

When Sysadmins Ruled the Earth

Cory Doctorow



Science Fiction

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Forematter

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In the words of Woody Guthrie:

"This song is Copyrighted in U.S., under Seal of Copyright #154085, for a period of 28 years, and anybody caught singin it without our permission, will be mighty good friends of ours, cause we don't give a dern. Publish it. Write it. Sing it. Swing to it. Yodel it. We wrote it, that's all we wanted to do."

Overclocked is dedicated to Pat York, who made my stories better.

Introduction

I've changed careers every two or three years ever since I dropped out of university in 1990, and one of the best gigs I ever had was working as a freelance systems administrator, working in the steam tunnels of the information age, pulling cables, configuring machines, keeping the backups running, kicking the network in its soft and vulnerable places. Sysadmins are the unsung heroes of the century, and if they're not busting you for sending racy IMs, or engaging in unprofessional email conduct it's purely out of their own goodwill.

There's a pernicious myth that the Internet was designed to withstand a nuclear war; while that Strangelove wet-dream was undoubtedly present in the hindbrains of the generals who greenlighted the network's R&D at companies like Rand and BBN, it wasn't really a big piece of the actual engineering and design.

Nevertheless, it does make for a compelling scenario, this vision of the sysadmins in their cages around the world, watching with held breath as the generator failed and the servers went dark, waiting out the long hours until the power and the air run out.

This story originally appeared in Baen's Universe Magazine, an admirable, high-quality online magazine edited by Eric Flint, himself a talented writer and a passionate advocate for open and free culture.

Listeners to my podcast heard this story as it was written, read aloud in serial chinks after each composing session. The pressure of listeners writing in, demanding to know what happened next, kept me honest and writing.

When Sysadmins Ruled the Earth

When Felix's special phone rang at two in the morning, Kelly rolled over and punched him in the shoulder and hissed, "Why didn't you turn that fucking thing off before bed?"

"Because I'm on call," he said.

"You're not a fucking doctor," she said, kicking him as he sat on the bed's edge, pulling on the pants he'd left on the floor before turning in. "You're a goddamned systems administrator."

"It's my job," he said.

"They work you like a government mule," she said. "You know I'm right. For Christ's sake, you're a father now, you can't go running off in the middle of the night every time someone's porn supply goes down. Don't answer that phone."

He knew she was right. He answered the phone.

"Main routers not responding. BGP not responding." The mechanical voice of the systems monitor didn't care if he cursed at it, so he did, and it made him feel a little better.

"Maybe I can fix it from here," he said. He could login to the UPS for the cage and reboot the routers. The UPS was in a different netblock, with its own independent routers on their own uninterruptible power-supplies.

Kelly was sitting up in bed now, an indistinct shape against the headboard. "In five years of marriage, you have never once been able to fix anything from here." This time she was wrong—he fixed stuff from home all the time, but he did it discreetly and didn't make a fuss, so she didn't remember it. And she was right, too—he had logs that showed that after 1AM, nothing could ever be fixed without driving out to the cage. Law of Infinite Universal Perversity—AKA Felix's Law.

Five minutes later Felix was behind the wheel. He hadn't been able to fix it from home. The independent router's netblock was offline, too. The last time that had happened, some dumbfuck

construction worker had driven a ditch-witch through the main conduit into the data-center and Felix had joined a cadre of fifty enraged sysadmins who'd stood atop the resulting pit for a week, screaming abuse at the poor bastards who labored 24-7 to splice ten thousand wires back together.

His phone went off twice more in the car and he let it override the stereo and play the mechanical status reports through the big, bassy speakers of more critical network infrastructure offline. Then Kelly called.

"Hi," he said.

"Don't cringe, I can hear the cringe in your voice."

He smiled involuntarily. "Check, no cringing."

"I love you, Felix," she said.

"I'm totally bonkers for you, Kelly. Go back to bed."

"2.0's awake," she said. The baby had been Beta Test when he was in her womb, and when her water broke, he got the call and dashed out of the office, shouting, The Gold Master just shipped! They'd started calling him 2.0 before he'd finished his first cry. "This little bastard was born to suck tit."

"I'm sorry I woke you," he said. He was almost at the data center. No traffic at 2AM. He slowed down and pulled over before the entrance to the garage. He didn't want to lose Kelly's call underground.

"It's not waking me," she said. "You've been there for seven years. You have three juniors reporting to you. Give them the phone. You've paid your dues."

"I don't like asking my reports to do anything I wouldn't do," he said.

"You've done it," she said. "Please? I hate waking up alone in the night. I miss you most at night."

"Kelly—"

"I'm over being angry. I just miss you is all. You give me sweet dreams."

"OK," he said.

"Simple as that?"

"Exactly. Simple as that. Can't have you having bad dreams, and I've paid my dues. From now on, I'm only going on night call to cover holidays."

She laughed. "Sysadmins don't take holidays."

"This one will," he said. "Promise."

"You're wonderful," she said. "Oh, gross. 2.0 just dumped core all over my bathrobe."

"That's my boy," he said.

"Oh that he is," she said. She hung up, and he piloted the car into the data-center lot, badging in and peeling up a bleary eyelid to let the retinal scanner get a good look at his sleep-depped eyeball.

He stopped at the machine to get himself a guarana/medafonil power-bar and a cup of lethal robot-coffee in a spill-proof clean-room sippy-cup. He wolfed down the bar and sipped the coffee, then let the inner door read his hand-geometry and size him up for a moment. It sighed open and gusted the airlock's load of positively pressurized air over him as he passed finally to the inner sanctum.

It was bedlam. The cages were designed to let two or three sysadmins maneuver around them at a time. Every other inch of cubic space was given over to humming racks of servers and routers and drives. Jammed among them were no fewer than twenty other sysadmins. It was a regular convention of black tee-shirts with inexplicable slogans, bellies overlapping belts with phones and multitools.

Normally it was practically freezing in the cage, but all those bodies were overheating the small, enclosed space. Five or six looked up and grimaced when he came through. Two greeted him by name. He threaded his belly through the press and the cages, toward the Ardent racks in the back of the room.

"Felix." It was Van, who wasn't on call that night.

"What are you doing here?" he asked. "No need for both of us to be wrecked tomorrow."

"What? Oh. My personal box is over there. It went down around 1:30 and I got woken up by my process-monitor. I should have called you and told you I was coming down—spared you the trip."

Felix's own server—a box he shared with five other friends—was in a rack one floor down. He wondered if it was offline too.

"What's the story?"

"Massive flashworm attack. Some jackass with a zero-day exploit has got every Windows box on the net running Monte Carlo probes on every IP block, including IPv6. The big Ciscos all run administrative interfaces over v6, and they all fall over if they get more than ten simultaneous probes, which means that just about every interchange has gone down. DNS is screwy, too—like maybe someone poisoned the zone transfer last night. Oh, and there's an email and IM component that sends pretty lifelike messages to everyone in your address book, barfing up Eliza-dialog that keys off of your logged email and messages to get you to open a Trojan."

"Jesus."

"Yeah." Van was a type-two sysadmin, over six feet tall, long pony-tail, bobbing Adam's apple. Over his toast-rack chest, his tee said CHOOSE YOUR WEAPON and featured a row of polyhedral RPG dice.

Felix was a type-one admin, with an extra seventy or eighty pounds all around the middle, and a neat but full beard that he wore over his extra chins. His tee said HELLO CTHULHU and featured a cute, mouthless, Hello-Kitty-style Cthulhu. They'd known each other for fifteen years, having met on Usenet, then f2f at Toronto Freenet beer-sessions, a Star Trek convention or two, and eventually Felix had hired Van to work under him at Ardent. Van was reliable and methodical. Trained as an electrical

engineer, he kept a procession of spiral notebooks filled with the details of every step he'd ever taken, with time and date.

