



Mallory

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Mallory

Vijay had been playing video games his whole life, but he'd never really become addicted to one until the first incarnation of *Fuck Me*. Adding an element of real-time strategy to the already-frenetic *Gestalt Warrior* combined construction, emergent behavior, and blob-themed violence in a way that both Vijay and the Selfish GAME found satisfying.

Game addiction burns hot and fast, unless the game itself keeps changing. Having spawned *Fuck Me*, the Selfish GAME shuffled its pedigree and came out with *Super Fuck Me*. This led to *Ms. Fuck Me*, which begat *Fuck Me Heels*, *Fuck Me Millennium Edition*, *Let's Have A Meaningful Relationship*, and other profane heralds of blob megadeath culminating in *Fuck Me Harder*, which was too complex for anyone not skilled at earlier iterations. *Fuck Me Harder* put Vijay's brain through strange transformations and he did not do well on the phone while playing it.

"Yes, hello, Rodney," he said, cradling the fake cell phone against his neck. He reached for the laptop keyboard, waving away the dangling cord that connected the Sabertooth set to his real cell phone. "Is this a random call? 'Cause I'm kind of busy." Vijay had met Rodney at a conference he'd attended only to give a paper about the SimShitty fab layout program. Their only shared interest was making meaningless phone calls to fool NSA data miners.

"Is that noise real?" asked Rodney. "It sounds like glitch metal."

"I'm playing a game," said Vijay. The Selfish GAME did not understand soundtracks or sound effects, and the games it produced were noisefests. Vijay always left the sound on and tuned it out; there was nobody around to bother him about it.

"You're busy—what game sounds like that?"

"*Fuck Me Harder*."

"Is that the name or..."

"Yeah." Vijay picked up a scroll and destroyed all blue blobs within a certain radius. He instantly regretted this since his own blue blobs had been playing an important role in a pincer movement.

"So, no, it's not an Entropy call. I called you to ask if you want to help me test the radio friendly unit shifter."

Vijay paused the game and stared at the frozen LCD, repeatedly projecting blob movements for the next few seconds before snapping back to the present. "The what now?"

"My signal retransmitter, for Pyromancy. I've been posting about it on my anonoblog for months."

"Oh. I skipped those because I hate circuit diagrams." Actually Vijay had been skipping most of what Rodney posted on his blogs.

"Cretin! So I'm going to try it out on this call. It'll sound like we're talking through a vocoder."

"It's an effects pedal for radio and phones? That's going to get you into Pyromancy?"

"Oh, it's extremely illegal. It clobbers all sorts of FCC rules."

"But you could make a legal one, couldn't you, that worked like the Sabertooth?"

"Yes, I could, if I wanted to mess up my own calls. This one messes up other peoples'. You ready?"

Vijay was neither ready nor un-. "Hmm, how is this possible? Doesn't it use a lot of power?"

"No more than your tiny cell phone needs to broadcast on the same frequencies. RTF circuit diagrams. Here we go!"

Vijay reached for the keyboard again and played half a second of *Fuck Me Harder* before his headset bleated static even worse than the soundtrack to the game. He dropped the fake cell phone like a piece of bread he'd just discovered was moldy.

The noise stopped. "Hey, you still there?" came Rodney's voice from the Sabertooth.

"Yeah, way to go, mister circuit diagram. You messed with an encrypted phone call and you turned it to garbage."

"No, this is actually good, because it demonstrates the value of voice encryption. I can't overpower someone's encrypted call and change what they're saying. The Pyromancy guys love the public service angle."

"You still want to try it out?" asked Vijay. "Turn off the encryption on your end." He held his thumb to the side of the Sabertooth.

"You can't just turn off encryption!" said Rodney, as if Vijay had suggested removing the condom.

"Why not? You're not going to say anything during the test. Mallory already knows you called me. Who cares if she hears unencrypted noise instead of encrypted noise?"

“Forget it,” said Rodney. “I’ll buy two throwaway phones and call one with the other.”

“Hey, whatever floats your boat. Let me know how it goes.”

“Fine. Are you working on anything interesting?”

Vijay took inventory. “I’m supposed to be fixing bugs for my boss. But he’s away at a Demo so I’m working on the game. Now that you mention it, I think it would make a good Pyromancy entry.”

“You wrote this game? How can a game be illegal?”

“It’s more a factory for games than one specific game.” Vijay was sinking into a game fugue, not interested in defending his nerd honor. With his free hand he swatted at an imaginary fly.

But after Rodney hung up, Vijay sat back in his chair and let all his blobs die. He’d discovered common cause with Rodney (who was still annoying). Along with hundreds of other hackers and hobbyists, they were consumed by projects that could never be released, whose only possible futures were infamy or permanent nagging obscurity. Katamari Pyromancy offered a purge of the mind, end-of-life with dignity.

Vijay projected his own movements into the future. An abstract submitted to the Pyromancy organizers, then the laptop searching a day’s spam for the secret coordinates of its grave. Himself stepping off a plane, then out of a rental car, shedding technology like winter clothes. Nothing in his hands now but the two universal tools: the personal computer, and duct tape.

He climbs a hill and sees his tribe below, assembled through a thousand anonymous transactions. Shy people turned social by the end of the world, showing off a crop of forbidden machines. He tells and hears the Demo. Rodney’s machine screws up some guy’s pirate radio software and everybody laughs. Some video installation that nobody understands, not even the artist. A girl with green hair, like the token girl in hacker movies, looks over Vijay’s shoulder all friendly like, and touches his arm.

Maybe it gets wild, maybe not. Who knows if you can trust people’s Pyromancy stories when the whole point is deniability. There’s probably drugs but no sex: just what’s necessary to suppress your child-preservation instinct at the crucial moment. Vijay takes up the Selfish GAME one last time and migrates to the center with everyone else. He straps it to its brothers with duct tape, one panel on a big ball of creativity.

He climbs that hill again, he and the hacker girl and Rodney and the guy who was in jail, all looking down. Then like that irrevocable moment when you decide this is it, you're going to throw up — bam!, there goes everybody's year in a big fireball. Artificial closure.

Then back to the car to the plane to productivity. To a new laptop, sending innocent encrypted emails to the hacker that eventually peter out. Back to working for Keith and the Weyo entity, waiting for another idea to colonize the empty space in his brain.

Except Vijay would never have another tenant after the Selfish GAME. As the years went by he'd decorate the shell with nostalgia: enlargements of that splendid explosion, an incendiary finger raised to Mallory's spy satellites. Vijay had read his crypto diagrams and he knew the best you can do is evade Mallory, show her you know she's watching. The thought of playing to win did not occur to him.

Here's how the Demo goes when Keith sings it:

He spreads a towel over the table and dumps a bunch of toys onto the towel. A dining car for a model train, a covered bridge for same, some click-brick minifigs, a milled garnet sculpture, a grinning plastic tree person. One hundred miles away, his business partner has just decided to blow up his laptop.

