic decay." It had been just a silly puzzle Bertie proposed, but it had given Juan a low-stress way to try out his new abilities.

"Yes!" said Bertie, slapping his forehead. "Of course! It's not directly related, but it might give the other guys some ideas."

Talking over the details took them through the bottom of the valley, past the newer subdivisions and then down the offramp that led to the old casinos. Bertie and his flying carpet flickered for a second, and then the overlay vanished as his friend lost the battle to find a handoff link.

"Dunno why you have to live in an unimproved part of town," Bertie grumbled in his ear.

Juan shrugged. "The neighborhood has fixed lasers and wireless." Actually, it was kind of nice to lose the flying carpet. He let his bike's recycler boost him up the little hill and then off into Las Mesitas. "So how are we going to work the concurrency on the unlimited test?"

"Easy. I'll chat up the Siberians in a couple of hours—then shuffle that across to my other groups. I don't know how fast things will break; it may be just you and me on the Fairmont side. Synch up with me after you get done with Miri Gu tonight, and we'll see about using your 'magical memory'."

Juan frowned and pedaled fast along white sidewalks and turn-of-the-century condos. His part of town was old enough that it looked glitzy even without virtual enhancements.

Bertie seemed to notice his lack of response. "So is there a problem?"

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Yes! He didn't like Bertie's unsubtle reference to what the little blue pills did for him. But that was just Bertie's way. In fact, today was all Bertie's way, both the good and the bad of it. "It's just that I'm a little worried about the local test. I know Miri gets good grades, and you say she is smart, but does she really have any traction?" What he really wanted to ask was why Bertie had pushed him into this, but he knew that any sort of direct question along those lines might provoke a Freeze Out.

"Don't worry, Juan. She'd do good work on any team. I've been watching her."

That last was news to Juan. Aloud he said, "I know she has a stupid brother over in senior high."

"Heh! William the Goofus? He *is* a dud, but he's not really her brother, either. No, Miri Gu is smart and tough. Did you know she grew up at Asilomar?"

"In a detention camp?"

"Yup. Well, she was only a baby. But her parents knew just a bit too much."

That had happened to lots of Chinese-Americans during the war, the ones who knew the most about military technologies. But it was also ancient history. Bertie was being more shocking than informative.

"Well, okay." No point in pushing. *At least, Bertie let me on his unlimited team.*

Almost home. Juan coasted down a short street and up his driveway, ducking under the creaking garage door that was just opening for him. "I'll get over to Miri's this evening and start the local team stuff while you're in East Asia."

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"Fine. Fine," said Bertie.

Juan leaned his bike against the family junk, and walked to the back of the garage. He stopped at the door to the kitchen. Bertie had gotten every single thing he had wanted. Maybe not. *I bet he still plans on messing with my local exam.* "But one thing. Miri's handshake—she was *real* definite, Bertie. She doesn't want you coming along, even passively. Okay?"

"Sure. Fine. I'm off to Asia. Ta!" Bertie's voice ended with an exaggerated *click*.

* * * *

Juan's father was home, of course. Luis Orozco was puttering around the kitchen. He gave his son a vague wave as the boy came in the room. The house had a good internal network, fed from a fixed station in the roof. Juan ignored the fantasy images almost automatically. He had no special interest in knowing what Pa was seeing, or where he thought he was.

Juan eeled past his father, into the living room. Pa was okay. Luis Orozco's own father had been an illegal back in the 1980s. Grandpa had lived in North County, but in the cardboard shacks and dirt tunnels that had hid amid the canyons in those days. The Orozco grandparents had worked hard for their only son, and Luis Orozco had worked hard to learn to be a software engineer. Sometimes, when he came down to earth, Pa would laugh and say he was one of the world's greatest experts in Regna 5. *And maybe for a year or two that had been an employable skill.* So three years of education had been spent for a couple years of income. That

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sort of thing had happened to a lot of people; Pa was one of those who just gave up because of it.

"Ma, can you talk?" Part of the wall and ceiling went transparent. Isabel Orozco was at work, upstairs. She looked down at him curiously.

"Hey, Juan! I thought you were going to be at finals until very late."

Juan bounced up the stairs, talking all the while. "Yes. I have a lot to do."

"Ah, so you'll be working from here."

Juan came into her work room and gave her a quick hug. "No, I was just gonna get supper and then visit the student I'm doing the local project with."

She was looking right at him now, and he could tell he had her full attention. "I just saw about the local exam; it seems like a great idea." Ma thought it was so important to get down on the real ground. When Juan was younger, she always dragged him along when she went on her field trips around the county.

"Oh, yes," said Juan. "We'll learn a lot."

Her look sharpened. "And Bertram is not in this, correct?"

"Um. No, Ma." No need to mention the unlimited exam.

"He's not here in the house, is he?"

"*Ma!* Of course not." Juan denied all snoop access to his friends when he was in the house. Mother knew that. "When he's here, you see him, just like when my other friends visit."

"Okay." She looked a little embarrassed, but at least she didn't repeat her opinion that "little Bertie is too slippery by half". Her attention drifted for a moment, and her fingers

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tapped a quick tattoo on the table top. He could see that she was off in Borrego Springs, shepherding some cinema people from LA.

"Anyway, I was wondering if I could take a car tonight. My team mate lives up in Fallbrook."

"Just a second." She finished the job she was working on. "Okay, who is your team-mate?"

"A really good student." He showed her.

Ma grinned uncertainly, a little surprised. "Good for you.... Yes, she is an excellent student, strong where you are weak—and vice versa, of course." She paused, checking out the Gu's. "They are a private sort of family, but that's okay."

"And it's a safe part of town."

She chuckled. "Yes, *very* safe." She respected the school rules and didn't ask about the team project. That was just as well, since Juan still had no idea what Miri Gu was planning.

"But you stay out of Camp Pendleton, hear me?"

"Yes, ma'am."

"Okay, you're cleared to go as soon as you have supper. I've got some big-money customers running, so I can't take a break just now. Go on downstairs and get your father and yourself something to eat. And learn something from this local project, huh? There are many careers you can have without knowing airy-fairy nonsense."

"Yes, ma'am." He grinned and patted her shoulder. Then he was running down the stairs. After Pa's programming career had crashed, Mother had worked harder and harder at her 411 information services. By now, she knew San Diego County and its data as well as anyone in the world. Most of

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her jobs were just a few seconds or a few minutes long, guiding people, answering the hard questions. Some jobs—like the *Migración* historical stuff—were ongoing. Ma made a big point that her work was really hundreds of little careers, and that almost none of them depended on high-tech fads. Juan could do much worse; that was her message, both spoken and unspoken.

And looking at Pa across the kitchen table, Juan understood the alternative that his mother had in mind; Juan had understood that since he was six years old. Luis Orozco ate in the absent-minded way of a truly hard worker, but the images that floated around the room were just passive soaps. Later in the night he might spend money on active cinema, but even that would be nothing with traction. Pa was always in the past or on another world. So Ma was afraid that Juan would end up the same way. *But I won't. Whatever the best is, I'll learn it, and learn it in days not years. And when that best is suddenly obsolete, I'll learn whatever new thing gets thrown at me.*

Ma worked hard and she was a wonderful person, but her 411 business was ... such a *dead end*. Maybe God was kind to her that she never realized this. Certainly Juan could never break her heart by telling her such a thing. But the local world sucked. San Diego County, despite all its history and industry and universities, was just a microscopic speck compared to the world of people and ideas that swirled around them every minute. Once upon a time, Juan's father had wanted to be part of that wider world, but he hadn't been fast enough or adaptable enough. *It will be different for me.* The little blue

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pills would the difference. The price might be high; sometimes Juan's mind went so blank he couldn't remember his own name. It was a kind of seizure, but in a moment or two it always went away. Always. So far. With custom street drugs you could never be absolutely sure of such things.

Juan had one jaw-clenched resolve: *I will be adaptable*. He would not fail as his father had failed.

* * * *

Juan had the car drop him off a couple of blocks short of the Gu's house. He told himself he did this so he could get a feel for the neighborhood; after all, it was not a very public place. But that wasn't the real reason. In fact, the drive had been just too quick. He wasn't ready to face his local teammate.

West Fallbrook wasn't super-wealthy, but it was richer and more modern than Las Mesitas. Most of its money came from the fact that it was right next to Camp Pendleton's east entrance. Juan walked through the late afternoon light, looking in all directions. There were a few people out—a jogger, some little kids playing an inscrutable game.

With all enhancements turned off, the houses were low and stony-looking, set well back from the street. Some of the yards were beautifully kept, succulents and dwarf pines arranged like large-scale bonsai. Others were workaday neat, with shade trees and lawns that were raked gravel or auto-mowed drygrass.

Juan turned on consensus imagery. No surprise, the street was heavily prepped. The augmented landscape was pretty, in an understated way: the afternoon sunlight sparkled off

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fountains and lush grass lawns. Now the low, stony houses were all windows and airy patios, some places in bright sunlight, others half-hidden in shadows. But there were no public sensors. There was no advertising and no graffiti. The neighborhood was so perfectly consistent, a single huge work of art. Juan felt a little shiver. In most parts of San Diego, you could find homeowners who'd opt out of the community image—or else demand to be included, but in some grotesque contradiction of their neighbors. West Fallbrook had tighter control than even most condo communities. You had the feeling that some single interest was watching over everything here, ready to act against intruders. In fact, that single interest went by the initials USMC.

Above him, his guide arrow had brightened. Now it turned onto a side street and swooped to the third house on the right. *Caray*. He wanted to slow down, maybe walk around the block. *I haven't even figured out how to talk to her parents*. Chinese-American grownups were an odd lot, especially the ones who had been Detained. When they were released, some of them had left the USA, gone to Mexico or Canada or Europe. Most of the others just went back to their lives—even to government jobs—but with varying degrees of bitterness. And some had helped finish the war, and made the government look very foolish in the process.

He walked up the Gu's driveway, at the same time snooping one last time for information on Miri's family.... So, if William the Goofus wasn't really Miri's brother, who was he? William had never attracted that much attention; there were no ready-made rumors. And Fairmont's security on student

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records was pretty strong. Juan poked around, found some good public camera data. Given a few minutes he'd have William all figured out—

But now he was standing at the Gu's front door.

* * * *

Miriam Gu was at the entrance. For a moment Juan thought she was going to complain that he was late, but she just waved him inwards.

Past the doorway, the street imagery cut off abruptly. They were standing in a narrow hallway with closed doors at both ends. Miri paused at the inner door, watching him.

There were little popping noises, and Juan felt something burn his ankle. "Hey, don't fry my gear!" He had other clothes, but the Orozco family wasn't rich enough to waste them.

Miri stared at him. "You didn't know?"

"Know what?"

"That's not *your* equipment I trashed; I was very careful. You were carrying hitchhikers." She opened the inner door and her gestures were suddenly polite and gracious. There must be grownups watching.

As he followed her down the hall, Juan rebooted his wearable. The walls became prettier, covered with silk hangings. He saw he had visitor privileges in the Gu's house system, but he couldn't find any other communications paths out of the building. All his equipment was working fine, including the little extras like 360 peripheral vision and good hearing. So what about those popping sounds, the heat? That was somebody *else's* equipment. Juan had been walking

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round like a fool with a KICK ME sign on his back. In fact, it was worse than that. He remembered assuring his mother that she would see any friends he brought to the house. Somebody had made that a lie. Fairmont had its share of unfunny jokesters, but this was gross. Who would do such a thing ... yeah, who indeed.

Juan stepped from the hallway into a high-ceilinged living room. Standing by a real fireplace was a chunky Asian with buzzcut hair. Juan recognized the face from one of the few pictures he had of the guy. This was William Gu: Miriam's father, not the Goofus. Apparently the two had the same first name.

Miriam danced ahead of him. She was smiling now. "Bill, I'd like you to meet Juan Orozco. Juan and I are doing the local project together. Juan, this is my father."

Bill? Juan couldn't imagine addressing his own Pa by his first name. These people were strange.