"Not even PEBKAC this time," Van said. Problem Exists Between Keyboard And Chair. Email trojans fell into that category—if people were smart enough not to open suspect attachments, email trojans would be a thing of the past. But worms that ate Cisco routers weren't a problem with the lusers—they were the fault of incompetent engineers.

"No, it's Microsoft's fault," Felix said. "Any time I'm at work at 2AM, it's either PEBKAC or Microsloth."

They ended up just unplugging the frigging routers from the Internet. Not Felix, of course, though he was itching to do it and get them rebooted after shutting down their IPv6 interfaces. It was done by a couple bull-goose Bastard Operators From Hell who had to turn two keys at once to get access to their cage—like guards in a Minuteman silo. 95 percent of the long distance traffic in Canada went through this building. It had better security than most Minuteman silos.

Felix and Van got the Ardent boxes back online one at a time. They were being pounded by worm-probes—putting the routers back online just exposed the downstream cages to the attack. Every box on the Internet was drowning in worms, or creating worm-attacks, or both. Felix managed to get through to NIST and Bugtraq after about a hundred timeouts, and download some kernel patches that should reduce the load the worms put on the machines in his care. It was 10AM, and he was hungry enough to eat the ass out of a dead bear, but he recompiled his kernels and brought the machines back online. Van's long fingers flew over the administrative keyboard, his tongue protruding as he ran load-stats on each one.

"I had two hundred days of uptime on Greedo," Van said. Greedo was the oldest server in the rack, from the days when they'd named the boxes after Star Wars characters. Now they were all named after Smurfs, and they were running out of Smurfs and had started in on McDonaldland characters, starting with Van's laptop, Mayor McCheese.

"Greedo will rise again," Felix said. "I've got a 486 downstairs with over five years of uptime. It's going to break my heart to reboot it."

"What the everlasting shit do you use a 486 for?"

"Nothing. But who shuts down a machine with five years uptime? That's like euthanizing your grandmother."

"I wanna eat," Van said.

"Tell you what," Felix said. "We'll get your box up, then mine, then I'll take you to the Lakeview Lunch for breakfast pizzas and you can have the rest of the day off."

"You're on," Van said. "Man, you're too good to us grunts. You should keep us in a pit and beat us like all the other bosses. It's all we deserve."

"It's your phone," Van said. Felix extracted himself from the guts of the 486, which had refused to power up at all. He had cadged a spare power-supply from some guys who ran a spam operation and was trying to get it fitted. He let Van hand him the phone, which had fallen off his belt while he was twisting to get at the back of the machine.

"Hey, Kel," he said. There was an odd, snuffling noise in the background. Static, maybe? 2.0 splashing in the bath? "Kelly?"

The line went dead. He tried to call back, but didn't get anything—no ring nor voicemail. His phone finally timed out and said NETWORK ERROR.

"Dammit," he said, mildly. He clipped the phone to his belt.

Kelly wanted to know when he was coming home, or wanted him to pick something up for the family. She'd leave voicemail.

He was testing the power-supply when his phone rang again. He snatched it up and answered it. "Kelly, hey, what's up?" He worked to keep anything like irritation out of his voice. He felt guilty: technically speaking, he had discharged his obligations to Ardent Financial LLC once the Ardent servers were back online. The past three hours had been purely personal—even if he planned on billing them to the company.

There was sobbing on the line.

"Kelly?" He felt the blood draining from his face and his toes were numb.

"Felix," she said, barely comprehensible through the sobbing. "He's dead, oh Jesus, he's dead."

"Who? Who, Kelly?"

"Will," she said.

Will? he thought. Who the fuck is—He dropped to his knees. William was the name they'd written on the birth certificate, though they'd called him 2.0 all along. Felix made an anguished sound, like a sick bark.

"I'm sick," she said, "I can't even stand anymore. Oh, Felix. I love you so much."

"Kelly? What's going on?"

"Everyone, everyone—" she said. "Only two channels left on the tube. Christ, Felix, it looks like dawn of the dead out the window—" He heard her retch. The phone started to break up, washing her puke-noises back like an echoplex.

"Stay there, Kelly," he shouted as the line died. He punched 911, but the phone went NETWORK ERROR again as soon as he hit SEND.

He grabbed Mayor McCheese from Van and plugged it into the 486's network cable and launched Firefox off the command line and googled for the Metro Police site. Quickly, but not

frantically, he searched for an online contact form. Felix didn't lose his head, ever. He solved problems and freaking out didn't solve problems.

He located an online form and wrote out the details of his conversation with Kelly like he was filing a bug report, his fingers fast, his description complete, and then he hit SUBMIT.

Van had read over his shoulder. "Felix—" he began.

"God," Felix said. He was sitting on the floor of the cage and he slowly pulled himself upright. Van took the laptop and tried some news sites, but they were all timing out. Impossible to say if it was because something terrible was happening or because the network was limping under the superworm.

"I need to get home," Felix said.

"I'll drive you," Van said. "You can keep calling your wife."

They made their way to the elevators. One of the building's few windows was there, a thick, shielded porthole. They peered through it as they waited for the elevator. Not much traffic for a Wednesday. Were there more police cars than usual?

"Oh my God—" Van pointed.

The CN Tower, a giant white-elephant needle of a building loomed to the east of them. It was askew, like a branch stuck in wet sand. Was it moving? It was. It was heeling over, slowly, but gaining speed, falling northeast toward the financial district. In a second, it slid over the tipping point and crashed down. They felt the shock, then heard it, the whole building rocking from the impact. A cloud of dust rose from the wreckage, and there was more thunder as the world's tallest freestanding structure crashed through building after building.

"The Broadcast Centre's coming down," Van said. It was—the CBC's towering building was collapsing in slow motion. People ran every way, were crushed by falling masonry. Seen through the port-hole, it was like watching a neat CGI trick downloaded from a file-sharing site.

Sysadmins were clustering around them now, jostling to see the destruction.

"What happened?" one of them asked.

"The CN Tower fell down," Felix said. He sounded far away in his own ears.

"Was it the virus?"

"The worm? What?" Felix focused on the guy, who was a young admin with just a little type-two flab around the middle.

"Not the worm," the guy said. "I got an email that the whole city's quarantined because of some virus. Bioweapon, they say." He handed Felix his Blackberry.

Felix was so engrossed in the report—purportedly forwarded from Health Canada—that he didn't even notice that all the lights had gone out. Then he did, and he pressed the Blackberry back into its owner's hand, and let out one small sob.

The generators kicked in a minute later. Sysadmins stampeded for the stairs. Felix grabbed Van by the arm, pulled him back.

"Maybe we should wait this out in the cage," he said.

"What about Kelly?" Van said.

Felix felt like he was going to throw up. "We should get into the cage, now." The cage had microparticulate air-filters.

They ran upstairs to the big cage. Felix opened the door and then let it hiss shut behind him.

"Felix, you need to get home—"

"It's a bioweapon," Felix said. "Superbug. We'll be OK in here, I think, so long as the filters hold out."

"What?"

"Get on IRC," he said.

They did. Van had Mayor McCheese and Felix used Smurfette. They skipped around the chat channels until they found one with some familiar handles.

> pentagons gone/white house too
> MY NEIGHBORS BARFING BLOOD OFF HIS BALCONY
IN SAN DIEGO

> Someone knocked over the Gherkin. Bankers are fleeing the City like rats.

> I heard that the Ginza's on fire

Felix typed: I'm in Toronto. We just saw the CN Tower fall. I've heard reports of bioweapons, something very fast.

Van read this and said, "You don't know how fast it is, Felix. Maybe we were all exposed three days ago."

Felix closed his eyes. "If that were so we'd be feeling some symptoms, I think."

> Looks like an EMP took out Hong Kong and maybe Paris—realtime sat footage shows them completely dark, and all netblocks there aren't routing

> You're in Toronto?

It was an unfamiliar handle.