"A Demo is just a story," says Keith, "and my Demo is about people who like to tell stories themselves. I brought some pieces of their stories to use as illustrations.

"Let's consider two Weyo customers, Alice and Bob. Alice plays in a shared virtual world, where she builds things and shows them off to her online friends. We at Weyo look at a virtual world and see a big, user-friendly CAD program."

Keith holds up the smiling tree-guy. "Here's one of Alice's virtual creations. She sends them to us and we print them out in 3D, so she can put them on her coffee table and show them off to her real-life friends.

"On the other end of the spectrum we have Bob. Bob plays in the real world, but his hobby involves a lot of small custom parts. Maybe he's a sculptor. Maybe he's a wargamer who needs authentic-looking half-inch Panzers. Maybe he builds little robots and he needs custom casings. But in actuality, Bob does model train layouts, and he needs landscaping." Keith holds up the dining car and the bridge.

“Now, unlike with Alice, there’s no shortage of people selling items for Bob’s coffee table. There are whole stores full of this stuff. The problem is that none of it is exactly what Bob has in mind, and most of it is pretty poor-quality molded plastic. Bob has put up with this for years, kitbashing and scraping off and repainting. Weyo’s 3D printing gives him precisely what he wants at much better resolution. Now Bob can build the model train layout of his dreams.

“Bob’s friend Charlie has a similar hobby: he builds complex structures out of toy click-bricks. Whenever he needs a custom brick or a new color, he draws it up in a CAD program and prints it out with Weyo. As you can see, he’s made a little figure of Bob to inhabit his creations.”

Keith holds up one of the click-brick humanoids, and sure enough it’s Keith, polo shirt and everything. He laughs bashfully, a skill retained from high school. “I guess now’s a good time to admit that Bob is me.” They kind of smile. Good enough.

“There are hundreds of stories like these, all with the same basic pattern. People have ideas and landscapes in their heads; Weyo turns them into products. We can do it dirt cheap in plastic, resin, foam, or pressed wood. For a little more we can do it in metal or semiprecious stone. The big expense is shipping. We’ve been profitable in this market since day one, and we’re looking to expand. Yes.”

Keith points at one of the VCs, who was about to ask a question anyway. The Demo is a story but it’s also a video game. You can’t say your piece and walk off. It requires agility and the all-important hand-eye coordination.

“It seems like your business is pretty well-established. Why are you looking for investment money?” This is level one: dodgeball.

“Right now we’re a profitable small company. We want to be a profitable large company. Hobbyists are always on the cutting edge; they’ll pay more for less. That won’t last long.

“We want to bring create-on-demand to the mass market, so everyone prints things out instead of buying them pre-made. We want everything to be customized: guitar bodies, pool tiles, even furniture. If you’re missing a part, you just print one out. With more money we can improve our processes and get new fabbers for large, complex objects.” Large here being the size and mass of a loaf of bread; no furniture yet.

“Don’t Pixelstub and Artifactory already do large-scale custom fabricating?” Level two: ritual arena combat.

“They make one-off prototypes. We make the real thing, and we keep the design around so you can make one whenever you want. We even have a marketplace set up so you can sell your designs to other people with your hobby. When hobbyists start getting their own fabbers at home instead of using ours, that marketplace is where the money will be.”

Keith’s getting grilled and he likes it. But as cute as they are, he needs to pull those click-brick figures from the Demo, because they look just like the click-bricks made by a large Scandinavian company, and that triggers the worry in the back of every VC’s mind. Here it comes now.

“What,” says the guy Keith’s age, “what’s to stop people from using your service to duplicate copyrighted images? Let’s say they reproduced an action figure and started selling it as original.”

Always some *nerd* fouls up Keith’s Demo world of smiling Alices and Bobs. Today it’s spiky-hair Chad here. Probably the youth liaison, VP for strategic keeping it real. Instead of a fairly easy level three, Keith is warped straight to a confrontation with the final boss, Mallory.

Mallory owns all the copyrights and trademarks, she makes the plastic toys around here, and she’s mad about people butting in on her territory. She’s always poking her nose into Alice’s business and Bob’s, firing off swarms of cease-and-desist letters. One day she’ll notice Weyo and brush it aside with her big lizard tail.

“You wouldn’t get many takers for an action figure at three times the market price,” says Keith weakly. He can’t find the boss’s weak spot. With his towel spread out on the table, he looks like a kid running away from home with his toys in a knapsack.

Keith’s only hope when he sings the Demo is to rack up the highest possible score before Mallory clobbers him; then maybe he can finally get some money. A belief not much different from one he held years ago: that if he got really good at Mutant’s Revenge, Paul Harriman would want to make out with him.

“But the possibility’s there,” says Chad. Always the possibility with Mallory, always the precaution, the timidity before power. “If anyone can print out anything, there’s bound to be abuse. It would only take one lawsuit to shut you down. Even if you were legally in the right, you couldn’t afford it.”

Frickin' Mallory. "Well, first, we've had zero complaints so far. But if we ever do get complaints from a copyright owner, we'll handle them in good faith on a case-by-case basis. That's the best we can do."

Keith's overpowered PDA pops up a notice. *This is the worst possible time*, thinks Keith, but he's defeated anyway. He pulls it off the table.

"Sorry," he says. "Excuse me a minute. I have to make a phone call."

Keith ducks out into the hall. Behind his back he's sure the VCs are smirking, guy has to go *make* a phone call, frickin' amateur. The notice on his PDA shows a Bible text and a phone number he's never seen before. It's time for Keith to do his part to defeat the NSA. He plugs in his Saber-tooth and dials the number.

"Yello?" It's male, a smoker's voice, Midwestern.

"Entropy calling," says Keith. "Some random text for you. Psalms 32:8. 'I will instruct you and teach you in the way you should go; I will counsel you with my eye upon you.'"

"Hey, you know what I hate?" says the voice on the other end, desperate for company.

Human contact is the last thing Keith needs right now. "'Do not be like the horse or the mule, which have no understanding...'" He finishes the 32nd Psalm and starts on the 33rd. After one minute and fourteen seconds, he hangs up and goes back into the conference room.

"You been talkin' about me?" he asks. Just trying to lighten the mood a little.

Vijay came in to to work late that evening to make a custom glow-in-the-dark logo for his laptop. He snuck the design into an after-hours batch and was waiting on the printer when Keith saw him and decided it was a good time to give him a new assignment.

"Now is not a good time," said Vijay. "I'm just finishing up a personal project for Katamari Pyromancy. I think I have a really good chance of being the one who gets arrested."

"You had better be joking," said Keith, clearing off the whiteboard.

"C'mon, nobody gets arrested," said Vijay. "Mallory never even knows where it's being held until it's too late."