"Pleased to meet you, Juan." Gu's handshake was firm, his expression mild and unreadable. "Are you enjoying the final exams so far?"

Enjoying?? "Yes, sir."

Miri had already turned away. "Alice? Do you have a minute? I'd like you to meet—"

A woman's voice: "Yes, Dear. Just a moment." Not more than two seconds passed, and a lady with a pleasant round face stepped into the room. Juan recognized her, too ... except for the clothes: This evening, Alice Gu wore the uniform of a timeshare Lieutenant Colonel in the United State

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Marines. As Miri made the introductions, Juan noticed Mr. Gu's fingers tapping on his belt.

"Oops. Sorry!" Alice Gu's Marine Corps uniform was abruptly replaced by a business suit. "Oh, dear." And the business suit morphed into the matronly dress that Juan remembered from the photos. When she shook his hand, she looked entirely innocent and motherly. "I hear that you and Miriam have a very interesting local project."

"I hope so." *Mainly I hope Miriam will get around to telling me what it is.* But he no longer doubted that Miriam Gu had traction.

"We'd really like to know more about it."

Miri pulled a face. "Bill! You know we're not supposed to talk about it. Besides, if it goes right we'll be all done with it tonight."

Huh?

But Mr. Gu was looking at Juan. "I know the school rules. I wouldn't dream of breaking them." Almost a smile. "But I think as parents we should at least know where you plan to be physically. If I understand the local exam, you can't do it remotely."

"Yes, sir," said Juan. "That is true. We—"

Miriam picked up smoothly where Juan had run out of words. "We're just going down to Torrey Pines Park."

Col. Gu tapped at her belt, and was quiet for a moment: "Well, that looks safe."

Mr. Gu nodded. "But you're supposed to do the local project without outside connectivity—"

"Except if an emergency comes up."

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Mr. Gu just tapped his fingers thoughtfully. Juan turned off all the house imagery, and zoomed in on Miriam's pa. The guy was dressed casually, but with better clothes sense than most grownups had. In the house enhancement, he looked soft and sort of heavy. In the plain view, he just looked hard and solid. Come to think of it, the edge of his hand had felt calloused, just like in the movies.

Col. Gu glanced at her husband, nodded slightly at him. She turned back to Juan and Miri. "I think it will be okay," she said. "But we do ask a couple things of you."

"Nothing against the exam rules," said Miri.

"I don't think so. First, since the park has no infrastructure and doesn't allow visitors to put up camping networks, please take some of the old standalone gear we have in the basement."

"Hey, that's great, Alice! I was going to ask you about that."

Juan could hear someone coming down the stairs behind him. He looked without turning, but there was no one visible yet, and his visitor's privilege did not allow him to see through walls.

"And second," Col. Gu continued, "we think William should go along with you."

Miri's father? No ... the Goofus. Ug.

This time, Miri Gu did not debate. She nodded, and said softly. "Well ... if you think that is best."

Juan spoke without thinking, "But ..." then more diffidently: "But wouldn't that violate the exam rules?"

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The voice came from behind him. "No. Read the rules, Orozco." It was William.

Juan turned to acknowledge the other. "You mean, you won't be a team member?"

"Yeah, I'd just be your escort." The Goofus had the same broad features, the same coloring as the rest of the family. He was almost as tall as Bill Gu, but scrawny. His face had a sweaty sheen like maybe—*Oh*. Suddenly Juan realized that while Bill and William *were* father and son, it was not in the order he had thought.

"It's really your call, Dad," said Mr. Gu.

William nodded. "I don't mind." He smiled. "The munchkin has been telling me how strange things are in junior high school. Now I'll get to see what she means."

Miri Gu's smile was a little weak. "Well, we'd be happy to have you come along. Juan and I want to look at Alice's gear, but we should be ready in half an hour or so."

"I'll be around." William gave a twitchy wave and left the room.

"Alice and I will let you make your plans now," Mr. Gu said. He nodded at Juan. "It was nice to meet you, Juan."

Juan mumbled appropriate niceties to Mr. and Col. Gu, and allowed Miri to maneuver him out of the room and down a steep stairway.

"Huh," he said, looking over her shoulder, "you really do have a basement." It wasn't what Juan really wanted to say; he'd get to *that* in a minute.

"Oh, yeah. All the newer homes in West Fallbrook do."

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Juan noticed that this fact didn't show up in the county building permits.

There was a brightly lit room at the bottom of the stairs. The enhanced view was of warm redwood paneling with an impossibly high ceiling. Unenhanced, the walls and ceiling were gray plastic sheeting. Either way, the room was crowded with cardboard boxes filled with old children's games, sports equipment, and unidentifiable junk. This might be one of the few basements in Southern California, but it was clearly being used the way Juan's family used the garage.

"It's great we can take the surplus sensor gear. The only problem will be the stale emrebs—" Miri was already rummaging around in the boxes.

Juan hung back at the doorway. He stood with his arms crossed and glared at the girl.

She looked at him and some of the animation left her face. "What?"

"I'll tell you *'what!'*" The words popped out, sarcastic and loud. He bit down on his anger, and messaged her point-to-point. "I'll tell you what. I came over here tonight because you were going to propose a local team project."

Miri shrugged. "Sure." She replied out loud, speaking in a normal voice. "But if we hustle, we can nail the whole project tonight! It will be one less background task—"

Still talking silently, directly: "Hey! This is supposed to be a *team* project! You're just pushing me around."

Now Miri was frowning. She jabbed a finger in his direction and continued speaking out loud, "Look. I've got a great idea for the local exam. You're ideal for the second seat on it. You

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and me are about as far apart in background and outlook as anybody in eighth grade. They like that in a team. But that's all I need you for, just to hold down the second seat. You won't have to do anything but tag along."

Juan didn't reply for a second. "I'm not your doormat."

"Why not? You're Bertie Todd's doormat."

"I'm gone." Juan turned for the stairs. But now the stairwell was dark. He stumbled on the first step, but then Miri Gu caught up with him, and the lights came on. "Just a minute. I shouldn't have said that. But one way or another, we both gotta get through finals week."

Yeah. And by now, most of the local teams were probably already formed. Even more, they probably were into project planning. If he couldn't make this work, Juan might have to kiss off the local test entirely. *Doormat!* "Okay," Juan said, walking back into the basement room. "But I want to know all about your 'proposed project', and I want some say in it."

"Yes. Of course." She took a deep breath, and he got ready for still more random noise. "Let's sit down.... Okay. You already know I want to go down on the ground to Torrey Pines Park."

"Yeah." In fact, he had been reading up on the park ever since she mentioned it to her parents. "I've also noticed that there are no recent rumormings hanging over the place.... If you know something's going on there, I guess you'd have an edge."

She smiled in a way that seemed more pleased than smug. "That's what I figure, too. By the way, it's okay to talk out loud, Juan, even to argue. As long as we keep our voices

down, Bill and Alice are not going to hear. Sort of a family honor thing." She saw his skeptical look, and her voice sharpened a little bit. "Hey, if they wanted to snoop, your point-to-point comm wouldn't be any protection at all. They've never said so, but I bet that inside the house, my parents could even eavesdrop on a handshake."

"Okay," Juan resumed speaking out loud. "I just want some straight answers. What is it that you've noticed at Torrey Pines?"

"Little things, but they add up. Here's the days the park rangers kept it closed this spring. Here's the weather for the same period. They've got no convincing explanation for all those closures. And see how during the closure in January, they still admitted certain tourists from Cold Spring Harbor."

Juan watched the stats and pictures play across the space between them. "Yes, yes, ... yes. But the tourists were mainly vips attending a physicality conference at UCSD."

"But the conference itself was scheduled with less than eighteen hours lead time."

"So? 'Scientists must be adaptable in these modern times'."

"Not like this. I've read the meeting proceedings. It's very weak stuff. In fact, that's what got me interested." She leaned forward. "Digging around, I discovered that the meeting was just a prop—paid for by Foxwarner and gameHappenings."

Juan looked at the abstracts. It would be really nice to talk to Bertie about this; he always had opinions or knew who to ask. Juan had to suppress the urge to call-out to him. "Well, I

guess. I, um, I thought the UCSD people were more professional than this." He was just puffing vapor. "You figure this is all a publicity conspiracy?"

"Yup. And just in time for the summer movie season. Think how quiet the major studios have been this spring. No mysteries. No scandals. Nothing obvious started on April First. They've fully faked out the second-tier studios, but they're also driving the small players nuts, because we *know* that Foxwarner, Spielberg/Rowling, Sony—all the majors—must be going after each other even harder than last year. About a week ago, I figured out that Foxwarner has cinema fellowship agreements with Marco Feretti and Charles Voss." *Who? Oh. World-class biotech guys at Cold Spring Harbor.* Both had been at the UCSD conference. "I've been tracking them hard ever since. Once you guess what to look for, it's hard for a secret to hide."

And movie teasers were secrets that *wanted* to be found out.

"Anyway," Miri continued, "I think Foxwarner is pinning their summer season on some bioscience fantasy. And last year, gameHappenings turned most of Brazil inside out."

"Yeah, the Dinosauria sites." For almost two months, the world had haunted Brazilian towns and Brazil-oriented websites, building up the evidence for their "Invasion from the Cretaceous". The echoes of that were still floating around, a secondary reality that absorbed the creative attention of millions. Over the last twenty years, the worldwide net had come to be a midden of bogus sites and recursive fraudulence. Until the copyrights ran out, and often for years

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afterwards, a movie's on-line presence would grow and grow, becoming more elaborate and consistent than serious databases. Telling truth from fantasy was often the hardest thing about using the web. The standard joke was that if real "space monsters" should ever visit Earth, they would take one look at the nightmares documented on the worldwide net, and flee screaming back to their home planet.

Juan looked at Miri's evidence and followed some of the major links. "You make a good case that this summer is going to be interesting, but the movie people have all cislunar space to play with. What's to think a Summer Movie will break out in San Diego County, much less at Torrey Pines Park?"

"They've actually started the initial sequence. You know, what will attract hardcore early participants. The last few weeks there have been little environment changes in the park, unusual animal movements."

The evidence was very frail. Torrey Pines Park was unimproved land. There was no local networking. But maybe that was the point. Miri had rented time on tourist viewpoints in Del Mar Heights, and then she had done a lot of analysis. So maybe she had that most unlikely and precious commodity, early warning. Or maybe she was puffing vapor. "Okay, something is going on in Torrey Pines, and you have an inside track on it. There's still only the vaguest connection with the movie people."

"There's more. Last night my theory moved from 'tenuous' to 'plausible', maybe even 'compelling'. I learned that Foxwarner has brought an advance team to San Diego."

"But that's way out at Borrego Springs, in the desert."

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"How did you know? I really had to dig for that."

"My mother, she's doing 411 work for them." *Oops*. Come to think of it, what he had seen of Ma's work this afternoon was probably privileged.

Miri was watching him with genuine interest. "She's working with them? That's great! Knowing the connection would put us way ahead. If you could ask your mother ...?"

"I dunno." Juan leaned back and looked at the schedule his mother had posted at home. All her desert work was under a ten-day embargo. Even that much information would not have been visible to outsiders. He checked out the privilege certificates. Juan knew his mother pretty well. He could probably guess how she had encrypted the details. *And maybe get some solid corroboration*. He really wanted to pass this exam, but ... Juan hunched forward a little. "I'm sorry. It's under seal."

"Oh." Miri watched him speculatively. Being the first to discover a Foxwarner movie setup, a Summer Movie, would give Fairmont the inside track on story participation. It would be a sure-fire A in the exam; the size of such a win wouldn't be clear until well into the movie season, but there would be some income for at least the five years of the movie's copyright.

If this issue had come up with Bertie Todd, there'd now be intense pleadings for him to think of his future and the team and do what his Ma would certainly want him to do if she only knew, namely break into her data space. But after a moment, the girl just nodded. "That's okay, Juan. It's good to have respect."