> Yes—on Front Street

> my sisters at UofT and i cnt reach her—can you call her?

> No phone service

Felix typed, staring at NETWORK PROBLEMS.

"I have a soft phone on Mayor McCheese," Van said, launching his voice-over-IP app. "I just remembered."

Felix took the laptop from him and punched in his home number. It rang once, then there was a flat, blatting sound like an ambulance siren in an Italian movie.

> No phone service

Felix typed again.

He looked up at Van, and saw that his skinny shoulders were shaking. Van said, "Holy motherfucking shit. The world is ending."

Felix pried himself off of IRC an hour later. Atlanta had burned. Manhattan was hot—radioactive enough to screw up the webcams looking out over Lincoln Plaza. Everyone blamed Islam until it became clear that Mecca was a smoking pit and the Saudi Royals had been hanged before their palaces.

His hands were shaking, and Van was quietly weeping in the far corner of the cage. He tried calling home again, and then the police. It didn't work any better than it had the last 20 times.

He sshed into his box downstairs and grabbed his mail. Spam, spam, spam. More spam. Automated messages. There—an urgent message from the intrusion detection system in the Ardent cage.

He opened it and read quickly. Someone was crudely, repeatedly probing his routers. It didn't match a worm's signature, either. He followed the traceroute and discovered that the attack had originated in the same building as him, a system in a cage one floor below.

He had procedures for this. He portscanned his attacker and found that port 1337 was open—1337 was “leet” or “elite” in hacker number/letter substitution code. That was the kind of port that a worm left open to slither in and out of. He googled known exploits that left a listener on port 1337, narrowed this down based on the fingerprinted operating system of the compromised server, and then he had it.

It was an ancient worm, one that every box should have been patched against years before. No mind. He had the client for it, and he used it to create a root account for himself on the box, which he then logged into, and took a look around.

There was one other user logged in, “scaredy,” and he checked the process monitor and saw that scaredy had spawned all the hundreds of processes that were probing him and plenty of other boxen.

He opened a chat:

> Stop probing my server

He expected bluster, guilt, denial. He was surprised.

> Are you in the Front Street data-center?

> Yes

> Christ I thought I was the last one alive. I'm on the fourth floor. I think there's a bioweapon attack outside. I don't want to leave the clean room.

Felix whooshed out a breath.

> You were probing me to get me to trace back to you?

> Yeah

> That was smart

Clever bastard.

> I'm on the sixth floor, I've got one more with me.

> What do you know?

Felix pasted in the IRC log and waited while the other guy digested it. Van stood up and paced. His eyes were glazed over.

"Van? Pal?"

"I have to pee," he said.

"No opening the door," Felix said. "I saw an empty Mountain Dew bottle in the trash there."

"Right," Van said. He walked like a zombie to the trash can and pulled out the empty magnum. He turned his back.

> I'm Felix

> Will

Felix's stomach did a slow somersault as he thought about 2.0.

"Felix, I think I need to go outside," Van said. He was moving toward the airlock door. Felix dropped his keyboard and struggled to his feet and ran headlong to Van, tackling him before he reached the door.

"Van," he said, looking into his friend's glazed, unfocused eyes. "Look at me, Van."

"I need to go," Van said. "I need to get home and feed the cats."

"There's something out there, something fast-acting and lethal. Maybe it will blow away with the wind. Maybe it's already gone. But we're going to sit here until we know for sure or until we have no choice. Sit down, Van. Sit."

"I'm cold, Felix."

It was freezing. Felix's arms were broken out in gooseflesh and his feet felt like blocks of ice.

"Sit against the servers, by the vents. Get the exhaust heat." He found a rack and nestled up against it."

> Are you there?

> Still here—sorting out some logistics

> How long until we can go out?

> I have no idea

No one typed anything for quite some time then.

Felix had to use the Mountain Dew bottle twice. Then Van used it again. Felix tried calling Kelly again. The Metro Police site was down.

Finally, he slid back against the servers and wrapped his arms around his knees and wept like a baby.

After a minute, Van came over and sat beside him, with his arm around Felix's shoulder.

"They're dead, Van," Felix said. "Kelly and my s—son. My family is gone."

"You don't know for sure," Van said.

"I'm sure enough," Felix said. "Christ, it's all over, isn't it?"

"We'll gut it out a few more hours and then head out. Things should be getting back to normal soon. The fire department will fix it. They'll mobilize the Army. It'll be OK."

Felix's ribs hurt. He hadn't cried since—Since 2.0 was born. He hugged his knees harder.

Then the doors opened.

The two sysadmins who entered were wild-eyed. One had a tee that said TALK NERDY TO ME and the other one was wearing an Electronic Frontiers Canada shirt.

"Come on," TALK NERDY said. "We're all getting together on the top floor. Take the stairs."

Felix found he was holding his breath.

"If there's a bioagent in the building, we're all infected," TALK NERDY said. "Just go, we'll meet you there."

"There's one on the sixth floor," Felix said, as he climbed to his feet.

"Will, yeah, we got him. He's up there."

TALK NERDY was one of the Bastard Operators From Hell who'd unplugged the big routers. Felix and Van climbed the stairs slowly, their steps echoing in the deserted shaft. After the frigid air of the cage, the stairwell felt like a sauna.

There was a cafeteria on the top floor, with working toilets, water and coffee and vending machine food. There was an uneasy queue of sysadmins before each. No one met anyone's eye. Felix wondered which one was Will and then he joined the vending machine queue.

He got a couple more energy bars and a gigantic cup of vanilla coffee before running out of change. Van had scored them some table space and Felix set the stuff down before him and got in the toilet line. "Just save some for me," he said, tossing an energy bar in front of Van.

By the time they were all settled in, thoroughly evacuated, and eating, TALK NERDY and his friend had returned again. They cleared off the cash-register at the end of the food-prep area and TALK NERDY got up on it. Slowly the conversation died down.

"I'm Uri Popovich, this is Diego Rosenbaum. Thank you all for coming up here. Here's what we know for sure: the building's been on generators for three hours now. Visual observation

indicates that we're the only building in central Toronto with working power—which should hold out for three more days. There is a bioagent of unknown origin loose beyond our doors. It kills quickly, within hours, and it is aerosolized. You get it from breathing bad air. No one has opened any of the exterior doors to this building since five this morning. No one will open the doors until I give the go-ahead.

"Attacks on major cities all over the world have left emergency responders in chaos. The attacks are electronic, biological, nuclear and conventional explosives, and they are very widespread. I'm a security engineer, and where I come from, attacks in this kind of cluster are usually viewed as opportunistic: group B blows up a bridge because everyone is off taking care of group A's dirty nuke event. It's smart. An Aum Shin Rikyo cell in Seoul gassed the subways there about 2AM Eastern—that's the earliest event we can locate, so it may have been the Archduke that broke the camel's back. We're pretty sure that Aum Shin Rikyo couldn't be behind this kind of mayhem: they have no history of infowar and have never shown the kind of organizational acumen necessary to take out so many targets at once. Basically, they're not smart enough.

"We're holing up here for the foreseeable future, at least until the bioweapon has been identified and dispersed. We're going to staff the racks and keep the networks up. This is critical infrastructure, and it's our job to make sure it's got five nines of uptime. In times of national emergency, our responsibility to do that doubles."

One sysadmin put up his hand. He was very daring in a green Incredible Hulk ring-tee, and he was at the young end of the scale.

"Who died and made you king?"

"I have controls for the main security system, keys to every cage, and passcodes for the exterior doors—they're all locked now, by the way. I'm the one who got everyone up here first and called

the meeting. I don't care if someone else wants this job, it's a shitty one. But someone needs to have this job."

"You're right," the kid said. "And I can do it every bit as well as you. My name's Will Sario."

Popovich looked down his nose at the kid. "Well, if you'll let me finish talking, maybe I'll hand things over to you when I'm done."