Keith turned, leaving a state diagram half-erased. "What does Mallory have to do with Pyromancy?"

“You know, secret policewoman Mallory. Alice and Bob want to go to Pyromancy, and Mallory wants to intercept them ‘cause they’re gonna do bad bad things when they get there.”

“Oh, the generic Mallory,” said Keith. “You spooked me because I’ve been thinking about business problems as though they were crypto diagrams.” Keith finished erasing the whiteboard and tapped the eraser against his slacks a couple times. “Weyo has a Mallory who is driving me crazy, and what I need from you is in the way of a countermeasure.”

Vijay sat up despite himself. “Aha, that’s got your attention,” said Keith. He picked up a marker and drew a doodle on the whiteboard: a stick figure and a rectangle.

“All month I have been going in front of people who have money,” he said, “and telling them what I thought they wanted to hear.” He pointed at the whiteboard doodle, which Vijay now realized was a picture of Keith pointing at a whiteboard. “It turns out that all they really want to hear is how we keep people from putting sports team logos on their blobs.”

Vijay sagged into the fake Volt chair and let his tongue fall out of his mouth.

“It’s stupid, but it’s the deal breaker. Nobody’s gonna give us money just so we can piss it away getting sued. We need some way of rejecting blobs that use trademarks or copyrighted images, so that there’s no confrontation with the Mallories who own them.”

Vijay raised his hand. “Okay, so that’s less a countermeasure than a capitulation.”

“Stop being such a drama queen,” said Keith. “It makes us actual queens look bad. I’m asking for a defense against a skilled attacker with effectively unlimited resources. You could do it as a crypto diagram: Alice *wants* money, and Bob *has* money, but Bob’s afraid—”

“I get it. Who even cares about this crap? Bob is just being paranoid.”

“You may not be interested in Mallory,” said Keith, “but Mallory is interested in you. I don’t want this company to end up like a Your Power or a Xyppicu. Plus it’s the right thing to do. Do you *want* us to be the next guys who make it trivial to commit mass copyright infringement?” Keith popped the cap of the whiteboard marker over and over again.

The 3D printer beeped via the computer’s case speaker. “My nachos are done,” said Vijay. He carefully opened the printer case, uncovering a

wobbling sculpture of plastic blobs bound together by thin grey filaments.

"I honestly don't care," he said, consulting the map on the computer monitor as he plucked items from the spiderweb. "It's not a big priority for me. I'd rather do things than stop people from doing things."

"As an officer of Weyo, you need to care," said Keith.

"My life does not revolve around these damn shares," said Vijay. "Not like yours. I have interests beyond this boring fabber software. It may not look like it."

"Hey. I know how you work and I don't push it. I don't make you show up here every day just so I can look over your shoulder. But when I really need something from you, I need it in Weyo's timeframe, not yours. Even if it means skipping something like Pyromancy."

"Well that's a real shame," Vijay drawled, rounding up a herd of HO scale cows suspended in midair, "because I was really looking forward to being irradiated with PCBs while making out with an obese bisexual sysadmin from Indiana."

"Take something seriously, dammit." Keith actually wrote DAMMIT on the whiteboard. "We are at the point where we make it big or we stay the size of a comic book shop forever."

"Wait a minute," said Vijay, "someone's been cattle rustling. These cows all have different brands." He dropped the bovine chunks into a labeled mailer and sighed.

"I'm sorry, dude," he said. "You know I get worked up and start throwing around words like 'Indiana' just to push your buttons."

"Right now Mallory can crush this company and nobody will notice except a couple of blogs. We need some kind of defense or we're stuck under the radar forever."

Vijay smirked. "You want it *when*?"

Two grown men briefly clutched their stomachs and made ritual heaving noises, imitating the mimeograph-era cartoons hung on the office wall, the connotation of which had plunged through playfully ironic to genuinely depressing until Keith had livened them back up with speech bubbles like "OH GOD THE MUSHROOMS".

"I can *possibly* meet with some Boston guys in three weeks," said Keith. The whiteboard marker dropped as he held up crossed fingers. "Keith and Vijay can spend their time however they want, but Weyo

needs to go up there and at least pretend to have a solution to this Mallory problem.”

“Check it out,” said Vijay, reaching into the center of the spiderweb and pulling out a green plastic square: Pyromancy funeral clothes for his laptop. “People are idiots if they don’t buy glow-in-the-dark versions of everything they’ve already bought from us.”

Keith interrogated the laptop logo. “GAME? What’s that mean? Is that a word or a ... trademarked name?”

“Maybe it’s trademarked. I don’t know.”

“You draw that double helix or get it off an image search?”

Vijay toked an imaginary joint. “Man, why you gotta ask what happens to all the pot we confiscate?”

“Can you do this? Seriously?”

“Okay, said Vijay, “I will concoct something to help out the courtship. But then I am definitely going on vacation.”

“Fine.”

“To Indiana.”

“Gar.”

Deep beneath Yucca Mountain, Nevada, Mallory monitors the world’s communications. Lacking physical form, she works through unwitting confederates and side effects: tweaking reward systems, modifying instructions en route. In cryptography diagrams, her symbol is a malevolent, all-seeing eye.

Mallory spies on presidents and paupers, national secrets and credit card transactions. She swallows whole any message not designed to resist her. The rest she cracks like lobsters: with brute force.

Like any bureaucracy, her motive is self-perpetuation, sheer hunger for data. The ruined lives and pointless wars are just more side effects. Mallory is made of information, and she needs to eat.

This sort of paranoia is very old, but computer science has institutionalized it and gotten good mileage out of probing Mallory’s capabilities. Ask a programmer Vijay’s age, and he’ll say the two most interesting projects are: to slow the flow of information towards Mallory, and to help its distribution elsewhere. Doing either risks Mallory’s wrath, which is why, to a first approximation, all those programmers are

constantly breaking the law. Mallory, though metaphorical, was not at all hypothetical.

Vijay's Mallory obsession climbed once he blew off Pyromancy, his designated outlet. The program he was writing could never hurt anybody, since it would never work, but it would have made a great prop for a Mallory Halloween costume. Under Demo conditions, it would sound a satisfying buzzer when Keith fed it the logos of major corporations. Scary!

The only good thing about the trademark project was its inconvenient timing, which had prevented Vijay from going to Pyromancy. Saved from destruction, the Selfish GAME made a grand evolutionary breakthrough into its next phase of being: producing games that didn't even work, dammit. This was probably just an algorithmic dead-end, but Vijay considered it a personal betrayal by an idea that had lived in his head rent-free since he was a boy.

Vijay had grown up playing *Mutant's Revenge* and the *Puddle Play* games in local arcades. When he finally got his own computer, he resolved to save his quarters by writing his own version of *Mutant's Revenge*, replete with gameplay improvements and with much better graphics. The blame for his failure he laid squarely on his tools. His dinky first-generation Muse Calliope, yes, but also the computer that moved his eyes and his guts, which turned out incompatible with whatever tape made you a whiz-kid programmer.