She moved back to the boxes and began rummaging again. "Let's go with what I've already got, namely that Foxwarner is running an operation in San Diego, and some of their Cinema Fellows have been fooling around in Torrey Pines Park." She pulled out a rack of ... they looked like milk cartons, and set them on top of another box. "Emrebs," she explained opaquely. She reached deeper into the open box and retrieved a pair of massive plastic goggles. For a moment he thought this was scuba gear, but they wouldn't cover the nose or mouth. They didn't respond to info pings; he searched on their physical appearance.

"In any case," she continued, even as she pulled out two more pairs of goggles, "the background research will fit with my unlimited team's work. We're trying to scope out the movie season's big secrets. So far, we're not focusing on San Diego, but Annette reached some of the same conclusions about Foxwarner that I did. You wanna be on my unlimited, too? If this works tonight, we can combine the results."

Oh. That was really quite a generous offer. Juan didn't answer immediately. He pretended to be fully distracted by all the strange equipment. In fact, he recognized the gadgets now; there was a good match in the *2005 Jane's Sensors*. But he couldn't find a user's manual. He picked up the first pair of goggles and turned it this way and that. The surface of the plastic was a passive optical lacquer, like cheap grocery wrap in reverse; instead of reflecting bright rainbow colors, the colors flowed as he turned it, always blending with the true color of the gray plastic walls behind it. It amounted to crude camo-color, pretty useless in an environment this smart.

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Finally, he replied, kind of incidentally, "I can't be on your unlimited team. I'm already on Bertie's. Maybe it doesn't matter. You know Annette's working with Bertie on the side."

"Oh *really?*" Her stare locked on him for a moment. Then, "I should have guessed; Annette is just not that bright by herself. So Bertie has been jerking all of us around."

Yeah. Juan shrugged and lowered his head. "So how do these goggles work, anyway?"

Miri seemed to stew over Annette for a few seconds more. Then she shrugged too. "Remember, this equipment is *old*." She held up her pair of goggles and showed him some slide controls in the headstrap. "There's even a physical 'on' button, right here."

"Okay." Juan slipped the goggles over his head and pulled the strap tight. The headset must have weighed two or three ounces. It was an awkward lump compared to contact lenses. Watching himself from the outside, he looked fully bizarre. The whole top of his face was a bulbous, gray-brown tumor. He could see Miriam was trying not to laugh. "Okay, let's see what it can do." He pressed the "on" button.

Nothing. His enhanced view was the same as before. But when he cleared his contact lenses and looked out with his naked eyes—"It's pitch dark from inside, can't see a thing."

"Oh!" Miri sounded a little embarrassed. "Sorry. Take off your goggles for a minute. We need an emreb." She picked up one of the heavy-looking "milk cartons".

"Meaning?"

"MRE/B." She spelled the word.

"Oh." Meal Ready to Eat, with Battery.

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"Yes, one of the little pluses of military life." She twisted it in the middle, and the carton split in two. "The top half is food for the Marine, and the bottom half is power for the Marine's equipment." There were letters physically stenciled on the food container: something about chicken with gravy, and dehydrated ice cream. "I tried eating one of these once." She made a face. "Fortunately, that won't be necessary tonight."

She picked up the bottom half of the emreb, and drew out a fine wire. "This is a weak point in my planning. These batteries are way stale."

"The goggles may be dead anyway." Juan's own clothes often wore out before he outgrew them. Sometimes a few launderings was enough to zap them.

"Oh, no. They built this milspec junk to be *tough*." Miri set down the battery pack and bent Juan's goggles into a single handful. "Watch this." She wound up like a softball pitcher and threw the goggles into the wall.

The gear smashed upwards into the wall and caromed loudly off the ceiling.

Miriam ran across the room to pick up what was left.

Col. Gu's voice wafted down the stairwell. "Hey! What are you kids doing down there?"

Miri stood up and giggled behind her hand. Suddenly she looked about ten years old. "It's okay, Alice!" She shouted back. "I just, um, dropped something."

"On the ceiling?"

"Sorry! I'll be more careful."

She walked back to Juan and handed him the goggles. "See," she said. "Hardly a scratch. Now we supply power,"—

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She plugged the wire from the battery into the goggles' headband. —" and you try them again."

He slid the goggles over his eyes and pressed "on". Monochrome reds wavered for a moment, and then he was looking at a strange, grainy scene. The view was not wraparound, just slightly fisheye. In it, Miri's face loomed large, peering in at him. Her skin was the color of a hot oven, and her eyes and mouth glowed bluish-white.

"This looks like thermal infrared," except that the color scheme wasn't standard.

"Yup. That's the default startup. Notice how the optics are built right into the gear? It's kind of like camping clothes: you don't have to depend on a local network. That's going to be a win when we get to Torrey Pines. Try some other sensors; you can get help by sliding the 'on' button."

"Hey, yes!"

THE FOLLOWING BLOCK QUOTE MUST BE IN A CONST WIDTH FONT SUCH AS COURIER

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BAT:LOW      SENSORS      BAT2:LOW
PASSIVE      ACTIVE
VIS AMP OK   GPR          NA
NIR   OK    SONO        NA
>TIR  OK    XECHO       NA
SNIFF  NA    GATED VIS  NA
AUDIO  NA    GATED NIR  NA
SIG    NA
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The tiny menu floated in the corner of his right eye's view. The battery warning was blinking. He fiddled with his head band and found a pointing device. "Okay, now I'm seeing in full color, normal light. Boogers resolution, though." Juan turned around and then back to Miri. He laughed. "The menu window is fully bizarre, you know. It just hangs there at the edge of my view. How can I tag it to the wall or a fixed object?"

"You can't. I told you this gear is old. It can't orient worth zip. And even if it could, its little pea-brain isn't fast enough to do image slews."

"Huh." Juan knew about obsolete systems, but he didn't use them much. With equipment like this, there could be no faerie overlays. Even ordinary things like interior decoration would all have to be real.

There were *lots* of other boxes, but no inventory data. Some of them must have belonged to the Goofus; they had handwritten labels, like "Prof. and Mrs. William Gu, Dept of English, UC Davis" and "William Gu Sr., Rainbow's End, Irvine, CA". Miri carefully moved these out of the way. "Someday William will know what do to with all this. Or maybe grandmother will change her mind, and come visit us again."

They opened more of the USMC boxes and poked around. There were wild equipment vests, more pockets than you ever saw around school. The vests weren't documented anywhere. The pockets were for ammunition, Juan speculated. For emrebs, Miri claimed; and they might need a lot of the batteries tonight, since even the best of them tested

"WARNING: LOW CHARGE". They dismembered the emrebs and loaded batteries onto two of the smallest vests. There were also belt-mount keypads for the equipment. "Hah. Before this is over, we'll be wiggling our fingers like grownups."

They were down to the last few boxes. Miri tore open the first. It was filled with dozens of camo-colored egg shapes. Each of them sprouted a triple of short antenna spikes. "*Feh*. Network nodes. A million times worse than what we have, and just as illegal to use in Torrey Pines Park."

Miri pushed aside several boxes that were stenciled with the same product code as the network nodes. Behind them was one last box, bigger than the others. Miri opened it ... and stood back with exaggerated satisfaction. "*Ah so*. I was hoping Bill hadn't thrown these out." She pulled out something with a stubby barrel and a pistol grip.

"A gun!" But it didn't match anything in *Jane's Small Arms*.

"Nah, look under 'sensor systems'." She grabbed a loose battery and snugged it under the barrel. "Even point blank, I bet this couldn't hurt a fly. It's an all-purpose active probe. Ground penetrating radar and sonography. Surface reflection xray. Gated laser. We couldn't get *this* at a sporting goods store. It's just too perfect for offensive snooping."

"...It's got attachments, too."

Miri peered into the box and retrieved a metal rod with a flared end. "Yeah, that's for the radar; it fits on right here. Supposedly it's great for scoping out tunnels." She noticed Juan's eyeing this latest find and smiled teasingly. "Boys...!"

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There's another one in the box. Help yourself. Just don't try it out here. It would set off alarms big time."

In a few minutes they were both loaded down with batteries, plugged into the probe equipment, and staring at each other through their goggles. They both started laughing. "You look like a monster insect!" she said. In the infra-red, the goggles were big, black bugeyes, and the equipment vests looked like chitinous armor, glowing brightly where there was an active battery.

Juan waved his probe gun in the air. "Yeah. *Killer* insects." *Hmm.* "You know, we look so bizarre.... I bet if we find Foxwarner down in Torrey Pines, we might end up in the show." That sort of thing happened, but most consumer participation was in the form of contributed content and plot ideas.

Miri laughed. "I told you this was a good project."

* * * *

Miri called a car to take them to Torrey Pines. They clumped up the stairs and found Mr. Gu standing with William the Goofus. Mr. Gu looked like he was trying to hide a smile. "You two look charming." He glanced at William. "Are you ready to go?"

William might have been smiling, too. "Any time, Bill."

Mr. Gu walked the three of them to the front door. Miri's car was already pulling up. The sun had slipped behind a climbing wall of coastal fog, and the afternoon was cooling off.

They pulled their goggles off and walked down the lawn, Juan in front. Behind him, Miri walked hand in hand with

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William. Miriam Gu was respectful of her parents, but flippant too. With her grandfather it was different, though Juan couldn't tell if her look up at William was trusting or protective. It was bizarre either way.

The three of them piled into the car, William taking the back-facing seat. They drove out through East Fallbrook. The neighborhood enhancements were still pretty, though they didn't have the coordinated esthetic of the homes right by Camp Pendleton. Here and there, homeowners showed advertising.

Miri looked back at the ragged line of the coastal fog, silhouetted against the pale bright blue of the sky. "The fog is brazen here," she quoted.

"Reaching talons across our land'," said Juan.

"Pouncing.'" she completed, and they both laughed. That was from the Hallowe'en show last year, but to the Fairmont students it had a special meaning. There was none of that twentieth century wimpiness about the fog's "little cat feet." Evening fog was common near the coast, and when it happened laser comm got whacked—and The World Changed. "Weather says that most of Torrey Pines Park will be under fog in an hour."

"Spooky."

"It'll be fun." And since the park was unimproved, it wouldn't make that much difference anyway.

The car turned down Reche Road and headed east, toward the expressway. Soon the fog was just an edge of low clouds beneath a sunny afternoon.

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William hadn't said a word since they got aboard. He had accepted a pair of goggles and couple of batteries, but not an equipment vest. Instead, he carried an old canvas bag. His skin looked young and smooth, but with that sweaty sheen. William's gaze wandered around, kind of twitchy. Juan could tell that the guy had contacts and a wearable, but his twitchiness was not like a grownup trying to input to smart clothes. It was more like he had some kind of disease.

Juan searched on the symptoms he was seeing AND'ed with gerontology. The strange-looking skin was a regeneration dressing; that was a pretty common thing. As for the tremors.... Parkinson's? Maybe, but that was a rare disease nowadays. Alzheimer's? No, the symptoms didn't match. *Aha: "Alzheimer's Recovery Syndrome"*. Ol' William must have been a regular vegetable before his treatments kicked in. Now his whole nervous system was regrowing. The result would be a pretty healthy person even if the personality was randomly different from before. The twitching was the final reconnect with the peripheral nervous system. There were about fifty thousand recovering Alzheimer's patients these days. Bertie had even collaborated with some of them. But up close and in person ... it made Juan queasy. So okay that William went to live with his kids during his recovery. But their enrolling him at Fairmont High was gross. His major was listed as "hardcopy media—nongraded status"; at least that kept him out of people's way.

Miri had been staring out the window, though Juan had no idea what she was seeing. Suddenly she said, "You know, this is your friend Bertie Toad Vomit." She pulled an incredible

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face, a fungus-bedecked toad that drooled nicely realistic slime all the way to the seat between them.

"Oh, yeah? Why is that?"