"Finish, by all means." Sario turned his back on him and walked to the window. He stared out of it intensely. Felix's gaze was drawn to it, and he saw that there were several oily smoke plumes rising up from the city.

Popovich's momentum was broken. "So that's what we're going to do," he said.

The kid looked around after a stretched moment of silence. "Oh, is it my turn now?"

There was a round of good-natured chuckling.

"Here's what I think: the world is going to shit. There are coordinated attacks on every critical piece of infrastructure. There's only one way that those attacks could be so well coordinated: via the Internet. Even if you buy the thesis that the attacks are all opportunistic, we need to ask how an opportunistic attack could be organized in minutes: the Internet."

"So you think we should shut down the Internet?" Popovich laughed a little, but stopped when Sario said nothing.

"We saw an attack last night that nearly killed the Internet. A little DoS on the critical routers, a little DNS-foo, and down it goes like a preacher's daughter. Cops and the military are a bunch of technophobic lusers, they hardly rely on the net at all. If we take the Internet down, we'll disproportionately disadvantage the attackers, while only inconveniencing the defenders. When the time comes, we can rebuild it."

"You're shitting me," Popovich said. His jaw literally hung open.

"It's logical," Sario said. "Lots of people don't like coping with logic when it dictates hard decisions. That's a problem with people, not logic."

There was a buzz of conversation that quickly turned into a roar.

"Shut UP!" Popovich hollered. The conversation dimmed by one Watt. Popovich yelled again, stamping his foot on the countertop. Finally there was a semblance of order. "One at a time," he said. He was flushed red, his hands in his pockets.

One sysadmin was for staying. Another for going. They should hide in the cages. They should inventory their supplies and appoint a quartermaster. They should go outside and find the police, or volunteer at hospitals. They should appoint defenders to keep the front door secure.

Felix found to his surprise that he had his hand in the air. Popovich called on him.

"My name is Felix Tremont," he said, getting up on one of the tables, drawing out his PDA. "I want to read you something.

"Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather.

"We have no elected government, nor are we likely to have one, so I address you with no greater authority than that with which liberty itself always speaks. I declare the global social space we are building to be naturally independent of the tyrannies you seek to impose on us. You have no moral right to rule us nor do you possess any methods of enforcement we have true reason to fear.

"Governments derive their just powers from the consent of the governed. You have neither solicited nor received ours. We did not invite you. You do not know us, nor do you know our

world. Cyberspace does not lie within your borders. Do not think that you can build it, as though it were a public construction project. You cannot. It is an act of nature and it grows itself through our collective actions.'

"That's from the Declaration of Independence of Cyberspace. It was written 12 years ago. I thought it was one of the most beautiful things I'd ever read. I wanted my kid to grow up in a world where cyberspace was free—and where that freedom infected the real world, so meatspace got freer too.

He swallowed hard and scrubbed at his eyes with the back of his hand. Van awkwardly patted him on the shoe.

"My beautiful son and my beautiful wife died today. Millions more, too. The city is literally in flames. Whole cities have disappeared from the map."

He coughed up a sob and swallowed it again.

"All around the world, people like us are gathered in buildings like this. They were trying to recover from last night's worm when disaster struck. We have independent power. Food. Water.

"We have the network, that the bad guys use so well and that the good guys have never figured out.

"We have a shared love of liberty that comes from caring about and caring for the network. We are in charge of the most important organizational and governmental tool the world has ever seen. We are the closest thing to a government the world has right now. Geneva is a crater. The East River is on fire and the UN is evacuated.

"The Distributed Republic of Cyberspace weathered this storm basically unscathed. We are the custodians of a deathless, monstrous, wonderful machine, one with the potential to rebuild a better world.

"I have nothing to live for but that."

There were tears in Van's eyes. He wasn't the only one. They

didn't applaud him, but they did one better. They maintained respectful, total silence for seconds that stretched to a minute.

"How do we do it?" Popovich said, without a trace of sarcasm.

The newsgroups were filling up fast. They'd announced them in news.admin.net-abuse.email, where all the spamfighters hung out, and where there was a tight culture of camaraderie in the face of full-out attack.

The new group was alt.november5-disaster.recovery, with .recovery.governance, .recovery.finance, .recovery.logistics and .recovery.defense hanging off of it. Bless the wooly alt. hierarchy and all those who sail in her.

The sysadmins came out of the woodwork. The Googleplex was online, with the stalwart Queen Kong bossing a gang of rollerbladed grunts who wheeled through the gigantic data-center swapping out dead boxen and hitting reboot switches. The Internet Archive was offline in the Presidio, but the mirror in Amsterdam was live and they'd redirected the DNS so that you'd hardly know the difference. Amazon was down. Paypal was up. Blogger, Typepad and Livejournal were all up, and filling with millions of posts from scared survivors huddling together for electronic warmth.

The Flickr photostreams were horrific. Felix had to unsubscribe from them after he caught a photo of a woman and a baby, dead in a kitchen, twisted into an agonized heiroglyph by the bioagent. They didn't look like Kelly and 2.0, but they didn't have to. He started shaking and couldn't stop.

Wikipedia was up, but limping under load. The spam poured in as though nothing had changed. Worms roamed the network.

.recovery.logistics was where most of the action was.

> We can use the newsgroup voting mechanism to hold regional

> elections

Felix knew that this would work. Usenet newsgroup votes had been running for more than twenty years without a substantial hitch.

> We'll elect regional representatives and they'll pick a Prime Minister.

The Americans insisted on President, which Felix didn't like. Seemed too partisan. His future wouldn't be the American future. The American future had gone up with the White House. He was building a bigger tent than that.

There were French sysadmins online from France Telecom. The EBU's data-center had been spared in the attacks that hammered Geneva, and it was filled with wry Germans whose English was better than Felix's. They got on well with the remains of the BBC team in Canary Wharf.

They spoke polyglot English in .recovery.logistics, and Felix had momentum on his side. Some of the admins were cooling out the inevitable stupid flamewars with the practice of long years. Some were chipping in useful suggestions.

Surprisingly few thought that Felix was off his rocker.

> I think we should hold elections as soon as possible. Tomorrow at the latest. We can't rule justly without the consent of the governed.

Within seconds the reply landed in his inbox.

> You can't be serious. Consent of the governed? Unless I miss my guess, most of the people you're proposing to govern are puking their guts out, hiding under their desks, or wandering shell-shocked through the city streets. When do THEY get a vote?

Felix had to admit she had a point. Queen Kong was sharp. Not many woman sysadmins, and that was a genuine tragedy. Women like Queen Kong were too good to exclude from the field. He'd have to hack a solution to get women balanced out in his new government. Require each region to elect one woman and

one man?

He happily clattered into argument with her. The elections would be the next day; he'd see to it.

"Prime Minister of Cyberspace? Why not call yourself the Grand Poobah of the Global Data Network? It's more dignified, sounds cooler and it'll get you just as far." Will had the sleeping spot next to him, up in the cafeteria, with Van on the other side. The room smelled like a dingleberry: twenty-five sysadmins who hadn't washed in at least a day all crammed into the same room. For some of them, it had been much, much longer than a day.

"Shut up, Will," Van said. "You wanted to try to knock the Internet offline."

"Correction: I want to knock the Internet offline. Present-tense"

Felix cracked one eye. He was so tired, it was like lifting weights.

"Look, Sario—if you don't like my platform, put one of your own forward. There are plenty of people who think I'm full of shit and I respect them for that, since they're all running opposite me or backing someone who is. That's your choice. What's not on the menu is nagging and complaining. Bedtime now, or get up and post your platform."

Sario sat up slowly, unrolling the jacket he had been using for a pillow and putting it on. "Screw you guys, I'm out of here."

"I thought he'd never leave," Felix said and turned over, lying awake a long time, thinking about the election.