Thanks to the General Arcade Machine Emulator, Vijay now inhabited a golden age. His laptop held every arcade game ever released, or at least the important ones, the ones written before games started getting ridiculous peripherals like drum kits and full-scale Army tanks. The only hard part had been finding the seedy web site that offered all the games as a graph. Because these games, even the forgotten ones, are still under copyright, and that eight kilobytes of data can't go on your laptop unless you've got the two-hundred-pound cabinet to go with it.

Even three thousand games weren't enough for Vijay, because none of them were perfect. So he'd built the Selfish GAME, which bred mutants with barbarians, spaceships, and wizards. It had been fun for two years and now it had stopped working. A week after the Pyromancy deadline, while all the cool people were converging on a field in Idaho with their machines and duct tape, Vijay was doing the most boring thing he could think of: making a spreadsheet. Most of the work he delegated to a

script, but writing the script was so boring he didn't mind when Rodney called.

"Oh, hi," said Rodney. "I thought you couldn't take your phone to Pyromancy. I was just going to leave a message."

"Guh. I'm not at Pyromancy. My game is behaving strangely. I don't want to kill it until I figure out what's going on."

"So you did get invited?"

"No," said Vijay, "I didn't even submit. Why are you - oh, maybe you got the invitation and missed it."

"I went through every piece of spam manually," said Rodney. "If I got one, it went right past me."

"Maybe the unit shifter just wasn't what they were looking for. I mean, it's a device for vandalism. It's technically impressive, but to someone like me who doesn't understand the details, it's not beautiful. I'm glad you made it, but I really think the world would be a better place if you did blow it up. And it seems to me that's not in the spirit of Pyromancy."

"Well, you're in luck, because I just had my own little Pyromancy in the backyard. Smashed it up with a hammer. Keeping that thing in my house for another year is asking for trouble."

"Yeah, there you go. Who needs it?"

"Not my wife. She doesn't want me doing homebrew broadcasting anymore. She's gotten all paranoid."

"I don't blame her. Look, I don't know anything about spectrum engineering, but there must be something you can still make."

"Easy for you to say; you're pure software. You can come up with something totally new, have some fun before they make it illegal. Speaking of which. What's wrong with your game?"

"The factory's putting out games that you can't play for more than a couple seconds. It's driving me crazy. I'm trying to see if the games have anything in common, before I go grovelling in the machine code."

"Do you need any help?"

"From the universe, yeah. Not so much from humans."

"Kay, I'll leave you to it."

Of the sea of ROMs on its laptop, the Selfish GAME was using fifty-three to build what Vijay called the Player Two series. These source

games had more ludemes than average, and Vijay considered most of them classics, but they had nothing else in common.

The completed spreadsheet broke the Player Two games into their component ludemes, and cross-referenced them to the original fifty-three ROMs. There were obvious clusters, but the only explainable one consisted of Jake Michaelson's four glorious machines from the early eighties. Almost all the clusters contained games from a single company, but why those games in particular?

Again Vijay did the most boring thing he could think of. He went to one of those tease sites that's full of bibliographic information about arcade games but doesn't actually have the ROMs for download. He scraped the data for every game made from the late seventies to the early nineties, and wrote a fitness function that used this data to grow hypotheses about the Selfish GAME's clusters.

It took an hour to write and a minute to run. The correlations became clear during the debugging, and once everything worked they were obvious.

All the clusters, not just the Jakemike's, were by author; by company only as a side effect. The arcade industry had never been good about crediting its talent, but there was enough data to make sense of the patterns. The outliers could be chalked up to plagiarism.

The Selfish GAME had figured out which people had written the classic games, and built new games based exclusively on their work. Games it wouldn't let Vijay play.

"Huh," said Vijay. Then, "I wonder if I can get contact info for these guys."

Now his vacation had a goal. Vijay threw himself into Weyo work, fixing bugs in SimShitty and attacking the trademark recognition problem with the same tools he threw at everything else. He spent his breaks getting *Fucked Harder*. At night he poked at the early-termination games in a futile attempt to uncover their secrets. He left the apartment only after realizing that shut-in behavior would pop a red flag in Mallory's data-mining net.

To trick Mallory, Vijay had already joined the Entropy project and purchased a Sabertooth unit for his cell phone. Keith cynically noted that this was what geeks did as a substitute for religion, but Keith was a religious guy and he'd done the same thing. Now Vijay was randomly going for walks around the block to hide the fact that he was in hermit

mode. When he discovered that the walks did something—they cleared his head and made him more productive—he couldn't decide whether or not to continue.

Any purposeful action leaked information to Mallory. From the perspective of this secular Zoroastrianism, what Vijay planned to do was a sin. From a threat model standpoint, it was simply insane. Random walks that stopped being random were bad enough. Now Vijay planned to enter the houses of untrusted strangers and show them exactly what he had done with the stolen intellectual property of large corporations.

Mallory never forgot a face, or anything else. Law enforcement agencies were her playthings. Slip up once and she had you; it did not matter if you were a good person, how often you went to temple or how much you gave to the Society for the Prevention of Cruelty to Furrries. Vijay would have been better off immolating his laptop in the manicured anonymity of Katamari Pyromancy, that pagan sacrifice to opportunity cost.

He had to be a man, take a calculated risk. Mallory dogma does not recognize degree - telling one person is as good as telling everybody - but in real life, his road trip was safer than releasing the Selfish GAME or its creations onto the net. Nobody would get a copy of his software, and he could put off a decision until he saw the results of his experiment.

After a week of work, Vijay told a Demo to Keith, claiming with a straight face that the trademark recognizer was ready for use in Keith's own Demos.

"It's called *V-squared*," he said finally, tapping the cap onto the whiteboard marker, proud of his ugly offspring.

"Do I want to know what that stands for?" asked Keith.

"It's not obscene!" said Vijay. "It stands for the *Violator Violator*. 'Cause when you violate trademark, it—"

"Okay, *V-squared* it is," said Keith.

"They say it in the damn Bellewether Romance books! Where the woman's always defending her honor so there are no dirty parts."

Keith finally laughed. "You're just digging yourself in deeper. Go on vacation."

This was a sensible idea. Vijay went outside and tossed the Selfish GAME on top of the duffel bag in his busted-up Epsilon.

“What I am about to show you,” said Vijay, “has two distinct parts. I think the first part is very interesting, so I’m showing it to you first. The second part is either the most amazing thing in the history of human-kind, or it’s a huge crock of crap. I need your help to figure out which it is. But either way, the expected value of this demo is pretty high, so you can’t complain.”

“Guess not,” said Brody Rosaen.