"He's been on my case all semester, jerking me around, spreading rumors about me. He tricked that idiot Annette, so she'd push me into teaming with you—not that I'm complaining about *you*, Juan. This is working out pretty well." She looked a little embarrassed. "It's just that Bertie is pushy as all get out."

Juan certainly couldn't argue against that. But then he suddenly realized: "You two are alike in some ways."

"*What!*"

"Well, you're *both* as pushy as all get out."

Miri stared at him open-mouthed, and Juan waited for an explosion. But he noticed that William was watching her with a strange smile on his face. She shut her mouth and glared at Juan. "Yeah. Well. You're right. Alice says it may be my strongest talent, if I can ever put a cork in it. In the meantime, I guess I can be pretty unpleasant." She looked away for a moment. "But besides us both being up-and-coming dictators, I don't see any similarities between me and Bertie. I'm loud. I'm a loner. Bertie Toad is sneaky and mean. He has his warty hands into everything. And no one knows what he really is."

"That's not true. I've known Bertie since sixth grade; I've known him well for almost two semesters. He's a remote student, is all. He lives in Evanston."

She hesitated, maybe looking up "Evanston". "So have you ever been to Chicago? Have you ever met Bertie in person?"

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"Well, not exactly. But last Thanksgiving I visited him for almost a week." That had been right after the pills really started giving Juan results. "He showed me around the museums piggyback, like a 411 tour. I also met his parents, saw their house. Faking all that would be next to impossible. Bertie's a kid just like us." Though it was true that Bertie hadn't introduced Juan to many of his friends. Sometimes it seemed like Bertie was afraid that if his friends got together, they might cut him out of things. Bertie's great talent was making connections, but he seemed to think of those connections as property that could be stolen from him. That was sad.

Miri wasn't buying any of it: "Bertie is not like us, Juan. You know about Annette. I know he's wormed into a lot of groups at school. He's everything to everyone, a regular Mr. Fixit." Her face settled into a look of brooding contemplation, and she was silent for a moment.

They were off Reche now, and on the southbound. The true view was of rolling hills covered by endless streets and houses and malls. If you accepted the roadway's free enhancements, you got placid wilderness, splashed with advertising. Here and there were subtle defacements, the largest boulders morphing into trollishness; that was probably the work of some Pratchett belief circle. Their car passed the Pala off-ramp and started up the first of several miles-long ridges that separated them from Escondido and the cut across to the coast.

"Last fall," Miri said, "Bertram Todd was just another too-smart kid in my language class. But this semester, he's

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caused me lots of inconvenience, lots of little humiliations. Now he has Attracted My Attention." That did not sound like a healthy thing to do. "I'm gonna figure out his secret. One slip is all it takes."

That was the old saying: Once your secret is outed anywhere, however briefly, it is outed forever. "Oh, I don't know," said Juan. "The way to cover a slip is to embellish it, hide it in all sorts of *fake* secrets."

"Hah. Maybe he *is* something weird. Maybe he's a corporate team."

Juan laughed. "Or maybe he's something really weird!" Over the next few miles, he and Miri hit on all the cinema clichés: Maybe Bertie was an artificial boy, or a superbrain stuck in a bottle under Fort Meade. Maybe Bertie was a front for alien invaders, even now taking over the worldwide net. Maybe he was an old Chinese war program, suddenly growing to sentience, or the worldwide net itself that had finally awakened with superhuman—and certainly malignant—powers.

Or maybe Bertie was a subconscious creation of Juan's imagination, and *Juan* was—all unknowing—the monster. This one was Miri's idea. In a way it was the funniest all, though there was something a little unsettling about it, at least for Juan.

The car had turned onto Highway 56, and they were going back toward the coast. There was more real open space here, and the hills were green with a gold-edging of spring flowers. The subdivisions were gone, replaced by mile after mile of industrial parks: the automated genomics and proteomics

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labs spread like gray-green lithops, soaking up the last of the sunlight. *People* could live and work anywhere in the world. But some things have to happen in a single real place, close enough together that superspeed data paths can connect their parts. These low buildings drove San Diego's physical economy; inside, the genius of humans, machines, and biological nature collided to make magic.

The sun sank back behind coastal fog as they entered the lagoon area north of Torrey Pines Park. Off the expressway, they turned south along the beach. The pale cliffs of the main part of the park rose ahead of them, the hilltops shrouded by the incoming fog.

The Goofus had remained silent through all their laughter and silly talk. But when Miri got back into her speculation about how this all fit with the fact that Bertie was bothering her so much, he suddenly interrupted. "I think part of it is very simple. Why is Bertie bothering you, Miriam? It seems to me there's one possibility so fantastic that neither of you have even imagined it."

William delivered this opinion with that faintly amused tone adults sometimes use with little kids. But Miri didn't make a flip response. "Oh." She looked at William as though he were hinting at some great insight. "I'll think about this some more."

* * * *

The road wound upwards through the fog. Miri had the car drop them off at the far side of the driveway circle at the top. "Let's scope things out as we walk toward the ranger station."

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Juan stepped down onto weedy asphalt. The sun had finally, truly, set. Geez, the air was cold. He flapped his arms in discomfort. He noticed that William had worn a jacket.

"You two should think ahead a little more," said the Goofus.

Juan pulled a face. "I can stand a little evening cool." Ma was often onto him like this, too. Plan-ahead addons were cheap, but he had convinced her that they made stupid mistakes of their own. He grabbed his sensor "gun" out of the car and slid it into the long pocket in the back of his vest—and tried to ignore his shivering.

"Here, Miriam." William handed the girl an adult-sized jacket, big enough to fit over her equipment vest.

"Oh, thank you!" She snuggled it on, making Juan feel even more chilly and stupid.

"One for you, too, champ." William tossed a second jacket at Juan.

It was bizarre to feel so irritated and so grateful at the same time. He took off the probe holster, and slipped on the jacket. Suddenly the evening felt a whole lot more pleasant. This would block about half his high-rate data ports, but *hey, in a few minutes we'll be back in the fog anyway.*

The car departed as they started off in the direction of the ranger station. And Juan realized that some of his park information was very out of date. There were the restrooms behind him, but the parking lot in the pictures was all gone except at the edges, where it had become this driveway circle. He groped around for more recent information.

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Of course, no one was parked up here. There were no cars dropping people off, either. Late April was not the height of the physical tourist season—and for Torrey Pines Park, that was the only kind of tourist season there was.

They were just barely above the fog layer. The tops of the clouds fluffed out below them, into the west. On a clear day, there would have been a great direct view of the ocean. Now there were just misty shapes tossed up from the fog and above that, a sky of deepening twilight blue. There was still a special brightness at the horizon, where the sun had set. Venus hung above that glow, along with Sirius and the brighter stars of Orion.

Juan hesitated. "That's strange."

"What?"

"I've got mail." He set a pointer in the sky for the others to see: a ballistic FedEx package with a Cambridge return address. It was coming straight down, and from very high up.

At about a thousand feet, the mailer slowed dramatically, and a sexy voice spoke in Juan's ear. "Do you accept delivery, Mr. Orozco?"

"Yes, yes." He indicated a spot on the ground nearby.

All this time, William had been staring into the sky. Now he gave a little start and Juan guessed the guy had finally seen Juan's pointer. A second after that, the package was visible to the naked eye: a dark speck showing an occasional bluish flare, falling silently toward them.

It slowed again at ten feet, and they had a glimpse of the cause of the light: dozens of tiny landing jets around the edge of the package. Animal rights campaigners claimed the micro-

turbines were painfully loud to some kinds of bats, but to humans and even dogs and cats, the whole operation was silent.... until the very last moment: Just a foot off the ground, there was a burst of wind and a scattering of pine needles.

"Sign here, Mr. Orozco," said the voice.

Juan did so and started toward the mailer. William was already there, kneeling awkwardly. The Goofus spazzed at just the wrong instant and lurched forward, putting his knee through the mailer carton.

Miri rushed over to him. "William! Are you okay?"

William rolled back on his rear and sat there, massaging his knee. "Yes, I'm fine, Miriam. Damn." He glanced at Juan. "I'm really sorry, kid." For once, he didn't sound sarcastic.

Juan kept his mouth shut. He squatted down by the box: it was a standard twenty-ounce mailer, now with a big bend in the middle. The lid was jammed, but the material was scarcely stronger than cardboard, and he had no trouble prying it open. Inside ... he pulled out a clear bag, held it up for the others to see.

William leaned forward, squinting. The bag was filled with dozens of small, irregular balls. "They look like rabbit droppings to me."

"Yes. Or health food," said Juan. Whatever they were, it didn't look like William's accident had done them any harm.

"Toad Vomit! What are *you* doing here?" Miriam's voice was sharp and loud.

Juan looked up and saw a familiar figure standing beside the mailer. *Bertie*. As usual, he had a perfect match on the

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ambient lighting; the twilight gleamed dimly off his grin. He gave Juan a little wave. "You can all thank me later. This FedEx courtesy link is only good for two minutes, so I have just enough time to clue you in." He pointed at the bag in Juan's hand. "These could be a big help once you get in the park."

Miri: "You don't have *any* time. Go away!"

Juan: "You're trashing our local exam just by being here, Bertie."

Bertie looked from from one indignant face to the other. He gave Miri a little bow, and said, "You wound me!" Then he turned to Juan: "Not at all, my dear boy. The exam proctors don't show you as embargoed. Technically, you haven't started your local exam. And I'm simply calling to check in with my loyal unlimited team member—namely you."

Juan ground his teeth. "Okay. What's the news?"

Bertie's grin broadened to slightly wider than humanly possible. "We've made great progress, Juan! I lucked out with the Siberian group—they had just the insight Kistler was needing. We've actually built prototypes!" He waved again at the bag in Juan's hand. "You've got the first lot." His tone slipped into persuasion mode. "I'm not on your local team, but our unlimited exam is concurrent, now isn't it, Juan?"

"Okay." This was extreme even for Bertie. *I bet he had the prototypes ready this afternoon!*

"So we need these 'breadcrumbs' tested, and since I noticed that my loyal team-mate is incidentally on a field trip through Torrey Pines Park, well, I thought ..."

Miri glared at the intruder's image. "So what *have* you stuck us with? I've got my own plans here."

"Totally organic network nodes, good enough to be field-tested. We left out the communication laser and recharge-capability, but the wee morsels have the rest of the standard function suite: basic sensors, a router, a localizer. And they're just proteins and sugars, no heavy metals. Come the first heavy rain, they'll be fertilizer."

Miri came over to Juan and popped open the plastic bag. She sniffed. "These things stink ... I bet they're toxic."

"Oh, no," said Bertie. "We sacrificed a lot of functionality to make them safe. You could probably *eat* the darn things, Miri." Bertie chuckled at the look on her face. "But I suggest not; they're kind of heavy on nitrogen compounds...."

Juan stared at the little balls. *Nitrogen compounds?* That sounded like the summary work Juan had done earlier this semester! Juan choked on outrage, but all he could think to say was, "This—this is everything we were shooting for, Bertie."

"Yup." Bertie preened. "Even if we don't get all the standard function suite, our share of the rights will be some good money." And a sure A grade on the unlimited exam. "So. Juan. These came off the MIT organo-fab about three hours ago. In a nice clean laboratory, they work fine. Now how about if you sneak them into the park, and give them a real field test? You'll be serving your unlimited team at the same time you're working on your local project. Now, *that's* concurrency."

"Shove off, Bertie," said Miri.

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He gave her a little bow. "My two minutes are almost up, anyway. I'm gone." His image vanished.

Miri frowned at the empty space where Bertie had been. "Do what you want with Bertie's dungballs, Juan. But even if they're totally organic, I'll bet they're still banned by park rules."

"Yes, but that would just be a technicality, wouldn't it? These things won't leave trash."

She just gave an angry shrug.

William had picked up the half-crushed mailing carton. "What are we going to do with this?"