There were other people in the running. Some of them weren't even sysadmins. A US Senator on retreat at his summer place in Wyoming had generator power and a satellite phone. Somehow he'd found the right newsgroup and thrown his hat into

the ring. Some anarchist hackers in Italy strafed the group all night long, posting broken-English screeds about the political bankruptcy of "governance" in the new world. Felix looked at their netblock and determined that they were probably holed up in a small Interaction Design institute near Turin. Italy had been hit very bad, but out in the small town, this cell of anarchists had taken up residence.

A surprising number were running on a platform of shutting down the Internet. Felix had his doubts about whether this was even possible, but he thought he understood the impulse to finish the work and the world. Why not?

He fell asleep thinking about the logistics of shutting down the Internet, and dreamed bad dreams in which he was the network's sole defender.

He woke to a papery, itchy sound. He rolled over and saw that Van was sitting up, his jacket balled up in his lap, vigorously scratching his skinny arms. They'd gone the color of corned beef, and had a scaly look. In the light streaming through the cafeteria windows, skin motes floated and danced in great clouds.

"What are you doing?" Felix sat up. Watching Van's fingernails rip into his skin made him itch in sympathy. It had been three days since he'd last washed his hair and his scalp sometimes felt like there were little egg-laying insects picking their way through it. He'd adjusted his glasses the night before and had touched the back of his ears; his finger came away shining with thick sebum. He got blackheads in the backs of his ears when he didn't shower for a couple days, and sometimes gigantic, deep boils that Kelly finally popped with sick relish.

"Scratching," Van said. He went to work on his head, sending a cloud of dandruff-crud into the sky, there to join the scurf that he'd already eliminated from his extremities. "Christ, I itch all over."

Felix took Mayor McCheese from Van's backpack and plugged it into one of the Ethernet cables that snaked all over the

floor. He googled everything he could think of that could be related to this. "Itchy" yielded 40,600,000 links. He tried compound queries and got slightly more discriminating links.

"I think it's stress-related excema," Felix said, finally.

"I don't get excema," Van said.

Felix showed him some lurid photos of red, angry skin flaked with white. "Stress-related excema," he said, reading the caption.

Van examined his arms. "I have excema," he said.

"Says here to keep it moisturized and to try cortisone cream. You might try the first aid kit in the second-floor toilets. I think I saw some there." Like all of the sysadmins, Felix had had a bit of a rummage around the offices, bathrooms, kitchen and store-rooms, squirreling away a roll of toilet-paper in his shoulder-bag along with three or four power-bars. They were sharing out the food in the caf by unspoken agreement, every sysadmin watching every other for signs of gluttony and hoarding. All were convinced that there was hoarding and gluttony going on out of eyeshot, because all were guilty of it themselves when no one else was watching.

Van got up and when his face hove into the light, Felix saw how puffed his eyes were. "I'll post to the mailing-list for some antihistamine," Felix said. There had been four mailing lists and three wikis for the survivors in the building within hours of the first meeting's close, and in the intervening days they'd settled on just one. Felix was still on a little mailing list with five of his most trusted friends, two of whom were trapped in cages in other countries. He suspected that the rest of the sysadmins were doing the same.

Van stumbled off. "Good luck on the elections," he said, patting Felix on the shoulder.

Felix stood and paced, stopping to stare out the grubby windows. The fires still burned in Toronto, more than before. He'd tried to find mailing lists or blogs that Torontonians were

posting to, but the only ones he'd found were being run by other geeks in other data-centers. It was possible—likely, even—that there were survivors out there who had more pressing priorities than posting to the Internet. His home phone still worked about half the time but he'd stopped calling it after the second day, when hearing Kelly's voice on the voicemail for the fiftieth time had made him cry in the middle of a planning meeting. He wasn't the only one.

Election day. Time to face the music.

> Are you nervous?

> Nope,

Felix typed.

> I don't much care if I win, to be honest. I'm just glad we're doing this. The alternative was sitting around with our thumbs up our ass, waiting for someone to crack up and open the door.

The cursor hung. Queen Kong was very high latency as she bossed her gang of Googloids around the Googleplex, doing everything she could to keep her data center online. Three of the offshore cages had gone offline and two of their six redundant network links were smoked. Lucky for her, queries-per-second were way down.

> There's still China

she typed. Queen Kong had a big board with a map of the world colored in Google-queries-per-second, and could do magic with it, showing the drop-off over time in colorful charts. She'd uploaded lots of video clips showing how the plague and the bombs had swept the world: the initial upswell of queries from people wanting to find out what was going on, then the grim, precipitous shelving off as the plagues took hold.

> China's still running about ninety percent nominal.

Felix shook his head.

> You can't think that they're responsible

> No

She typed, but then she started to key something and then stopped.

> No of course not. I believe the Popovich Hypothesis. This is a bunch of assholes all using the rest for cover. But China put them down harder and faster than anyone else. Maybe we've finally found a use for totalitarian states.

Felix couldn't resist. He typed:

> You're lucky your boss can't see you type that. You guys were pretty enthusiastic participants in the Great Firewall of China.

> Wasn't my idea
she typed.

> And my boss is dead. They're probably all dead. The whole Bay Area got hit hard, and then there was the quake.

They'd watched the USGS's automated data-stream from the 6.9 that trashed northern Cal from Gilroy to Sebastopol. Soma webcams revealed the scope of the damage—gas main explosions, seismically retrofitted buildings crumpling like piles of children's blocks after a good kicking. The Googleplex, floating on a series of gigantic steel springs, had shook like a plateful of jello, but the racks had stayed in place and the worst injury they'd had was a badly bruised eye on a sysadmin who'd caught a flying cable-crimper in the face.

> Sorry. I forgot.

> It's OK. We all lost people, right?

> Yeah. Yeah. Anyway, I'm not worried about the election. Whoever wins, at least we're doing SOMETHING

> Not if they vote for one of the fuckrags

Fuckrag was the epithet that some of the sysadmins were using to describe the contingent that wanted to shut down the Internet. Queen Kong had coined it—apparently it had started life as a catch-all term to describe the clueless IT managers that she'd chewed up through her career.

> They won't. They're just tired and sad is all. Your endorsement will carry the day

The Googloids were one of the largest and most powerful blocs left behind, along with the satellite uplink crews and the remaining transoceanic crews. Queen Kong's endorsement had come as a surprise and he'd sent her an email that she'd replied to tersely: "can't have the fuckrags in charge."

> gtg

she typed and then her connection dropped. He fired up a browser and called up google.com. The browser timed out. He hit reload, and then again, and then the Google front-page came back up. Whatever had hit Queen Kong's workplace—power failure, worms, another quake—she had fixed it. He snorted when he saw that they'd replaced the O's in the Google logo with little planet Earths with mushroom clouds rising from them.

"Got anything to eat?" Van said to him. It was mid-afternoon, not that time particularly passed in the data-center. Felix patted his pockets. They'd put a quartermaster in charge, but not before everyone had snagged some chow out of the machines. He'd had a dozen power-bars and some apples. He'd taken a couple sandwiches but had wisely eaten them first before they got stale.

"One power-bar left," he said. He'd noticed a certain looseness in his waistline that morning and had briefly relished it. Then he'd remembered Kelly's teasing about his weight and he'd cried some. Then he'd eaten two power bars, leaving him with just one left.

"Oh," Van said. His face was hollower than ever, his shoulders sloping in on his toast-rack chest.

"Here," Felix said. "Vote Felix."

Van took the power-bar from him and then put it down on

the table. "OK, I want to give this back to you and say, 'No, I couldn't,' but I'm fucking hungry, so I'm just going to take it and eat it, OK?"

"That's fine by me," Felix said. "Enjoy."

"How are the elections coming?" Van said, once he'd licked the wrapper clean.