Vijay’s mistake is singing the Demo like a stock Hero’s Quest. Someone with the knack can put the audience in the role of Hero, but Vijay just talks about what he had to go through to make the pixels dance just so on the screen, and save it for your festchrift, pal. So Keith is the Demo-bard for Weyo, but this was Vijay’s solo venture, and there was no money involved anyway.

“I’ll just start from the beginning. Like most kids my age, I grew up playing your games, especially *Mutant’s Revenge*.” A.k.a. *Mutants Revenge* and *Mutants’ Revenge* on variant cabinets, but always *Mutant’s Revenge* in the ROM, which is what’s survived.

“When I got my own computer, I thought I’d write a clone of *Mutant’s Revenge*. But I’ve never been a very good programmer and it never worked out. Now skip to high school, when I learned about evolution. They couldn’t say ‘evolution’ because they were afraid of lawsuits, but my teacher snuck it in under the radar by calling it ‘descent with modification’.

“Which was actually good, because when he called it that, I noticed the similarity with what I wanted to do to *Mutant’s Revenge*, and every other game I’d ever played, my click-brick sets, every book I’d read, and the whole world in general. I wanted to make my own version that worked better.

“I did all this inter-library loan crap to see if other people had had this idea, and of course they had. Genetic algorithms, right? If you set up the ways something can vary, and you have a rule for determining fitness, then you can evolve a solution without doing the hard work—what to me was the hard work. This was my science project for like three years. What’s so funny?”

All through this speech Brody Rosaen was leaning back in his chair smiling, running his hand through hair that wasn’t there anymore. “Nothing,” he said. “You just remind me of me when I was your age.”

"That's really ... that's a great compliment. Thank you." Huh, wait, so what's going to happen to Vijay in thirty years? Tired, sitting in a rocking chair while some punk kid shows him what he did to the Selfish GAME?

"Go on."

"Sorry, lost my train of thought."

Vijay's starting small with your Brody Rosaens, working his way upwards and westwards to Jake Michaelson; Sir Jacob, if you buy into the colonialism bullshit. Vijay's Demo tour takes him all the way to the edge of the Pacific, to the Jakemike's self-contained geodesic habitat. Well-known to computer nerds and the Pacifica zoning board, come the Big One this tensesgrity eyesore will be the only structure spared - or so believe the devout. As San Mateo County crumbles into the roiling sea, the Jakemike's transparent dome will be liberated from its moorings, and through sheer mechanical genius and split-second improvisation it will drift like a soap bubble up to the L5 point.

Vijay's Demo song is going to blow the Jakemike's mind because Vijay has read his histories of the personal computing revolution, and he has Michaelson sussed as a guy who is constantly reminding himself that most people are just not as clever as he is. By industry standards this counts as modesty. And among the accoutrements that will sweeten Jakemike's lonely trip among the stars is an old-fashioned arcade room containing thirty classic game machines, including the four mind-blowing quarter-eaters that the Jakemike designed at Zymurgy. Brody Rosaen has put his game-design past behind him, but Jake Michaelson still has the passion.

This was not what Vijay was saying, and the things he was saying were being pitched to Jakemike on the other side of the country, not Brody Rosaen who was sitting right there.

Okay. "Do you by any chance have a cabinet of *Mutant's Revenge*?" Vijay asked. "A souvenir, for nostalgia's sake?"

"Why?" said Brody. "Do you need to use one?"

"Nope," said Vijay. "It's just a thought experiment. Why don't you have one?"

Brody ticked off the reasons. "Too much space, too hard to maintain, too expensive, my wife would kill me."

None of these are obstacles to Jakemike, a lifelong bachelor whose extravagant tastes cannot drive him into debt or even down to regular

code-slave wealth, a man so rich that he must come up with specialized money-losing schemes like promoting bicycle races and trying to fix the California public school system. But Brody Rosaen is pretty well-off and he can't keep around the one perfect machine he designed, the one so beautiful that Vijay got a summer job making squicky burgers just so he could play it for free.

Vijay pulled out his laptop. "Have you ever heard of GAME? The General Arcade Machine Emulator?"

"Yeah," said Brody.

"Great," said Vijay. "So obviously you can play *Mutant's Revenge* on your PC." Vijay loaded up the game, over two decades old, and pressed the 5 key to insert a virtual coin.

"Right," said Brody.

"Okay, good," said Vijay, whose unattended avatar on the screen was quickly ravaged by assorted mutants. "If you know where to look on the net you can get *Mutant's Revenge* and *Renegade* and any other arcade game you want.

"But I took the underlying emulator, the GAME - actually GLAME with the LISP extensions - and added genetic algorithms to create what I call the Selfish GAME. Which doesn't just simulate the instructions of the original arcade game: it simulates the input of someone playing the game."

Vijay set the Selfish GAME to analyzing *Mutant's Revenge*, and a slew of windows popped up, each playing the game in super-fast-motion.

"Pretty wild," said Brody.

"It goes even faster when it doesn't have to write to the screen," said Vijay. "Anyway, it plays a game a few million ways to develop strategies. Once it's mastered the gameplay, it figures out how the game works, which pieces of code correspond to which parts of the game. That way it decomposes the game into ludemes, or what I call GAMEtes: the basic units of gameplay. It can recombine the ludemes within a general framework to create new games. Like so."

Vijay killed the analysis session and loaded up one of the Selfish GAME's more playable recent efforts. It was recognizably *Mutant's Revenge*, but it took graphics and an element of stealth from Brody's lesser follow-up effort, *Renegade*.

"Every ludeme is simulated as though it were part of the original game. They communicate through a standard interface to make up a new

game. So, really, what we see as a single game is running on up to twenty simulated chipsets."

Vijay took to the arrow keys and demonstrated a couple moves, shorthand for the delta between *Mutant's Revenge* and the new "Renegade Mutant".

"The ludemes are like chromosomes, you dig?" Wait, why did he say "dig"? "The Selfish GAME breeds new games and evaluates them according to the same criteria it used against the human-created games. When I play one of its games, it watches what I do and uses that information, too. The best games survive and pass on their genes. I've made about ten thousand games with this. Some of them are a lot of fun."

"This is amazing. What was on the title screen? I noticed it said 'Player Two'."

"Good job. Near as I can tell, the title screen is gibberish, except for that one thing. Recently started making these games that said 'Player Two'. Then a week ago it started making games that just died after a couple seconds of play. At first I thought it was a bug, but if I'm right, those two things are connected, and that brings me to the second thing I want to show you. Let me demonstrate a game that dies."

Vijay killed the Selfish GAME. His first emulator session was still running stock *Mutant's Revenge*. Vijay's untouched quarter had long since GAME OVERed and decayed back to the teaser screen. Vijay's finger hovered over the key that would kill this session too.

"Oh, I've always wanted to ask you, why the revenge?"

"What?"