Juan motioned him to set it down. "Just leave it. There's a FedEx mini-hub in Jamul. The carton should have enough fuel to fly over there." Then he noticed the damage tag floating beside the box. "*Caray*. It says it's not airworthy." There were also warnings about flammable fuel dangers and a reminder that he, Juan Orozco, had signed for the package and was responsible for its proper disposal.

William flexed the carton. Empty, the thing was mostly plastic fluff, not more than two or three pounds. "I bet I could bend it back into its original shape."

"Um," Juan said.

Miri spelled things out for the Goofus: "That would probably not work, William. Also, we don't have the manual. If we broke open the fuel system ..."

William nodded. "A good point, Miriam." He slipped the carton into his bag, then shook his head wonderingly. "It flew here all the way from Cambridge."

Yeah, yeah.

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The three of them resumed their walk down to the ranger station, only now they were carrying a bit more baggage, both mental and physical. Miri grumbled, arguing mainly with herself about whether to use Bertie's gift.

Even with the fog, Bertie's "breadcrumbs" could give them a real edge in surveilling the park—if they could get them in. Juan's mind raced along that line, trying to figure what he should say at the ranger station. At the same time he was watching William. The guy had brought a flashlight. The circle of light twitched this way and that, casting tree roots and brush into sharp relief. Come to think of it, without Miri's Marine Corps gear, a flashlight would have been even more welcome than the jackets. In some ways, William was not a complete fool. In others...

Juan was just glad that William hadn't pushed the FedEx mailer back at him. Juan would have been stuck with carrying it around all night; the carton counted as toxic waste, and it would surely rat on him if he left it in an ordinary trash can. Ol' William had been only mildly interested in the breadcrumbs—but the package they came in, even busted, *that* fascinated the guy.

* * * *

The park's entrance area still had fairly good connectivity, but the ranger station was hidden by the hillside and Juan couldn't get a view on it. Unfortunately, the State Parks web site was under construction. Juan browsed around, but all he could find were more out-of-date pictures. The station might be uncrewed. On an off-season Monday night like this, a

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single 411 operator might be enough to cover all the state parks in Southern California.

As they came off the path, into direct sight of the station, they saw that it wasn't simply a rest point or even a kiosk. In fact, it was an enclosed office with bright, real lighting and a physically-present ranger—a middle-aged guy, maybe thirty-five years old.

The ranger stood and stepped out into the puddle of light. "Evening," he said to William; then he noticed the heavily bundled forms of Miriam and Juan. "Hi, kids. What can I do for you all?"

Miri glanced significantly at William. Something almost like panic came into William's eyes. He mumbled, "Sorry, Munchkin, I don't remember what you do at places like this."

"S'okay." Miri turned to the ranger. "We just want to buy a night pass, no camping. For three."

"You got it." A receipt appeared in the air between them, along with a document: a list of park regulations.

"Wait one." The ranger ducked back into his office and came out with some kind of search wand; this setup was really old-fashioned. "I shoulda done this first." He walked over to William, but was talking to all three of them, essentially hitting the high points of the park regs. "Follow the signs. No cliff climbing is allowed. If you go out on the seaside cliff face, we *will* know and you *will* be fined. Are you vision equipped?"

"Yes, sir." Miriam raised her goggles into the light. Juan opened his jacket so his equipment vest was visible.

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The ranger laughed. "Wow. I haven't seen those in a while. Just don't leave the batteries lying around in the park. That's—" he turned away from William and swept his wand around Miriam and Juan "—That's very important here, folks. Leave the park as you found it. No littering, and no networking. Loose junk just piles up, and we can't clean it out like you can other places."

The wand made a faint whining sound as it passed over Juan's jacket pocket. *Boogers. It must have gotten a ping back.* Most likely Bertie's prototypes didn't have a hard off-state.

The ranger heard the noise, too. He held the wand flat against Juan's jacket and bent to listen. "Damn false alarm, I bet. What do you have in there, Son?"

Juan handed him the bag of dark, brownish balls. The ranger held it up to the light. "What are these things?"

"Trail mix." William spoke before Juan could even look tongue-tied.

"Hey, really? Can I try one?" He popped the bag open as Juan watched in wide-eyed silence. "They look nice and chocolaty." He picked one out of the bag, and squeezed it appraisingly. Then the smell hit him. "Dios!" He threw the ball at the ground and stared at the brown stain that remained on his fingers. "That smells like ... that smells awful." He jammed the bag back into Juan's hands. "I don't know, kid. You have odd tastes."

But he didn't question their story further. "Okay, folks. I think you're good to go. I'll show you the trailhead. I—" He stopped, stared vacantly for a second. "Oops. I see some

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people just coming into Mount Cuyamaca Park, and I'm covering there tonight, too. You wanna go on ahead?" He pointed at a path that led northward from his station. "You can't miss the trailhead; even if it's down, there's a big sign." He waved them on, and then turned to talk to whoever he was seeing at the park in the mountains.

* * * *

Beyond the trailhead, the park was completely unimproved, a wilderness. For a hundred feet or so, Juan had wireless connectivity but even that was fading. Miri checked in with the exam proctor service to certify that their team was going local; since the wilderness was very soon going to isolate them from the worldwide net, they might as well get official credit for the fact!

But yuk. Just knowing you can't go out in the wide world for answers was a pain. It was like having a itch you can't scratch or a sock with lump in it, only much worse. "I've cached a lot of stuff about the park, Miri ... but some of it is kinda old."—which would have been no problem, but now he couldn't just go out and search for better information.

"Don't worry about it, Juan. Last week, I spent a little money and used a 411 service. See?" A few gigabytes flickered on laser light between them.... She *was* prepared. The maps and pictures looked very up-to-date.

Miri confidently picked one of several trails and got them on a gentle path that zigzagged downward toward the northwest. She even persuaded William to use the third pair of goggles instead of his flashlight. The Goofus moved

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awkwardly along. He seemed limber enough, but every four or five paces there was random spikey twitching.

It made Juan uncomfortable just to watch the guy. He looked away, played with his goggles' menu. "Hey, Miri. Try 'VIS AMP'. It's pretty."

They walked silently for a while. Juan had never been to Torrey Pines Park except with his parents, and that was when he was little. And in the daytime. Tonight, with VIS AMP ... the light of Venus and Sirius and Betelgeuse came down through the pine boughs, casting colored shadows every which way. Most of the flowers had closed, but there were glints of yellows and reds bobbing among the manzanita and the low, pale cactus. The place was peaceful, really beautiful. And so what if the goggles' low-res pics only showed the direction you were looking at. That was part of the charm. They were getting this view without any external help, a step closer to true reality.

"Okay, Juan. Try laying out some of Bertie's dungballs."

The breadcrumbs? "Sure." Juan opened the bag and tossed one of the balls off to the side of the path.... Nothing. He popped up some low-layer wireless diagnostics. Wow. "This is a quiet place."

"What do you expect?" said Miri. "No networks, remember."

Juan leaned down to inspect the breadcrumb. The park ranger had gotten a faint response with his wand, but now that Juan wanted a ping response, there was nothing. And Bertie hadn't told them an enable-protocol. *Well, maybe it doesn't matter.* Juan was a packrat; he had all the standard

enablers squirreled away on his wearable. He blasted the breadcrumb with one startup call after another. Partway through the sequence, there was a burst of virtual light in his contacts. "Hah. This one's live!" He turned and caught up with Miri and William.

"Good going, Juan." For once, Miri Gu sounded pleased with him.

The path was still wide and sandy, the gnarled pines hanging fists of long needles right above his head—and right in the Goofus's face. Amid the park trivia that Juan had downloaded was the claim that this was the last place on earth these pines existed. They rooted in the steep hillsides and hung on for years and years against erosion and draught and cold ocean breezes. Juan glanced back at William's gangly form shambling along behind them. *Yeah*. Ol' William was kind of like a human 'Torrey Pine'.

They were in the top of the fog now. Towering and silent, pillars of haze drifted by on either side of them. Starlight dimmed and brightened.

Behind them, the node Juan had left was dimming toward a zero data rate. He picked out a second breadcrumb, gave it correct startup call, and dropped it to the side of the trail. The low-layer diagnostics showed its pale glow, and after a second it had picked up on the first node, now bright again. "They linked ... I'm getting data forwarded from the first node." *Hah*. Normally you didn't think about details like that. The gadgets kind of reminded Juan of the toy network his father had bought him, back when Pa still had a job. Juan had been only five years old, and the toy nodes had been enormous

clunkers, but laying them down around the house had engaged father and son for several happy days—and given Juan an intuition about random networks that some grownups still seemed to lack.

“Okay, I see them,” said Miri. “We're not getting any communication from beyond the dungballs, are we? I don't want anything forwarded out to the world.”

Yeah, yeah. This is a local exam. “We're isolated, unless we punch out with something really loud.” He threw out five or six more breadcrumbs, enough so they could figure their relative positions accurately; in his diagnostic view, the locator gleams sharpened from misty guesstimates to diamond-sharp points of light.

Fog curled more thickly over them, and the starlight grew hazy. Ahead of him, Miri stumbled. “Watch your step.... You know, there's really not enough light anymore.”

In patches, the fog was so thick that VIS AMP was just colorful noise.

“Yeah, I guess we should switch back to thermal IR.”

They stopped and stood like idiots, fiddling with manual controls to do something that should have been entirely automatic. Near infrared was as bad as visual: for a moment he watched the threads of NIR laser light that flickered sporadically between the data ports on their clothes; in this fog, the tiny lasers were only good for about five feet.

Miri was ahead of him. “Okay, that's a lot better,” she said.

Juan finally got his goggles back to their thermal infrared default. Miri's face glowed furnace-red except for the cool blackness of her goggles. Most plants were just faintly

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reddish. The stairstep timber by his feet had three dark holes in the top. Juan reached down and discovered that the holes felt cold and metallic. Ha, metal spikes holding the timber in place.

"C'mon," said Miri. "I want to get down near the bottom of the canyon."

The stairs were steep, with a heavy wood railing on the dropoff side. The fog was still a problem, but with TIR, you could see out at least ten yards. Dim reddish lights floated up through the dark, blobs of slightly warmer air. The bottom was way down, farther than you'd ever guess. He threw out a few more breadcrumbs and looked back up the path, at the beacons of the other nodes. What a bizarre setup. The light of the breadcrumb diagnostics was showing on his contact lenses, where he normally saw all enhancements. But it was the USMC goggles that were providing most of the augmentation. And beyond them? He stopped, turned off his wearable enhancement, and slipped the goggles up from his face for a moment. Darkness, absolute darkness, and chill wet air on his face. Talk about isolation!

He heard William coming up behind him. The guy stopped and for a second they stood silent, listening.

Miri's voice came from further down the steps. "Are you okay, William?"

"Sure, no problems."

"Okay. Would you and Juan come down by me? We wanna stay close enough to keep a good data rate between us. Are you getting any video off the dungballs, Juan?" Bertie had said they contained basic sensors.

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"Nope," Juan replied. He slipped the goggles back on and walked down to her. Any breadcrumb video would have shown up on his contacts, but all he was getting was diagnostics. He started another breadcrumb and tossed it far out, into the emptiness. Its location showed in his contacts. It fell and fell and fell, until he was seeing its virtual gleam "through" solid rock.

He studied the diagnostics a moment more. "You know, I think they *are* sending low data rate video—"

"That's fine. I'll settle for wireless rate." Miri was leaning out past the railing, staring downwards.

"—but it's not a format I know." He showed her what he had. Bertie's Siberian pals must be using something really obscure. Ordinarily, Juan could have put out some queries and had the format definition in a few seconds; but down here in the dark, he was just stuck.

Miri made an angry gesture. "So Bertie gave you something that could be useful, but only if we punch out a loud call for help? No way. Bertie is not getting his warty hands on *my* project!"