"Dunno," Felix said. "Haven't checked in a while." He'd been winning by a slim margin a few hours before. Not having his laptop was a major handicap when it came to stuff like this. Up in the cages, there were a dozen more like him, poor bastards who'd left the house on Der Tag without thinking to snag something WiFi-enabled.

"You're going to get smoked," Sario said, sliding in next to them. He'd become famous in the center for never sleeping, for eavesdropping, for picking fights in RL that had the ill-considered heat of a Usenet flamewar. "The winner will be someone who understands a couple of fundamental facts." He held up a fist, then ticked off his bullet points by raising a finger at a time. "Point: The terrorists are using the Internet to destroy the world, and we need to destroy the Internet first. Point: Even if I'm wrong, the whole thing is a joke. We'll run out of generator-fuel soon enough. Point: Or if we don't, it will be because the old world will be back and running, and it won't give a crap about your new world. Point: We're gonna run out of food before we run out of shit to argue about or reasons not to go outside. We have the chance to do something to help the world recover: we can kill the net and cut it off as a tool for bad guys. Or we can rearrange some more deck chairs on the bridge of your personal Titanic in the service of some sweet dream about an 'independent cyberspace.'"

The thing was that Sario was right. They would be out of fuel in two days—intermittent power from the grid had stretched their generator lifespan. And if you bought his hypothesis that the

Internet was primarily being used as a tool to organize more mayhem, shutting it down would be the right thing to do.

But Felix's daughter and his wife were dead. He didn't want to rebuild the old world. He wanted a new one. The old world was one that didn't have any place for him. Not anymore.

Van scratched his raw, flaking skin. Puffs of dander and scruff swirled in the musty, greasy air. Sario curled a lip at him. "That is disgusting. We're breathing recycled air, you know. Whatever leprosy is eating you, aerosolizing it into the air supply is pretty anti-social."

"You're the world's leading authority on anti-social, Sario," Van said. "Go away or I'll multi-tool you to death." He stopped scratching and patted his sheathed multi-pliers like a gunslinger.

"Yeah, I'm anti-social. I've got Asperger's and I haven't taken any meds in four days. What's your fucking excuse."

Van scratched some more. "I'm sorry," he said. "I didn't know."

Sario cracked up. "Oh, you are priceless. I'd bet that three quarters of this bunch is borderline autistic. Me, I'm just an asshole. But I'm one who isn't afraid to tell the truth, and that makes me better than you, dickweed."

"Fuckrag," Felix said, "fuck off."

They had less than a day's worth of fuel when Felix was elected the first ever Prime Minister of Cyberspace. The first count was spoiled by a bot that spammed the voting process and they lost a critical day while they added up the votes a second time.

But by then, it was all seeming like more of a joke. Half the data-centers had gone dark. Queen Kong's net-maps of Google queries were looking grimmer and grimmer as more of the world went offline, though she maintained a leader-board of new and rising queries—largely related to health, shelter, sanitation and self-defense.

Worm-load slowed. Power was going off to many home PC users, and staying off, so their compromised PCs were going dark. The backbones were still lit up and blinking, but the missives from those data-centers were looking more and more desperate. Felix hadn't eaten in a day and neither had anyone in a satellite Earth-station of transoceanic head-end.

Water was running short, too.

Popovich and Rosenbaum came and got him before he could do more than answer a few congratulatory messages and post a canned acceptance speech to newsgroups.

"We're going to open the doors," Popovich said. Like all of them, he'd lost weight and waxed scruffy and oily. His BO was like a cloud coming off a trash-bag behind a fish-market on a sunny day. Felix was quite sure he smelled no better.

"You're going to go for a reccy? Get more fuel? We can charter a working group for it—great idea."

Rosenbaum shook his head sadly. "We're going to go find our families. Whatever is out there has burned itself out. Or it hasn't. Either way, there's no future in here."

"What about network maintenance?" Felix said, though he knew the answers. "Who'll keep the routers up?"

"We'll give you the root passwords to everything," Popovich said. His hands were shaking and his eyes were bleary. Like many of the smokers stuck in the data-center, he'd gone cold turkey this week. They'd run out of caffeine products two days earlier, too. The smokers had it rough.

"And I'll just stay here and keep everything online?"

"You and anyone else who cares anymore."

Felix knew that he'd squandered his opportunity. The election had seemed noble and brave, but in hindsight all it had been was an excuse for infighting when they should have been figuring out what to do next. The problem was that there was nothing to do next.

"I can't make you stay," he said.

"Yeah, you can't." Popovich turned on his heel and walked out. Rosenbaum watched him go, then he gripped Felix's shoulder and squeezed it.

"Thank you, Felix. It was a beautiful dream. It still is. Maybe we'll find something to eat and some fuel and come back."

Rosenbaum had a sister whom he'd been in contact with over IM for the first days after the crisis broke. Then she'd stopped answering. The sysadmins were split among those who'd had a chance to say goodbye and those who hadn't. Each was sure the other had it better.

They posted about it on the internal newsgroup—they were still geeks, after all, and there was a little honor guard on the ground floor, geeks who watched them pass toward the double doors. They manipulated the keypads and the steel shutters lifted, then the first set of doors opened. They stepped into the vestibule and pulled the doors shut behind them. The front doors opened. It was very bright and sunny outside, and apart from how empty it was, it looked very normal. Heartbreakingly so.

The two took a tentative step out into the world. Then another. They turned to wave at the assembled masses. Then they both grabbed their throats and began to jerk and twitch, crumpling in a heap on the ground.

"Shiii—!" was all Felix managed to choke out before they both dusted themselves off and stood up, laughing so hard they were clutching their sides. They waved once more and turned on their heels.

"Man, those guys are sick," Van said. He scratched his arms, which had long, bloody scratches on them. His clothes were so covered in scurf they looked like they'd been dusted with icing sugar.

"I thought it was pretty funny," Felix said.

"Christ I'm hungry," Van said, conversationally.

"Lucky for you, we've got all the packets we can eat," Felix said.

"You're too good to us grunts, Mr President," Van said.

"Prime Minister," he said. "And you're no grunt, you're the Deputy Prime Minister. You're my designated ribbon-cutter and hander-out of oversized novelty checks."

It buoyed both of their spirits. Watching Popovich and Rosenbaum go, it buoyed them up. Felix knew then that they'd all be going soon.

That had been pre-ordained by the fuel-supply, but who wanted to wait for the fuel to run out, anyway?

> half my crew split this morning

Queen Kong typed. Google was holding up pretty good anyway, of course. The load on the servers was a lot lighter than it had been since the days when Google fit on a bunch of hand-built PCs under a desk at Stanford.

> we're down to a quarter

Felix typed back. It was only a day since Popovich and Rosenbaum left, but the traffic on the newsgroups had fallen down to near zero. He and Van hadn't had much time to play Republic of Cyberspace. They'd been too busy learning the systems that Popovich had turned over to them, the big, big routers that had went on acting as the major interchange for all the network backbones in Canada.

Still, someone posted to the newsgroups every now and again, generally to say goodbye. The old flamewars about who would be PM, or whether they would shut down the network, or who took too much food—it was all gone.

He reloaded the newsgroup. There was a typical message.

> Runaway processes on Solaris

>

> Uh, hi. I'm just a lightweight MSCE but I'm the only one awake here and four of the DSLAMs just went down. Looks like

there's some custom accounting code that's trying to figure out how much to bill our corporate customers and it's spawned ten thousand threads and its eating all the swap. I just want to kill it but I can't seem to do that. Is there some magic invocation I need to do to get this goddamned weenix box to kill this shit? I mean, it's not as if any of our customers are ever going to pay us again. I'd ask the guy who wrote this code, but he's pretty much dead as far as anyone can work out.

He reloaded. There was a response. It was short, authoritative, and helpful—just the sort of thing you almost never saw in a high-caliber newsgroup when a noob posted a dumb question. The apocalypse had awoken the spirit of patient helpfulness in the world's sysop community.