"The title. What did I ever do to the mutants that they want revenge?"

"They're just mad at society in general," said Brody.

The day after that visit, when Vijay looped back from Vermont and started tearing across the country, Brody called him unencrypted from his home phone. The only thing dumber than Brody doing this was Vijay's taking the call. Now Mallory had a confirmed voice connection in addition to email correspondence and the paper trail of Vijay's gas purchases.

"I want copies of those games," said Brody.

"I'm driving," said Vijay, squishing his real cell phone to his shoulder. He'd set the cruise control to exactly four miles over the speed limit.

“Sure,” said Brody. “It’s just ... I still feel it in my fingers, you know? I’m hooked.” Pretty rich coming from the *Mutant’s Revenge* guy, but Vijay too had the screen-capture videos from the night before stuck in his head.

“They won’t run on the stock system,” he said. “When I get back home, I’ll try to package them as standalone executables. I’m being deliberately vague here because this is an insecure line.”

Vijay’s muscle memory twitched on down the Atlantic Seaboard, guessing at moves to games he hadn’t played. Vijay had stuck his hands into the universe and built something great. Man, the hell with Mallory. That was more than she’d ever done.

Vijay swung through Kentucky to meet Keith’s parents. Dinner turned out to be chicken, but it wasn’t the first time he’d cheated on vegetarianism.

“Imagine a plant,” he told them, emphasizing *plant* just to be mean. “Plants are phototropic: they seek out light. But this is no ordinary plant: you can train it to do tricks. You can give it a green light and a blue light, and train it to prefer the green light over the blue. You with me?”

“Sure,” said Keith’s father.

“Now this program, V-squared. Imagine that certain colors of light are trademarked. Well, actually some colors are trademarked, but - never mind. The point is that we’re legally allowed to fabricate model train cars in certain colors but not others.

“So what do we do? We hook up the plant to the database of trademarks, and train it to seek out only the trademarked colors. Whenever someone wants a train car of a certain color, we shine that color of light on the plant, and see if it reacts.”

He waited for the tough questions, but they never came.

“Well, that sounds really interesting,” said Keith’s mother, handing him the rice.

“There’s no real plant,” said Vijay helpfully, spooning it out. “It’s just a metaphor.” A metaphor with obvious problems! C’mon, trademarks aren’t colors; they’re shapes, names, and concepts. They’re claimed within a specific field of endeavor. And copyright is even worse! You need a lawyer for this stuff, and all Vijay had to work with was trained plants! What was he even doing at this job?

“And you’re working on this now, or...”

“No, it’s all done,” said Vijay. He chowed down on chicken. “Finished it before I went on this vacation. Keith is talking to some guys in Boston in a few days. He thinks we have a real shot at an investment now.”

“That’s great!” said Keith’s mother. His father: “We’re so proud of you two.”

Uh-oh. What did that mean? Vijay tried his hand at damage control. “Yeah, it’s really exciting. Once things get a little less hectic I’ll have some more time for a personal life. Go out, meet some girls.”

Despite his best effort, “girls” came out in exactly the weird tone “plant” had earlier. Vijay winced, but Keith’s parents didn’t notice, or had lots of practice pretending not to notice, or else Vijay had just been paranoid the whole time. He pretended not to notice their lack of reaction.

What was with these people? Vijay had long felt his parents were secretly ashamed of him and Rukmini, even though technically they did the sorts of things that made parents proud. Vijay had graduated a good school and was now a successful entrepreneur in the computer industry. But he had passed up schools much higher in the newsweeklies’ college rankings because (it was true) he didn’t like to work hard. And the company he’d helped found was a producer of toys and trivialities, hardly likely to become the next Muse or even be purchased by the existing Muse. His sister was working towards her Ph.D., but it was a Ph.D. in Gender and Linguistics, so it didn’t count.

Keith’s family was oblivious to the shame in which their son had drenched them. To them, Keith and Vijay embodied the American dream. Sure, Keith was not so hot on the family tradition of heterosexuality, but he was the president of his own company! It didn’t matter to Keith’s parents that Weyo had only three employees, or that Keith spent half his time performing menial, meta-assembly-line tasks. Their attitude towards the small stuff, and its sweating, made it easy for them to be proud of their son.

The next morning, Vijay woke up from a dream in which Keith had been Demoing the Selfish GAME to game industry big shots. He didn’t remember how the dream went but he could do a good impression of Keith:

“You people put more money into one game than I personally have seen in my entire life, and yet you put out nothing but bland,

recombined crap! With the Selfish GAME you can fire your prima donna programmers, and get right to the crapitude!" Vijay had not really attended any of Keith's Demos, and was just going by what he ranted about afterwards.

"I'm at your parents' house," he told Keith, pulling on his socks. "They put me in your old room, which was weird, but I'll recover."

"I hope they didn't bother you."

"No, they were great. They did feed me chicken, but it's not a big deal."

Keith sucked his teeth. "Geez, I'm sorry about that. They must think you just don't eat red meat. I'm pretty sure they know chicken's not a vegetable."

"Don't worry about it. I had a fun time. Hey, have you noticed anything weird about your dad's train layout?"

"No, it's really well thought out, thematically consistent..."

"Also very creepy. There are no people in it. The railroad crossing barriers go up and down, but there are never any cars on the road."

"My dad will tell you that what really looks creepy is people waiting at a train station, and the train stops and nothing happens. That's horror movie quality right there: people who can't move. You're used to click-brick sculptures that use blocky figures. Model railroads need to look realistic."

"It looks weird."

"If it makes you feel better, there's a schism within the model railroading community on this very topic."

"You're kidding."

"Well, between me and my dad. I finally adopted a compromise position. I put people in my layouts, but they're all lying dead on the ground. It looks more natural that way."

Vijay snorted. "You're in a good mood."

"I am. Last night I came up with a much better way to fabricate splines. And I've been playing with *V-squared* and it's really something. It's not easy to fool."

"Um," said Vijay, trying to come close to the truth without going over, "you know that I just made *V-squared* for you to Demo. It's not intended for production use."

“You worry too much,” said Keith. ““Our proprietary technology scans incoming files for infringing material before approving any piece for fabrication.’ That’s all I need. We can do it up right once we get the money. Where are you off to today?”

“Little Rock, probably, and then Dallas tomorrow. I’m seeing this guy R. R. Venn. He worked for Zymurgy and then Muse for a while.”

“You going to swing up to Chicago to see your folks?”

“Maybe on the way back.” Vijay’s revenge was swift and terrible. “Hey, you want to talk to anyone here, long as I’ve got you on the line?”

“No, just tell them I said hi.”

For a few hours, the scenery let Vijay pretend he was driving Keith’s father’s scale recreation of Appalachia. Abandoned Weyo-wood buildings flashed by, showing off high-resolution weathering that beat the pants off what you could do with molded plastic. There was no other traffic, only the occasional train, roaring like a giant worm past a crossing. The trains were empty; Vijay was alone.