Hey, Miri, you and I are supposed to be a team here. It would be nice if she would stop treating him like dirt. But she was right about Bertie's tactics. Bertie had given them something wonderful—and was holding back all the little things that would make it useable. First it was the enable-protocol, now it was this screwball video format. Sooner or later, Bertie figured they'd come crawling to him, begging him to be a shadow member of the team. I could call out to him. His clothes had enough power that he could easily punch

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wireless as far as network nodes in Del Mar Heights, at least for a few minutes. Getting caught was a real risk; Fairmont used a good proctor service—but it was impossible for them to cover all the paths all the time. This afternoon, Bertie had as much as bragged they would cheat that way.

Damn you, Bertie, I'm not going to break isolation. Juan reviewed the mystery data from the breadcrumbs. There seemed to be real content; so given the darkness, the pictures were probably thermal infrared. *And I have lots of known video I can compare them to, everything that has been seen through my goggles during the last few minutes!* Maybe it was time for some memory magic, the edge he got from his little blue pills: If he could remember which blocks of imagery might match what the breadcrumbs could see, and pass that to his wearable, then conventional reverse engineering would be possible.... Juan's mind went blank for a few seconds, and there was a moment of awesome panic ... but then he remembered himself. He fed the picture pointers back to his wearable. It began crunching out solutions almost immediately. "Try this, Miri." He showed her his best guess-image, and sharpened it over the next five seconds as his wearable found more correlation spikes.

"Yes!" The picture showed the roots of the big pine a dozen yards behind them. A few seconds passed and there was another picture, black sky and faintly glowing branches. In fact, each breadcrumb was generating a low-resolution TIR image every five seconds or so, even though they couldn't all be forwarded that fast. "What are those numbers all about?"

Numbers that clustered where the picture detail was most complex.

Oops. "Those are just graphical hierarchy pointers." That was true, but exactly how Juan used them was something he didn't want pursued. He made a note to delete them from all future pics.

Miri was silent for several seconds as she watched the pictures coming in from the crumbs above them on the trail, and from the one that he'd dropped way down. Juan was on the point of asking for payback, like some straight talk about exactly what they were looking for. But then she said, "This picture format is one of those Siberian puzzles, isn't it?"

"Looks like."

Those formats were all different, created by antisocials who seemed to get a kick out of not being interoperable. "And you untangled it in fifteen seconds?"

Sometimes Juan just didn't think ahead: "Yup," he said, blissfully proud.

The uncovered part of her face flared. "You lying weasel! You're talking to the outside!"

Now Juan's face got hot too. "Don't you call me a liar! You know I'm good with interfaces."

"Not. That. Good." Her voice was deadly.

Caray. The right lie occurred to Juan a few seconds too late: He should have said he'd seen the Siberian picture format before! Now the only safe thing to do was 'confess' that he was talking to Bertie. But Juan couldn't bear to tell *that* lie, even if it meant she would figure out what he had really done.

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Miri stared at him for several seconds.

William's begoggled face had turned from one of them to other like a spectator at a tennis game. He spoke into the silence, and for once sounded a little surprised: "So what are you doing now, Miriam?"

Juan had already guessed: "She's watching the fog, and listening."

Miri nodded. "If Orozco is sneaking out on wireless, I'd hear it. If he's using something directional, I'd see sidescatter from the fog. I don't see anything just now."

"So maybe I'm squirting micro pulses." Juan's words came out all choked, but he was trying to sound sarcastic; any laser bright enough to get through the fog would have left an afterglow.

"Maybe. If you are, Juan Orozco, I *will* figure it out—and I'll get you kicked out of school." She turned back to look over the drop off. "Let's get going."

* * * *

The steps got even steeper; eventually they reached a turn and walked on almost level ground for about sixty feet. The other side of the gorge was less than fifteen feet away.

"We must be close to the bottom," said William.

"No, William. These canyons go awfully deep and narrow." Miri motioned them to stop. "My darn battery has died." She fumbled around beneath her jacket, replacing a dead battery with one that was only half dead.

She adjusted her goggles and looked over the railing. "Huh. We have a good view from here." She waved at the

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depths. "You know, Orozco, this might be the place to do some active probing."

Juan pulled the probe gun from the sling on his back. He plugged it into his equipment vest. With the gun connected, most of the options were live:

THE FOLLOWING BLOCK QUOTE MUST BE IN A CONST WIDTH FONT SUCH AS COURIER

```
BAT:LOW      SENSORS      BAT2:LOW
PASSIVE      ACTIVE
VIS AMP OK   GPR          OK
NIR  OK     SONO        OK
>TIR  OK    XECHO       OK
SNIFF  NA    GATED VIS OK
AUDIO  NA    GATED NIR OK
SIG    NA
```

"What do you want to try?"

"The ground penetrating radar." She pointed her own gun at the canyon wall. "Use your power, and we'll both watch."

Juan fiddled with the controls; the gun made a faint *click* as it shot a radar pulse into the rock wall. "Ah!" The USMC goggles showed the pulse's backscatter as lavender shading on top of the thermal IR. In the daylight pictures that Juan had downloaded, these rocks were white sandstone, fluted and scalloped into shapes that water or wind could not carve alone. The microwave revealed what could only be guessed at from the visible light: moisture that etched and weakened the rock from the inside.

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"Aim lower."

"Okay." He fired again.

"See, way down? It Looks like little tunnels cut in the rock."

Juan stared at the pattern of lavender streaks. They did look different than the ones higher up, but—"I think that's just where the rock is soaking wet."

Miri was already hurrying down the steps. "Toss out more dungballs."

* * * *

Down and around another thirty feet, they came to a place where the path was just a tumble of large boulders. The going got very slow. William stopped and pointed at the far wall.

"Look, a sign."

There was a square wooden plate spiked into the sandstone. William lit his flashlight and leaned out from the path. Juan raised his goggles for a moment—and got the dubious benefit of William's light: everything beyond ten feet was hidden behind the pearly white fog. But the faded lettering on the sign was now visible: "FAT MAN'S MISERY".

William chuckled—and then almost lost his footing. "Did you ever think? Old-fashioned writing is the ultimate in context tagging. It's passive, informative, and present exactly where you need it."

"Yeah, sure. But can I point through it and find out what it thinks it means?"

William doused his flashlight. "I guess it means the gorge gets even narrower further on."

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Which we already knew from Miri's maps. At the trailhead, this had looked like a valley, one hundred feet across. It had narrowed and narrowed, till now the far wall was about ten feet away. And from here....

"Scatter some more dungballs," said Miri. She was pointing straight down.

"Okay." They still had plenty of them. He carefully dropped six breadcrumbs where Miri indicated. They stood silently for a moment, watching the network diagnostics: the position guesstimate on one crumb was twenty-five to thirty feet further down. That was darn near the true bottom of the gorge. Juan took a breath. "So, are you ever going to tell us what precisely we're looking for, Miri?"

"I don't *precisely* know."

"But this is where you saw the UCSD people poking around?"

"Some, but they were mainly south of this valley."

"Geez, Miri. So you brought us *here* instead?"

"Look you! I'm not keeping secrets! I could see the hills above this canyon from the tourist scopes on Del Mar Heights. In the weeks after the UCSD guys left, there were small changes in the vegetation, mostly over this valley. At night, the bats and owls were at first more active and then less active than before.... And now tonight we've spotted some kind of tunnels in the rocks."

William sounded mystified. "That's all, Miriam?"

The girl didn't blow up when it was William asking. Instead she seemed almost abashed. "Well ... there's context. Feretti and Voss were behind the trips to the park in January. One is

into synthetic ethology; the other is a world-class proteomics geek. They both got called to San Diego all at once, just like you'd expect for a movie teaser. And I'm sure ... almost sure ... they're both consulting for Foxwarner."

Juan sighed. That wasn't much more than she'd said in the beginning. Maybe Miri's biggest problem wasn't that she was bossy—it was that she was too darn good at projecting certainty. Juan made a disgusted noise, "And you figure if we just poke around carefully enough, solid clues will show up?" *Whatever they may be.*

"Yes! Somebody has to be the first to catch on. Using our probe gear and—yeah—Bertie's dungballs, we're not going to miss much. My theory is Foxwarner is trying to top what Spielberg/Rowling did last year with the magma monsters. This will be something that starts small, and is overtly plausible. With Feretti and Voss as advisors, I'll bet they'll play it as an escape from a bioscience lab." *That would certainly fit the San Diego scene.*

The new breadcrumbs had located their nearest neighbors. Now the extended network showed as diamond-sharp virtual gleams scattered through the spaces both above and below. In effect, they had twenty little 'eyeballs', watching from all over the canyon. The pictures were all low-resolution stuff, but taken together that was too much data to forward all at once across the breadcrumb net to their wearables. They would have to pick through the viewpoints carefully.

"Okay then," said Juan. "Let's just sit and watch for a bit."

The Goofus remained standing. He seemed to be staring upward. Juan guessed that he was having some trouble with

the video Juan was forwarding to him. Things were going to get pretty dull for him. Abruptly, William said, "Do either of you smell something burning?"

"Fire?" Juan felt a flash of alarm. He sniffed carefully at the damp air. "... Maybe." Or it might just be something flowering in the night. Smells were a hard thing to search on and learn about.

"I smell it too, William," Miri said. "But I think things are still too wet for it to be a danger."

"Besides," said Juan, "if there was fire anywhere close, we'd see the hot air in our goggles." Maybe someone had a fire down on the beach.

William shrugged, and sniffed at the air again. *Trust the Goofus to have one superior sense—and that one useless.* After a moment, he sat down beside them, but as far as Juan could tell, he still wasn't paying attention to the pictures Juan was sending him. William reached into his bag and pulled out the FedEx mailer; the guy was still fascinated by the thing. He flexed the carton gently, then rested the box on his knees. Despite all Miri's warnings, it looked like the Goofus wanted to knock it back into shape. He'd carefully poise one hand above the middle of the carton, as if preparing a precise poke ... and then his hand would start shaking and he would have to start all over again.

Juan looked away from him. *Geez the ground was hard. And cold.* He wriggled back against the rock wall and cycled through the pictures he was getting from the breadcrumbs. They were pretty uninspiring... But sitting here quietly, not talking ... there were *sounds*. Things that might have been

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insects. And behind it all, a faint, regular throbbing. Automobile traffic? Maybe. Then he realized that it was the sound of ocean surf, muffled by fog and the zigzag walls of the canyon. It was really kind of peaceful.

There was a popping sound very nearby. Juan looked up and saw that William had done it again, smashed the mailer. Only now, it didn't look so bent—and a little green light had replaced the warning tag.

"You fixed it, William!" said Miri.

William grinned. "Hah! Every day in every way, I'm getting better and better." He was silent for a second and his shoulders slumped a little. "Well, different anyway."

Juan looked at the gap in the canyon walls above them. There should be enough room. "Just set it on the ground and it will fly away to Jamul," he said.

"No," said William. He put the carton back in his bag.

O-kay, so the box is cool. Have a ball, William.

They sat listening to the surf, cycling through the video from the breadcrumbs. There were occasional changes in the pictures, quick blurs that might have been moths. Once, they saw something bigger, a glowing snout and a blurry leg.

"I bet that was a fox," said Miri. "But the picture was from above us. Route us more pictures from the bottom of the canyon."

"Right." There was even less action down there. Maybe her movie theories were vapor, after all. He didn't pay as much attention to the movies as most people did—and just now, he couldn't do any background research. Dumb. On the way to

the park, he had cached all sorts of stuff, but almost nothing about movie rumors.

"Hey, a snake," said Miri.

The latest picture was from a breadcrumb that had landed in a bush just a few inches above the true bottom of the canyon. It was a very good viewpoint, but he didn't see any snake. There was a pine cone and, beside it, a curved pattern in the dark sand. "Oh. A *dead* snake." Viewed in thermal IR, the body was a barely visible as a change in texture. "Or maybe it's just a shed skin."

"There are tracks all around it," said Miri. "I think they're mouse tracks."

Juan ran the image through some filters, and pulled up a half dozen good foot prints. He had cached pictures from nature studies. He stared at them all, transforming and correlating. "They're mouse tracks, but they aren't pocket mice or white foot. The prints are too big, and the angle of the digits is wrong."