Van shoulder-surfed him. "Holy shit, who knew he had it in him?"

He looked at the message again. It was from Will Sario.

He dropped into his chat window.

> sario i thought you wanted the network dead why are you helping msces fix their boxen?

> <sheepish grin> Gee Mr PM, maybe I just can't bear to watch a computer suffer at the hands of an amateur.

He flipped to the channel with Queen Kong in it.

> How long?

> Since I slept? Two days. Until we run out of fuel? Three days. Since we ran out of food? Two days.

> Jeez. I didn't sleep last night either. We're a little short handed around here.

> asl? Im monica and I live in pasadena and Im bored with my homework. WOUld you like to download my pic???

The trojan bots were all over IRC these days, jumping to every channel that had any traffic on it. Sometimes you caught five or six flirting with each other. It was pretty weird to watch a piece of malware try to con another instance of itself into

downloading a trojan.

They both kicked the bot off the channel simultaneously. He had a script for it now. The spam hadn't even tailed off a little.

> How come the spam isn't reducing? Half the goddamned data-centers have gone dark

Queen Kong paused a long time before typing. As had become automatic when she went high-latency, he reloaded the Google homepage. Sure enough, it was down.

> Sario, you got any food?

> You won't miss a couple more meals, Your Excellency

Van had gone back to Mayor McCheese but he was in the same channel.

"What a dick. You're looking pretty buff, though, dude."

Van didn't look so good. He looked like you could knock him over with a stiff breeze and he had a phlegmy, weak quality to his speech.

> hey kong everything ok?

> everything's fine just had to go kick some ass

"How's the traffic, Van?"

"Down 25 percent from this morning," he said. There were a bunch of nodes whose connections routed through them. Presumably most of these were home or commercial customers is places where the power was still on and the phone company's COs were still alive.

Every once in a while, Felix would wiretap the connections to see if he could find a person who had news of the wide world. Almost all of it was automated traffic, though: network backups, status updates. Spam. Lots of spam.

> Spam's still up because the services that stop spam are failing faster than the services that create it. All the anti-worm stuff is centralized in a couple places. The bad stuff is on a million zombie computers. If only the lusers had had the good sense to turn off their home PCs before keeling over or taking off

> at the rate were going well be routing nothing but spam by dinnertime

Van cleared his throat, a painful sound. "About that," he said. "I think it's going to hit sooner than that. Felix, I don't think anyone would notice if we just walked away from here."

Felix looked at him, his skin the color of corned-beef and streaked with long, angry scabs. His fingers trembled.

"You drinking enough water?"

Van nodded. "All frigging day, every ten seconds. Anything to keep my belly full." He pointed to a refilled Pepsi Max bottle full of water by his side.

"Let's have a meeting," he said.

There had been forty-three of them on D-Day. Now there were fifteen. Six had responded to the call for a meeting by simply leaving. Everyone knew without having to be told what the meeting was about.

"So that's it, you're going to let it all fall apart?" Sario was the only one with the energy left to get properly angry. He'd go angry to his grave. The veins on his throat and forehead stood out angrily. His fists shook angrily. All the other geeks went lids-down at the site of him, looking up in unison for once at the discussion, not keeping one eye on a chat-log or a tailed service log.

"Sario, you've got to be shitting me," Felix said. "You wanted to pull the goddamned plug!"

"I wanted it to go clean," he shouted. "I didn't want it to bleed out and keel over in little gasps and pukes forever. I wanted it to be an act of will by the global community of its caretakers. I wanted it to be an affirmative act by human hands. Not entropy and bad code and worms winning out. Fuck that, that's just what's happened out there."

Up in the top-floor cafeteria, there were windows all around,

hardened and light-bending, and by custom, they were all blinds-down. Now Sario ran around the room, yanking down the blinds. How the hell can he get the energy to run? Felix wondered. He could barely walk up the stairs to the meeting room.

Harsh daylight flooded in. It was a fine sunny day out there, but everywhere you looked across that commanding view of Toronto's skyline, there were rising plumes of smoke. The TD tower, a gigantic black modernist glass brick, was gouting flame to the sky. "It's all falling apart, the way everything does.

"Listen, listen. If we leave the network to fall over slowly, parts of it will stay online for months. Maybe years. And what will run on it? Malware. Worms. Spam. System-processes. Zone transfers. The things we use fall apart and require constant maintenance. The things we abandon don't get used and they last forever. We're going to leave the network behind like a lime-pit filled with industrial waste. That will be our fucking legacy—the legacy of every keystroke you and I and anyone, anywhere ever typed. You understand? We're going to leave it to die slow like a wounded dog, instead of giving it one clean shot through the head."

Van scratched his cheeks, then Felix saw that he was wiping away tears.

"Sario, you're not wrong, but you're not right either," he said. "Leaving it up to limp along is right. We're going to all be limping for a long time, and maybe it will be some use to someone. If there's one packet being routed from any user to any other user, anywhere in the world, it's doing it's job."

"If you want a clean kill, you can do that," Felix said. "I'm the PM and I say so. I'm giving you root. All of you." He turned to the white-board where the cafeteria workers used to scrawl the day's specials. Now it was covered with the remnants of heated technical debates that the sysadmins had engaged in over the days since the day.

He scrubbed away a clean spot with his sleeve and began to write out long, complicated alphanumeric passwords salted with punctuation. Felix had a gift for remembering that kind of password. He doubted it would do him much good, ever again.

> Were going, kong. Fuels almost out anyway
> yeah well thats right then. it was an honor, mr prime minister

> you going to be ok?

> ive commandeered a young sysadmin to see to my feminine needs and weve found another cache of food thatll last us a couple weeks now that were down to fifteen admins—im in hog heaven pal

> youre amazing, Queen Kong, seriously. Dont be a hero though. When you need to go go. There's got to be something out there

> be safe felix, seriously—btw did i tell you queries are up in Romania? maybe theyre getting back on their feet

> really?

> yeah, really. we're hard to kill—like fucking roaches

Her connection died. He dropped to Firefox and reloaded Google and it was down. He hit reload and hit reload and hit reload, but it didn't come up. He closed his eyes and listened to Van scratch his legs and then heard Van type a little.

"They're back up," he said.

Felix whooshed out a breath. He sent the message to the newsgroup, one that he'd run through five drafts before settling on, "Take care of the place, OK? We'll be back, someday."

Everyone was going except Sario. Sario wouldn't leave. He came down to see them off, though.

The sysadmins gathered in the lobby and Felix made the safety door go up, and the light rushed in.

Sario stuck his hand out.

"Good luck," he said.

"You too," Felix said. He had a firm grip, Sario, stronger than he had any right to be. "Maybe you were right," he said.

"Maybe," he said.

"You going to pull the plug?"

Sario looked up at the drop-ceiling, seeming to peer through the reinforced floors at the humming racks above. "Who knows?" he said at last.

Van scratched and a flurry of white motes danced in the sunlight.

"Let's go find you a pharmacy," Felix said. He walked to the door and the other sysadmins followed.

They waited for the interior doors to close behind them and then Felix opened the exterior doors. The air smelled and tasted like a mown grass, like the first drops of rain, like the lake and the sky, like the outdoors and the world, an old friend not heard from in an eternity.

"Bye, Felix," the other sysadmins said. They were drifting away while he stood transfixed at the top of the short concrete staircase. The light hurt his eyes and made them water.

"I think there's a Shopper's Drug Mart on King Street," he said to Van. "We'll throw a brick through the window and get you some cortisone, OK?"

"You're the Prime Minister," Van said. "Lead on."

They didn't see a single soul on the fifteen minute walk. There wasn't a single sound except for some bird noises and some distant groans, and the wind in the electric cables overhead. It was like walking on the surface of the moon.

"Bet they have chocolate bars at the Shopper's," Van said.