Nobody ever questioned Keith’s father’s choice of hobby, or wondered aloud on Internet fora whether he didn’t have something better to do with his time. Mallory had made it illegal to look at trains through binoculars, but no one was going to outlaw train sets. Model railroading was dying out on its own.

Folded Time, the underrated sequel to the overrated *Folded Space*, should have been the top-grossing game of 1983. It was a big-budget production of Zymurgy, the preeminent American videogame company. It had stellar gameplay and excellent graphics for the time. Most importantly, its name was easily confused with that of its successful predecessor. But in 1983, Zymurgy was falling apart. Too much money was coming in for the company to handle, and though it was leaking back out in rivers, none was ending up in the pockets of the man responsible for earning most of it: Jake Michaelson, F.O.B. from Australia.

At this point in the videogame histories, be they written or made-for-TV, Vijay inserts a scene where the Jakemike storms into the boardroom screaming obscenities in a ridiculous Bruce Roopuncher accent, alligator-wrestles Zymurgy president Vercingetorix Lebec to the ground, and punches him like in *Bad Town Misfits* until royalty coins leap from his body. In real life, Michaelson simply quit, taking most of the Zymurgy

engineers with him and going off to invent the modern personal computer.

R. R. Venn and Alex Ohara joined the exodus and never saw a dollar of royalties for *Folded Time*. Even if the whole venture hadn't been a programmer rip-off, in 1983 Zymurgy was in no condition to sell cabinets or ship the ones already sold. It was too much drama for one little videogame to take. No one's ever heard of *Folded Time*, and nobody plays it except videogame nuts like Vijay with maxed-out GAME collections.

"Which is a big shame because in my opinion it is really the pinnacle of the unconstrained 2D chase genre," Vijay gushed. R. R. Venn just gave a kind of purse-lipped *hmm*, not even a grunt but an exhalation. Like the Buddha gave to groupies telling him that in their opinion he had arranged the optimal number of noble truths in just about the correct order.

To Bob Venn, *Folded Time* was a fact about the universe, nothing but a local maximum in million-dimensional ludic space. Though Venn was content to be the public face of *Folded Time*, he and Ohara deserved only the credit allocated to the men who discover a new star or an interesting fact about cave formation. Okay, now Vijay was projecting big time.

"Do you ever talk to Alex Ohara?"

"No," said R. R. Venn, who wasn't inclined to start now. "I think he's still in California."

"I tried to find him for this project but he's not on the net. How about Jake Michaelson?"

A sharp intake of breath. Crud! Most people who contact R. R. Venn are probably just trying to get to the Jakemike.

"I'm just... you know, I'm going to be seeing him in a few days. Just wondered if you wanted me to say hi for you."

"No, thanks. You said you had something else to show me?"

"Right. Sorry if I - right. So far, I've shown you a modified version of *Folded Time*, which I call *Glaive from the Grave* because it's really hard to name ten thousand pieces of software. You've seen how the Selfish GAME tears games apart and splices them back together. But what you haven't seen yet, what nobody has seen, is this other game that the Selfish GAME won't let me play. It starts off normal but after a few seconds it crashes."

"That happened to me all the time programming those old chips," said R. R. Venn. "Your assembler's just buggy."

"It's not buggy," said Vijay. "Watch for a bit."

Vijay loaded up *Now You Don't (Player Two)* and tried to play. It was mostly *Folded Time*, combined with the best parts of the earlier Venn/Ohara collaborations: *Secret Mission* and *Glaivar*. *Folded Space* gameplay was conspicuously absent: the Selfish GAME didn't like that game any more than Vijay did.

Vijay had conjectured all of this from the miniscule windows of game he'd get before his GAME session crashed. It was the arcade owner's dream: a quarter buys you three seconds of play. Four if you twist the spaceship the right way.

"Sure looks buggy to me."

"Now you try it."

R. R. Venn did, but he was rusty on the controls and before he could figure out how to even move the spaceship, his GAME session died too. He smiled and held his hands up, pushing off responsibility for this broken software. He's retired now; this stuff belongs to a whole other phase of his life.

"Try it again."

R. R. Venn tried again. This time he twisted the spaceship the right way. He twisted again, evading the first wave of insectoid pursuers. The second wave he destroyed in a slicing maneuver more usually associated with the hell-blade of *Glaivar* the Uncouth than with hyperspace-capable fighter craft. The third wave wasn't even hostile; Venn shot two before realizing his mistake and zooming ahead, collecting the insects behind him as a glittering string of trophies.

Venn's joystick-accustomed fingers slipped on the arrow keys, but he played the game as if he'd known it all his life, an old champion brought back for one last fight. He grinned like a kid, in symbiosis with the machine but always one step ahead. Then gibberish blitted onto the screen and began to dance. The game was over.

"There are four or five more like that," said Vijay. "We can probably get to them all tonight."

"I'll be damned," whispered Bob Venn, still smiling, fingers shaking.

"It made that game for you," said Vijay. "The same thing happened with Brody Rosaen and Cliff Keilbach."

"What does that mean, it made it for me?"

“I’ve thought about this a lot,” said Vijay. “I’m no good at writing games, so I made a tool to explore ludic space: the space you saw in your head when you designed *Folded Time*. It explores by building and playing games, the way we build hypotheses and test them out in the real world.

“For two years I’ve talked to it by playing its games. But I’ve never made any games of my own, so it was like it was talking to someone who never has original thoughts. I’m Player One, the fast dumb guy. The Selfish GAME got me to say all kinds of clever things, but they were just canned phrases I’d picked up from your games.

“But all of you from Zymurgy and Puddle Play and the other companies whose games I stole: you made the original seeds, the thoughts I don’t know how to think, the other halves of the conversation. You all are Player Two, the slow smart guy. It knew you’d speak the whole language, so it figured out how you see ludic space, and it built games only you would know how to play. It tried to pressure me to evolve back into you, or get the operating system to swap me out for you, or whatever it thinks we aliens do.”

“You’re anthropomorphizing a piece of software.”

“You can put it in quotes, or say that doing this helps it satisfy its fitness function, but I think the Selfish GAME is the kind of thing that has wants. Maybe on the level of a dog or a cat. It’s not something that we can understand or communicate with, but it knows about us and it tells us about its universe.”

“Is that what it’s doing now?” The game-win screen still flashed its animated hieroglyphics. Inscrutable multicolored bitmaps (graphical representations of code?) danced and reproduced, and game sprites chased each other in complex patterns. There were two pieces of English: the Zymurgy logo and PLAYER TWO.

“The more I look at these screens,” said Vijay, “the more I seem to see patterns. I’ve got the whole play recorded, but let’s take a couple screenshots.”