"How can you tell?" suspicion was in her voice.

Juan was not about to repeat his recent blunder: "I downloaded nature facts earlier," he said truthfully, "and some fully cool analysis programs," which was a lie.

"Okay. So what kind of mice—"

A new picture arrived from the breadcrumb in question.

"*Whoa!*" "Wow!"

"What is it?" said William. "I see the snake carcass now." Apparently he was a couple of pictures behind them.

"See, William? A mouse, right below our viewpoint—"

"—staring straight up at us!"

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Glowing beady eyes looked into the imager.

"I bet mice can't see in the dark!" said Juan.

"Well, Foxwarner has never been strong on realism."

Juan gave top routing priority to pics from the same breadcrumb. *C'mon, c'mon!* Meantime, he stared at the picture they had, analyzing. In thermal IR, the mouse's pelt was dim red, shading in the shorter fur to orange. Who knew what it looked like in natural light? Ah, but the shape of the head looked—

A new picture came in. Now there were *three* mice looking up at them. "Maybe they're not *seeing* the dungball. Maybe they're smelling the stink!"

"*Shhh!*" William whispered.

Miri leaned forward, listening. Juan pushed up his hearing and listened, too, his fists tightening. Maybe it was just his imagination: were there little scrabbling noises from below? The gleam of the breadcrumb beacon was almost thirty feet below where they were sitting.

The breadcrumb gleam moved.

Juan heard Miri's quick, indrawn breath. "I think they're shaking the bush it's on," she said softly.

And the next picture they saw seemed to be from right on the ground. There was a blur of legs, and a very good head shot.

Juan sharpened the image, and did some more comparisons. "You know what color those mice are?"

"Of course not."

"White—maybe? I mean, lab mice would be neat."

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In fact, Juan had only just saved himself. He'd been about to say: "White, of course. Their head shape matches Generic 513 lab mice." The conclusion was based on applying conventional software to his cached nature information—but no normal person could have set up the comparisons as fast as he had just done.

Fortunately, Miri had some distractions: The breadcrumb's locator gleam was moving horizontally in little jerks. A new picture came up, but it was all blurred.

"They're rolling it along. Playing with it."

"Or taking it somewhere."

Both kids bounced to their feet, and then William stood up too. Miri forced her voice down to a whisper. "Yeah, lab mice would be neat. Escaped super-mice.... This could be a re-remake of *Secret of NIMH!*"

"Those were rats in *NIMH!*"

"A detail." She was already moving down the trail. "The timing would be perfect. The copyright on the second remake just lapsed. And did you see how *real* those things looked? Up till a few months ago, you couldn't make animatronics that good."

"Maybe they *are* real?" said William.

"You mean like trained mice? Maybe. At least for parts of the show."

The latest picture showed cold darkness. The imaging element must be pointing into the dirt.

They climbed down and down, trying their best not to make noise. Maybe it didn't matter; the surf sound was much

louder here. In any case, the fake mice were still rolling along their stolen breadcrumb.

But while the three humans were moving mainly downward, the breadcrumb had moved horizontally almost fifteen feet. The pictures were coming less and less frequently. "*Caray*. It's getting out of range." Juan took three more breadcrumbs from his bag and threw them one at a time, as hard as he could. A few seconds passed, and the new crumbs registered with the net. One had landed on a ledge forward and above them. Another had fallen between the humans and the mice. The third—hah—its locator gleamed from beyond the mice. Now there were lots of good possibilities. Juan grabbed a picture off the farthest crumb. The view was looking back along the path, in the direction the mice would be coming from. Without any sense of scale, it looked like a picture from some fantasy Yosemite Valley.

They had finally reached the bottom, and could make some speed. From behind them, William said, "Watch your head, Munchkin."

"Oops," said Miri, and stopped short. "We got carried away there." This might be a big valley for mice, but just ahead, the walls arched to within inches of each other. She bent down. "It's wider at the bottom. I bet I could wiggle through. I know you could, Juan."

"Maybe," Juan said brusquely. He pushed past her and stepped up into the cleft. He got the active probe off his back, and held it in one hand as he slid into the gap. If he stood sideways and tilted his upper body, he could fit. He didn't even have to take off his jacket. He sidled a foot or two

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further, dragging the probe gun behind him. Then the passage widened enough for him to turn and walk forward.

Miri followed a moment later. She looked up. "Huh. This is almost like a cave with a hole running along the ceiling."

"I don't like this, Miriam," said William, who was left behind; no way could he squeeze through.

"Don't worry, William. We'll be careful not to get jammed." In any real emergency, they could always punch out a call to 911.

The two kids moved forward another fifteen feet, to where the passage narrowed again, even more than before.

"Caray. The stolen breadcrumb is off the net."

"Maybe we should have just stayed up top and watched."

It was a little late for her to be saying that! Juan surveyed the crumb net. There was not even a hazy guesstimate on the lost node. But there were several pictures from the crumb he had tossed beyond all this: every one of them showed an empty path. "Miri! I don't think the mice ever got to the next viewpoint."

"Hey, did you hear that, William? The mice have taken off down a hole somewhere."

"Okay, I'll look around back here."

Juan and Miri moved back along the passage, looking for bolt-holes. Of course there were no shadows. The fine sand of the path was almost black, the fallen pine needles scarcely brighter. On either side, the rock walls showed dark and mottled red as the sandstone cooled in the night air. "You'd think their nest would show a glow."

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"So they're in deep." Miri held up her probe gun, and slipped the radar attachment back onto the barrel. "USMC to the rescue."

They traversed the chamber from one narrowness to the other. When they put the GPR snout of the guns right up to the rock, the lavender echograms were *much* more detailed than before. There really were tunnels, mouse-sized and extending back into the rock. They went through three batteries in about five minutes, but—"But we still haven't found an entrance!"

"Keep looking. We know there is one."

"*Caray*, Miri! It's just not here."

"You're right." That was William. He had crawled part way in to look at them. "Come back here. The critters jumped off the trail before it got narrow."

"What? How do you know?"

William backed out, and the kids wriggled out after him. Ol' William had been busy. He had swept the pine cones and needles away from the edges of the path. His little flashlight lay on the ground.

But they didn't need a flashlight to see what William had discovered. The edge of the path, which should have been black and cold, was a dim red, a redness that spread across the rock face like weird, upward-dripping blood.

Miri dropped flat and poked around where the heat red was brightest. "Ha. I got my finger into something! Can't find an end to it." She pulled back ... and a plume of orange followed her hand and then drifted up, its color cooling to red as it swelled and rose above them.

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There was the faint smell of burning wood.

For a moment, they just stared at each other, the big black goggle eyes a true reflection of their inner shock.

No more warm air rose from the hole. "We must have found an in-draft," William said.

Both Miri and Juan were on their knees now. They looked carefully, but the goggles didn't have the resolution to let them see the hole clearly—it was simply a spot that glowed a bit redder than anything else.

"Use the gun, Juan."

He probed the rock above the hole and on either side. The tiny passage extended two feet down from the entrance, branching several times before it reached the main network of tunnels and chambers.

"So what happened to the dungball they grabbed? It would be nice to get some pictures from in there."

Juan shrugged, and fed his probe gun still another battery. "They must have it in one of the farther chambers, behind several feet of rock. The crumb doesn't have the power to get through that."

Juan and Miri looked at each other, and laughed. "But we have lots more breadcrumbs!" Juan felt around for the entrance hole and rolled a crumb into it. It lit up about six inches down, just past the first tunnel branch.

"Try another."

Juan studied the tunnel layout for a moment. "If I throw one in just right, I bet I can carom it a couple of feet." The crumb's light disappeared for a moment ... and then appeared as data forwarded via the first one. *Yes!*

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"Still no word from the one they stole," said Miri. There were just the two locator gleams, about six inches and thirty-six inches down their respective tunnels.

Juan touched the gun here and there to the rock face. With the GPR at high power, he could probe through a lot of sandstone. How much could he figure out from what came back? "I think I can refine this even more," he said. Though that would surely make Miri suspicious. "That third fork in the tunnel. Something ... soft ... is blocking it." A brightly reflecting splotch, coming slowly toward them.

"It looks like a mouse."

"Yeah. And it's moving between two breadcrumbs," effectively a two-station wireless tomograph. *Maybe I can combine it all.* For a moment, Juan's whole universe was the problem of meshing the "breadcrumb tomography" with the GPR backscatter. The image showed more and more detail. He blanked out for a just a second, and for a moment after that forgot to be cautious.

It was a mouse all right. It was facing up the tunnel, toward the entrance the three humans were watching. They could even see its guts, and the harder areas that were skull and ribs and limbs. There was something stuck in its forepaw.

The whole thing looked like some cheap graphics trick. Too bad Miri didn't take it that way. "Okay! I've *had it* with you, Juan! One person could never work that fast. You *doormat!* You let Bertie and his committee—"

"Honest, Miri, I did this myself!" said Juan, defending where he should not defend.

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"We're getting an F on account of you, and Bertie will own all of this!"

William had been watching with the same detachment as during Miri's earlier accusations. But this time: "I see the picture, Munchkin, but ... I don't think he's lying. I think he did it himself."

"But—"

William turned to Juan, "You're on drugs, aren't you, kid?" he said mildly.

Once a secret is outed—

"No!" *Make the accusation look absurd.* But Juan floundered, wordless.

For an instant, Miri stared open-mouthed. And then she did something that Juan thought about a lot in the times that followed. She raised her hands, palms out, trying to silence them both.

William smiled gently. "Miriam, don't worry. I don't think Foxwarner is patching us into their summer release. I don't think anyone but us knows what we're saying here at the bottom of a canyon in thick fog."

She slowly lowered her hands. "But ... William." She waved at the warmth that spread up the rock face. "None of this could be natural."

"But what kind of *unnatural* is it, Munchkin? Look at the picture your friend Juan just made. You can see the insides of the mouse. It's not animatronic." William ran a twitchy hand through his hair. "I think somebody in the bioscience labs hereabouts really did have an accident. Maybe these creatures aren't as smart as humans ... but they were smart

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enough to escape, and fool—who was it that was poking around here in January?"

"Feretti and Voss," Miri said in a small voice.

"Yes. Maybe just hiding down here when the bottom was under water was enough to fool them. I'll bet these creatures have just a little edge over ordinary lab mice. But a little edge can be enough to change the world."

And Juan realized William wasn't talking about just the mice. "I don't want to change the world," he said in a choked voice. "I just want to have my chance in it."

William nodded. "Fair enough."

Miri looked back and forth at them. What Juan could see of her expression was very solemn.

Juan shrugged. "It's okay, Miri. I think William is right. We're all alone here."

She leaned a little toward him. "Was it Bertie who got you into this?"

"Some. My mother has our family in one of the distributed framinghams. I showed my part of it to Bertie last spring, after I flunked Adaptability. Bertie shopped it around as an anonymous challenge. He came back with a custom drug. What it does—" Juan tried to laugh, but it sounded more like a rattle. "—most people would think that what it does is a joke. See," he tapped the side of his head, "it makes my memory very very good. Everyone thinks human memory doesn't count for much anymore. People say, 'No need for eidetic memory when your clothes' data storage is a billion times bigger.' But that's not the point. Now I can remember big data blocks perfectly, and I have my wearable put

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hierarchical tags on all the stuff I see. So I can communicate patterns *back* to my wearable just by citing a few numbers. It gives me this incredible advantage in setting up problems."

"So Bertie is your great friend because you are his super tool?" Her voice was quiet and outraged, but the anger was no longer directed at Juan.

"*No!* I've studied the memory effect. The idea itself came from analysis of my own medical data. Even now that we have the gimmick, only one person in a thousand could be affected by it at all. There's *no way* Bertie could have known beforehand that I was special."