Felix's stomach lurched. Food. "Wow," he said, around a mouthful of saliva.

They walked past a little hatchback and in the front seat was the dried body of a woman holding the dried body of a baby, and his mouth filled with sour bile, even though the smell was faint through the rolled-up windows.

He hadn't thought of Kelly or 2.0 in days. He dropped to his knees and retched again. Out here in the real world, his family was dead. Everyone he knew was dead. He just wanted to lie down on the sidewalk and wait to die, too.

Van's rough hands slipped under his armpits and hauled weakly at him. "Not now," he said. "Once we're safe inside somewhere and we've eaten something, then and then you can do this, but not now. Understand me, Felix? Not fucking now."

The profanity got through to him. He got to his feet. His knees were trembling.

"Just a block more," Van said, and slipped Felix's arm around his shoulders and led him along.

"Thank you, Van. I'm sorry."

"No sweat," he said. "You need a shower, bad. No offense."

"None taken."

The Shoppers had a metal security gate, but it had been torn away from the front windows, which had been rudely smashed. Felix and Van squeezed through the gap and stepped into the dim drug-store. A few of the displays were knocked over, but other than that, it looked OK. By the cash-registers, Felix spotted the racks of candy bars at the same instant that Van saw them, and they hurried over and grabbed a handful each, stuffing their faces.

"You two eat like pigs."

They both whirled at the sound of the woman's voice. She was holding a fire-axe that was nearly as big as she was. She wore a lab-coat and comfortable shoes.

"You take what you need and go, OK? No sense in there being any trouble." Her chin was pointy and her eyes were sharp. She looked to be in her forties. She looked nothing like Kelly, which

was good, because Felix felt like running and giving her a hug as it was. Another person alive!

"Are you a doctor?" Felix said. She was wearing scrubs under the coat, he saw.

"You going to go?" She brandished the axe.

Felix held his hands up. "Seriously, are you a doctor? A pharmacist?"

"I used to be a RN, ten years ago. I'm mostly a Web-designer."

"You're shitting me," Felix said.

"Haven't you ever met a girl who knew about computers?"

"Actually, a friend of mine who runs Google's data-center is a girl. A woman, I mean."

"You're shitting me," she said. "A woman ran Google's data-center?"

"Runs," Felix said. "It's still online."

"NFW," she said. She let the axe lower.

"Way. Have you got any cortisone cream? I can tell you the story. My name's Felix and this is Van, who needs any anti-histamines you can spare."

"I can spare? Felix old pal, I have enough dope here to last a hundred years. This stuff's going to expire long before it runs out. But are you telling me that the net's still up?"

"It's still up," he said. "Kind of. That's what we've been doing all week. Keeping it online. It might not last much longer, though."

"No," she said. "I don't suppose it would." She set the axe down. "Have you got anything to trade? I don't need much, but I've been trying to keep my spirits up by trading with the neighbors. It's like playing civilization."

"You have neighbors?"

"At least ten," she said. "The people in the restaurant across the way make a pretty good soup, even if most of the veg is canned. They cleaned me out of Sterno, though."

"You've got neighbors and you trade with them?"

"Well, nominally. It'd be pretty lonely without them. I've taken care of whatever sniffles I could. Set a bone—broken wrist. Listen, do you want some Wonder Bread and peanut butter? I have a ton of it. Your friend looks like he could use a meal."

"Yes please," Van said. "We don't have anything to trade, but we're both committed workaholics looking to learn a trade. Could you use some assistants?"

"Not really." She spun her axe on its head. "But I wouldn't mind some company."

They ate the sandwiches and then some soup. The restaurant people brought it over and made their manners at them, though Felix saw their noses wrinkle up and ascertained that there was working plumbing in the back room. Van went in to take a sponge bath and then he followed.

"None of us know what to do," the woman said. Her name was Rosa, and she had found them a bottle of wine and some disposable plastic cups from the housewares aisle. "I thought we'd have helicopters or tanks or even looters, but it's just quiet."

"You seem to have kept pretty quiet yourself," Felix said.

"Didn't want to attract the wrong kind of attention."

"You ever think that maybe there's a lot of people out there doing the same thing? Maybe if we all get together we'll come up with something to do."

"Or maybe they'll cut our throats," she said.

Van nodded. "She's got a point."

Felix was on his feet. "No way, we can't think like that. Lady, we're at a critical juncture here. We can go down through negligence, dwindling away in our hiding holes, or we can try to build something better."

"Better?" She made a rude noise.

"OK, not better. Something though. Building something new is better than letting it dwindle away. Christ, what are you going

to do when you've read all the magazines and eaten all the potato chips here?"

Rosa shook her head. "Pretty talk," she said. "But what the hell are we going to do, anyway?"

"Something," Felix said. "We're going to do something. Something is better than nothing. We're going to take this patch of the world where people are talking to each other, and we're going to expand it. We're going to find everyone we can and we're going to take care of them and they're going to take care of us. We'll probably fuck it up. We'll probably fail. I'd rather fail than give up, though."

Van laughed. "Felix, you are crazier than Sario, you know it?"

"We're going to go and drag him out, first thing tomorrow. He's going to be a part of this, too. Everyone will. Screw the end of the world. The world doesn't end. Humans aren't the kind of things that have endings."

Rosa shook her head again, but she was smiling a little now. "And you'll be what, the Pope-Emperor of the World?"

"He prefers Prime Minister," Van said in a stagey whisper. The anti-histamines had worked miracles on his skin, and it had faded from angry red to a fine pink.

"You want to be Minister of Health, Rosa?" he said.

"Boys," she said. "Playing games. How about this. I'll help out however I can, provided you never ask me to call you Prime Minister and you never call me the Minister of Health?"

"It's a deal," he said.

Van refilled their glasses, upending the wine bottle to get the last few drops out.

They raised their glasses. "To the world," Felix said. "To humanity." He thought hard. "To rebuilding."

"To anything," Van said.

"To anything," Felix said. "To everything."

"To everything," Rosa said.

They drank. The next day, they started to rebuild. And months later, they started over again, when disagreements drove apart the fragile little group they'd pulled together. And a year after that, they started over again. And five years later, they started again.

Felix dug ditches and salvaged cans and buried the dead. He planted and harvested. He fixed some cars and learned to make biodiesel. Finally he fetched up in a data-center for a little government—little governments came and went, but this one was smart enough to want to keep records and needed someone to keep everything running, and Van went with him.

They spent a lot of time in chat rooms and sometimes they happened upon old friends from the strange time they'd spent running the Distributed Republic of Cyberspace, geeks who insisted on calling him PM, though no one in the real world ever called him that anymore.

It wasn't a good life, most of the time. Felix's wounds never healed, and neither did most other people's. There were lingering sicknesses and sudden ones. Tragedy on tragedy.

But Felix liked his data-center. There in the humming of the racks, he never felt like it was the first days of a better nation, but he never felt like it was the last days of one, either.

> go to bed, felix

> soon, kong, soon—almost got this backup running

> youre a junkie, dude.

> look whos talking

He reloaded the Google homepage. Queen Kong had had it online for a couple years now. The Os in Google changed all the time, whenever she got the urge. Today they were little cartoon globes, one smiling the other frowning.

He looked at it for a long time and dropped back into a terminal to check his backup. It was running clean, for a change. The little government's records were safe.

> ok night night

> take care

Van waved at him as he creaked to the door, stretching out his back with a long series of pops.

"Sleep well, boss," he said.

"Don't stick around here all night again," Felix said. "You need your sleep, too."

"You're too good to us grunts," Van said, and went back to typing.

Felix went to the door and walked out into the night. Behind him, the biodiesel generator hummed and made its acrid fumes. The harvest moon was up, which he loved. Tomorrow, he'd go back and fix another computer and fight off entropy again. And why not?

It was what he did. He was a sysadmin.

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