The animations ran in a loop, but the loop was winding down. The wiggling bitmaps lost their colors and settled into a steady state. Exhausted sprites ran in circles.

“I need more data,” said Vijay. “I’ve still got locked games to show Jake Michaelson, and anyone he’s kept in contact with. I guess I need to

go to Japan to talk to whoever in the Uchiyama crowd is still around. I've got to figure this out."

The animation had now stopped completely. The bitmaps and sprites turned a uniform blue, and the *Now You Don't* session finally crashed.

"Yeah, what's that about?" said R. R. Venn. "It's obviously not part of the game."

"Title screens and cut scenes," said Vijay. "That's its concession to the way we think."

Vijay drove over a bridge and he was in California; that is, the place where consensus geography congrued with the rump California of his mind. A place he and Keith had done their best to recreate in the Weyo office in Philly: somewhere where a person could *make* something. The brazen, sputtering, increasingly illegal engine of the world.

It was a time of civil war. Ever year, the north sent more delegates than anywhere else on earth to Katamari Pyromancy. The Mallory-aligned south was a prime mover behind most of those ideas being illegal or unsalable in the first place. Alice, Bob, and Mallory shorted every human value in the name of progress, but like every pantheon they pulled in opposing directions. The engine was stalled.

Vijay had come to this conspiracy of a state to claim citizenship from that other great immigrant, Jacob Michaelson. A captain of industry who'd once sold phones that placed long distance calls for free. Whose response to being robbed and cheated was to come up with yet another mind-blowing idea. Who had, according to reliable sources, killed some sort of marsupial bear when he was only three.

Vijay had his fingers crossed driving through physical California, because around that time Keith was starting on his second series of Demoes. Vijay took it as a good omen when he got an email from Keith right after entering mental California. He pulled into a gas station and just wandered around for a while, enjoying the fresh air and the superposition of possible futures.

"Hey, how did it go?"

"This," said Keith, "is amazing. You know the *V-squared*?"

"My glorious vacation has yet to cloud the memory. Did it get them to shut up and give us money?"

"It blew them away. It derailed the Demo. They kept me in there an hour past time. They were downloading pictures and logos from the web so I could run them through *V-squared*."

Vijay fiddled with the phone cord, a habit many years in remission, but the tech had finally caught up. "Keith, I'm feeling a strange emotion which I believe I can decompose into two parts. Um, the first part is that this makes me very angry, and the second part is I don't believe you."

"Let's take the second one. I'm living it. I was just there and I'm telling you it happened."

"You were not supposed to go into depth. It was just to get you past the Mallory question."

"I'm sitting on a verbal offer that's completely obscene," said Keith, "because this is what they've been looking for. You know how Zeal was treating us, and all the other firms? It's not just us. Their due diligence rejects anything consumer-facing. Consumers are like a plague to these guys. Half the Demoes they get, they've got to raise their hands: what if someone uses this to share music, what if someone uploads a copyrighted picture, what if someone makes a photocopy on the damn photocopier? They're terrified of Mallory. *V-squared* lets them spend money again."

"Keith, *V-squared* does not work. It cheats. I only made it so I could go on vacation instead of arguing with you about impossible problems."

"I just saw it work and so did a roomful of VCs. You're outvoted."

"And you're a lousy attacker. You guys downloaded images from big-company websites, the ones you're most afraid will sue Weyo. Am I right?"

"So what?"

Vijay paced the sidewalk between his car and the convenience store. "Image recognition is too hard, so *V-squared* just finds the commonalities among its seed images. It sees things like certain kinds of lighting and a design-by-committee style. Someone whose amateur work looks 'professional' is going to trigger the net, and lame three-person-company logos are going to sail through. Did you feed the Weyo logo into *V-squared*?"

"That's our trademark."

"It doesn't know that!"

"You are so arrogant you can't admit you solved a problem you don't like," said Keith. "How is this harder than that GAME hack you did?"

"A video game has nothing to do with the outside world," said Vijay. "A trademark is a social construct. Speaking of which, can I berate you about this later? I've got to meet the Jakemike in an hour, and I'm already agitated enough."

"You can't do that," said Keith.

"Why the hell not?" Vijay grinned and waved at a woman who stared at him as she got into her car. He tried to project the image of an overbearing executive berating an underling. He was wearing day-old jeans and a LPRSY T-shirt.

"The Selfish GAME is my project," he said, "it's how I stay sane. I can't blow it up and now I can't show it to anyone?"

"You definitely can't show it to famous people," said Keith. "We can't violate the law like everyone else if we're selling a product for enforcing it. So no downloaded music, no watching online videos ripped from TV, no game ROMs."

"What happened to changing the rules? We created a new world where you can manufacture things without owning a factory, and now you want to ... you're introducing the invasive species that's already killed off art and literature."

"If *V-squared* can't work, why are you so afraid it will?"

"Because I'm a goddamned paranoid, Keith!" More waving. Hi! "I see the world in terms of threat models. I make random calls to people I don't like so my other calls won't look suspicious. When we go out to dinner, I'm nudging everybody into a triangle formation so we don't get surprise attacked. I can't sleep because there are ten ways a terrorist could kill everyone in Philly, and nobody does anything about it. And now *you* and *I* have somehow been tricked into working for Mallory. I can't trust my own brain, Keith!"

There was a long encrypted silence. Anyone tapping the line would have heard noise mathematically identical to the noise that preceded it. Nobody knew Vijay was a goddamned paranoid except for Keith and a few gas station customers.

"Vijay, buddy," said Keith. "I say 'buddy' as your actual buddy and not as your condescending manager. Go ahead and show off to Jake Michaelson, and we'll figure out the ramifications later."

"I'll make it easy for you," said Vijay. "I quit."

Now another silence. Vijay decoded it and saw Keith scrunching his eyes shut, gritting his teeth.

“All right,” Keith said finally, careful to not make any sounds that were not English words. “I’ll see if there’s some way of buying your stock back at the new price.”

“Just like that? You’re going ahead with this?”

“I can’t let Artifactory take over the 3D printing market. I have to do what’s best for Weyo.”

“Weyo is an abstraction, not a person with needs. Jesus didn’t die for Alice and Bob. You and I are the people and we’re the ones who will be held responsible for what we do.”

“Apart from the Jesus crack,” said Keith, “which I understand in context, this is not how you usually talk. I know you’re under stress, and that I’ve contributed to it, but maybe you’ve also experienced something on this vacation that you can’t make sense of. The kind of thing that transcends normal experience, that I might refer to as mystical?”

Vijay, very slowly: “I’m going to say yes, with the stipulation that it doesn’t mean I believe in God.”

“Okay. I’m not trying to proselytize you. Can you tell me about it?”

Vijay tapped the flat of his fist against his upper lip. He squinted through his windshield at the laptop case in the passenger seat.

“No,” he said, “I don’t think I can.”

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