"Ah. Of course," she said, and was silent. Juan hated it when people did that, agreed with what you said and then waited for you to figure out why you had just made a fool of yourself.... *Bertie is just very good with connections.* He had connections everywhere, to research groups, idea markets, challenge boards. But maybe Bertie had figured out how to do even better: How many casual friends did Bertie have? How many did he offer to help with custom drug improvements? Most of that would turn out to be minor stuff, and maybe those friendships would remain casual. But sometimes, Bertie would hit the jackpot. *Like with me.*

"But Bertie is my best friend!" *I will not blubber.*

"You could find other friends, son," said William. He shrugged. "Back before I lost my marbles, I had a gift. I could make words sing. I would give almost anything to get that back. And you? Well, however you came by it, the talent you have now is a marvelous gift. You are beholden to no one other than yourself for it."

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Miri said softly. "I—I don't know, Juan. Custom meds aren't illegal like twentieth century drugs—but they are off-limits for a reason. There's no way to do full testing on them. This stuff you're taking could—"

"I know. It could fry my mind." Juan put his hands to his face, and ran into the cold plastic of his goggles. For a moment, Juan's mind turned inward. All the old fear and shame rose up ... and balanced against the strange surprise that out of the whole world, this old man could understand him.

But even here, even with his eyes closed, his contacts were still on, and Juan saw the virtual gleam of the breadcrumbs. He stared passively for several seconds, and then surprise began to eat through his funk. "Miri ... they're *moving*."

"Huh?" She had been paying even less attention than he had. "Yes! Down the tunnels, away from us."

William moved close to the mouse hole, and pressed his ear against the stone wall. "I'll bet our little friends are taking your dungballs to wherever the first one went."

"Can you get some pictures from them, Juan?"

"...Yes. Here's one." A thermal glimpse of a glowing tunnel floor. Frothy piles of something that looked like finely shredded paper. Seconds passed, and a virtual gleam showed dimly through the rock. "There's the locator beacon of the first crumb." It was five feet deeper in the rock. "Now it has a node to forward through."

"We could lose them, too."

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Juan pushed past William, and tossed two more breadcrumbs down the hole. One rolled a good three feet. The other stopped after six inches—and then began moving “on its own”.

“The mice are stringing nodes *for us!*” All but the farthest locator beacon were glowing high-rate bright. Now there were lots of pictures, but the quality was poor. As the crumbs warmed in the hot air of the tunnels, the images showed very little detail except for the mice themselves: paws and snouts and glowing eyes. “Hey, did you see the splinter sticking out of that poor thing's paw?”

“Yes, I think that's the one I saw before. Wait, we're getting a picture from the crumb they stole to begin with.” At first, the data was a jumble. *Still another picture format?* Not exactly. “This picture is normal vision, Miri!” He finished the transformation.

“How—?” Then she gave a sharp little gasp.

There was no scale marker, but the chamber couldn't have been more than a couple of feet across. To the eye of the breadcrumb it was a wide, high-ceilinged meeting room, crowded with dozens of white-furred mice, their dark eyes glittering by the light of a ... fire ... in the middle of the hall.

“I think you have your ‘A’, Miriam,” William said softly.

Miri didn't answer.

Rank upon rank of mice, crouched around the fire. Three mice stood at the center, higher up—tending the flame? It wobbled and glowed, more like a candle than a bonfire. But the mice didn't seem to be watching the fire as much as they

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were the breadcrumb. Bertie's little breadcrumb was the magical arrival at their meeting.

"See!" Miri hunched forward, her elbows on her knees. "Foxwarner strikes again. A slow flame in a space like that ... those 'mice' should all be dead of carbon monoxide poisoning."

The breadcrumbs were not sending spectral data, so who could say? Juan visualized the tunnel system. There were other passages a little higher up, and he had data on the capacity of the inlets and outlets. He thought a few seconds more and gave the problem to his wearable. "No ... actually, there is enough ventilation to be safe."

Miri looked up at him. "Wow. You are fast."

"Your Epiphany outfit could do it in a instant."

"But it would've taken me five minutes to pose the problem to my Epiphany."

Another picture came in, firelight on a ceiling.

"The mice are rolling it closer to the fire."

"I think they're just poking at it."

Another picture. The crumb had been turned again, and now was looking outwards, to where three more mice had just come in from a large side entrance ... rolling another breadcrumb.

But the next picture was a blur of motion, a glimpse of a mostly empty meeting chamber, in thermal colors. The fire had been doused.

"Something's stirred them up," said William, listening again at the stone wall. "I can actually hear them chittering."

"The dungballs are coming back this way!" said Miri.

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"The mice are smart enough to understand the idea of poison." William's voice was soft and wondering. "Up to a point, they grabbed our gifts like small children. Then they noticed that the dungballs just kept coming ... and someone raised an alarm."

There were still pictures, lots of them, but they were all thermal IR, chaotic blurs; the mice were hustling. The locator gleams edged closer together, some moving toward an entrance about three feet above the gully floor. The others were approaching the first hole.

Juan touched the probe gun against the wall and pulsed the rock in several places. He was getting pretty good at identifying the flesh-and-blood reflections. "Most of the mice have moved away from us. It's just a rearguard that's pushing out the breadcrumbs. There's a crowd of them behind the crumbs that are coming out by your head, William."

"William, quick! The FedEx mailer. Maybe we can trap some when they come out!"

"I ... yes!" William stood and pulled the FedEx mailer from his bag. He tilted the open carton toward the mouse hole.

A second later there was a faint scrabbling noise, and William's arms moved with that twitchy speed of his. Juan had a glimpse of fur and flying breadcrumbs.

William slapped the container shut, and then stumbled backwards as three more mice came racing out of the lower hole. For a fleeting instant, their glowing blue eyes stared up at the humans. Miri made a dive for them, but they had already fled down the path, oceanward. She picked herself up and looked at William. "How many did you get?"

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"Four! The little guys were in such a rush they just jumped out at me." He held the mailer close. Juan could hear tiny thumping noises from inside it.

"That's great," said Miri. "Physical evidence!"

William didn't reply. He just stood there, staring at the carton. Abruptly he turned and walked a little way up the trail, to where the path widened out and the brush and pines didn't cover the sky. "I'm sorry, Miriam." He tossed the mailer high into the air.

The box was almost invisible for a moment, and then its ring of jets lit up. Tiny, white-hot spikes of light traced the mailer's path as it wobbled and swooped within a foot of the rock wall. It recovered, and slowly climbed, still wobbling. Juan could imagine four very live cargo items careening around inside it. Silent to human ears, the mailer rose and rose, jets dimming in the fog. The light was a pale smudge when it drifted out of sight behind the canyon wall.

Miri stood, her arms reaching out as if pleading.
"Grandfather, *why?*"

For a moment, William Gu's shoulders slumped. Then he looked across at Juan. "I bet you know, don't you, kid?"

Juan stared in the direction the mailer had taken. Four mice, rattling around in a half-broken mailer. He had no idea just now what security was like at the FedEx minihub, but it was at the edge of the back country, where the mail launchers didn't cause much complaint. Out beyond Jamul ... the mice could have their chance in the world. He looked back at William and just gave a single quick nod.

* * * *

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There was very little talk as they climbed back out of the canyon. Near the top, the path was wide and gentle. Miri and William walked hand in hand. There were spatters of coldness on her face that might have been tears, but there was no quaver in her voice. "If the mice are real, we've done a terrible thing, William."

"Maybe. I'm sorry, Miriam."

"...But I don't think they are real, William."

William made no reply. After a moment, Miri said, "You know why? Look at that first picture we got from the mouse meeting hall. It's just too perfectly dramatic. The chamber doesn't have furniture or wall decorations, but it clearly *is* a meeting hall. Look how all the mice are positioned, like humans at an old town meeting. And then at the center—"

Juan's eyes roamed the picture as she spoke. Yes. There in the center—almost as though they were on stage—stood three large white mice. The biggest one had reared up as it looked at the imager. It had one paw extended ... and the paw grasped something sharp and long. They had seen things like that in other pictures and never quite figured them out. In this natural-light picture, the tool—a spear? —was unmistakable.

Miri continued on, "See, that's the tip-off, Foxwarner's little joke. A real, natural breakthrough in animal intelligence would never be such a perfect *movie poster*. So. Later tonight, Juan and I will turn in our local team report, and Foxwarner will 'fess up. By dinnertime at the latest, we'll be famous."

And my own little secret will be outed.

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Miri must have understood Juan's silence. She reached out and took his hand, dragging the three of them close together. "Look," she said softly. "We don't know what—if anything—Foxwarner recorded of us. Even now, we're in thick fog. Except for the mice themselves, our gear saw no sensors. So either Foxwarner is impossibly good, or they weren't close snooping us." She gestured up the path. "Now in a few more minutes we'll be back in the wide world. Bertie and maybe Foxwarner will be wisping around. But no matter *what* you think really happened tonight—" her voice trailed off....

And Juan finished, "—no matter what really happened, we're all best to keep our mouths shut about certain things." She nodded.

* * * *

Bertie followed Juan home from Miri's house, arguing, wheedling, demanding all the way. He wanted to know what Miri had been up to, what all they had done and seen. When Juan wouldn't give him more than the engineering data from the dungballs, Bertie had got fully dipped, kicked Juan off their unlimited team, and rejected all connections. It was a total Freeze Out. By the time Juan got home, he could barely put up a good front for his Ma.

But strangely enough, Juan slept well that night. He woke to morning sunlight splashing across his room. Then he remembered: Bertie's total Freeze Out. *I should be frantic.* This could mean he'd fail the unlimited and lose his best friend. Instead, more than anything else, Juan felt like ... he was free.

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Juan slipped on his clothes and contacts, and wandered downstairs. Usually, he'd be all over the net about now, synching with the world, finding out what his friends had done while he was wasting time asleep. He'd get to that eventually; it would be just as much fun as ever. But just now the silence was a pleasure. There were a dozen red "please reply" lights gleaming in front of his eyes—mostly from Bertie. The message headers were random flails. This was the first time one of Bertie's Freeze Outs had not ended because Juan came groveling.

Ma looked up from her breakfast. "You're off-line," she said.

"Yeah." He slouched onto a chair and started eating cereal. His father smiled absently at him and went on eating. Pa's eyes were very far away, his posture kind of slumped.

Ma looked back and forth between them, and a shadow crossed her face. Juan straightened up a little and made sure she saw his smile. "I'm just tired out from all the hiking around." Suddenly, he remembered something. "Hey, thanks for the maps, Ma."

She looked puzzled.

"Miri used 411 for recent information on Torrey Pines."

"Oh!" Ma's face lit up. There were a number of 411 services in San Diego County, but this *was* her kind of thing. "Did the test go well?"

"Dunno yet." They ate in silence for a moment. "I expect I'll know later today." He looked across the table at her. "Hey, you're off-line, too."

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She grimaced and gave him a little grin. "An unintended vacation. The movie people dropped their reservations for four time."

"...Oh." Just what you'd expect if the operation in East County was related to what they'd found in Torrey Pines. Miri would have seen the cancellation as significant evidence. Maybe it was. But he and Miri had turned in their project report last night, the first local exam to complete. If she were right about the mice, Foxwarner was sure to know by now that their project had been outed, and you'd think they'd have launched publicity. And yet, there were no bulletins; just Bertie and a few other students pinging away at him.

Give it till dinnertime. That's how long Miri said it might take for a major cinema organization to move into action. Real or movie, they should know by then. And his own secret? It would be outed ... or not.

Juan had a second serving of cereal.

* * * *

Since he had a morning exam, Ma let him take a car to Fairmont. He made it to school with time to spare.

The vocational exam was for individuals, and you weren't allowed to search beyond the classroom. As with Ms. Wilson's math exam, the faculty had dug up some hoary piece of business that no reasonable person would ever bother with. For the vocational test, the topic would be a work specialty.

And today ... it was Regna 5.

When Regna had been hot, back in Pa's day, tech schools had taken three years of training to turn out competent Regna practitioners.

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It was a snap. Juan spent a couple of hours scanning through the manuals, integrating the skills ... and then he was ready for the programming task, some cross-corporate integration nonsense.

He was out by noon, with an A.

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