

A decorative border with intricate floral and scrollwork patterns, rendered in a light gray color, framing the central text.

Nanowhere

NANOWHERE

by Chris Howard

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Also by Chris Howard

THE WREATH

(with Chloe Howard)

NANOWHERE

Chris Howard

NANOWHERE

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NANOWHERE

Joe and Al

DR. ERNEST STRAFF wasn't surprised when the jumptroopers tackled him in his dining room, stuffed his head in a bag, zip-tied his wrists and ankles, dragged him into a clearing in the forest next to his house, and cabled him up into a hovering gunship. He just thought or hoped or wished he had had more time.

In seven hundred and sixteen seconds (Straff was counting) his captors had him over the New Hampshire line, crossing western Mass at a shallow angle that would take him into upstate New York. He knew their direction because he heard a voice through the backroar of the engines, deep with round tones and a slight Minnesota lilt, curiously pointing out the Mass Pike to one of his squadmates. I-90 ran east-west across Massachusetts, dipped south a bit in the middle before it headed into Boston. The ex-Minnesotan was on Straff's left, so they must be just north of the Pike, heading west. Nothing but cold Atlantic east. If the pilot kept a fairly straight heading they'd cross into New York south of the capital toward the Catskill's.

Straff caught all of this in the space of a few seconds. As soon as the trooper started speaking, he stopped, having seen another of his team give him a finger drawn across the throat.

This left another few hundred seconds for Dr. Straff to blindly think over his fate. The black fabric bag rubbed his nose and ears. The gunship's engines threw off a steady high-throttled chainsaw whine with an accompanying fuselage-vibrating rumble, and his ears hurt trying to listen for distinguishable sounds out of the dense storm of noise.

The noetic surgeon stepped back from his scope, rubbing the arched pink grooves in the skin around his eyes. "Nicely healed, sir. She's ready to go."

Dr. Greenleigh looked up from the whitepaper his tech staff had worked up for the procedure. He pocketed his reading glasses. "Enough in place to get into her memory flow?"

"Yes, sir."

The mechs embedded in June Trimony's brain were next-gen neural retiforms, far more intrusive and real-driving than gCognitivs, SoulYoke stabs or the deeper versions of these developed in the military's labs.

"How long before her body rejects them?"

The surgeon's lips curled in to hide his mouth behind a stiff doughy line. His lips popped out after a pause. "I'd guess a month."

The Chairman of the Rost Institute tilted his head a little, not quite smiling, not much of a guesser. "That long?"

"Guessing, but keeping it cautious, sir. There are physiologicals to consider, but I'll stand by a month," he said, nodding.

"And after rejection?"

"They won't come out easy. Probably kill her."

Greenleigh straightened, pausing half a second over the question of how much sympathy he needed to show, and nodded at his surgeon without showing anything that looked sympathetic. "Very well. Keep her on nutrition. I need her healthy."

"Yes, Dr. Greenleigh."

The chairman studied the surgeon a moment, and then showed all of his teeth in a broad grin. "Well done, Mitch. I'm off to pick up an old friend at the landing. Let me know when Miss Trimony wakes."

Kaffia Lang jumped the curb at 30 k's, ground the handrail against the earth's gravity in a sideways scoot, and dropped three feet into a concrete plain at the edge of the North Hampton skate park.

She swung her backpack around, charcoal black against smooth brown skin and a flare of tight neon green clothing. She lowered it to the ground as she rolled up to another skater, Alexander Shoaler, a tall red head her own age, fifteen.

Plywood ramps and half pipes ringed the central concrete basin like bygone-era shipyard scraps. The park was clean, walled with sixty-foot pines, and set back twenty meters off Atlantic Avenue, prime real estate that the owner had been obliged to give up in some cloudy property tax exchange deal with the New Hampshire town.

A single lane dirt track ran alongside the laser-leveled concrete pad, weed-choked and pot-holed. It headed into the forest, lost in overgrowth thirty meters beyond the padlocked gate.

The forest was haunted. Everyone knew that, but the tax deal apparently included a do-not-bother-the-skaters clause, and so as long as you stayed this side of the gate you weren't likely to run into any of the rumored specters, alleged oversized arachnids, poisonous fog or any of the other blood-drinking, mind-emptying, acidic-saliva-spitting denizens of the wood.

Kaffia didn't notice the haunted forest. She smiled at Alex because she felt their world blaze into existence and expand around them, widening to encompass the real world, but with special properties like the ability to tune out the real world while they were together. When her parents sighed, "Off in your own little world, Kaffia?" she would say, "Actually, it's quite large, as large as I want it to be."

The private world she shared with Alex always appeared when they met. They'd been friends about a year but it felt like five times

that, and they'd taken it so far, that for fun and the delight of annoying others, they pretended to be married. That was the act they usually put on while in their world, a comfortably married couple with loud staged greetings and grotesquely sweet nicknames. It threw everyone around them into uncomfortable amusement or sickness, sometimes both.

Alex waved off another boarder, turned to Kaffia, puckering up.

"Lips," she said shortly in mock reproach, followed his lip-scrunching expression, but turned her head at just the right time so that he planted his kiss on her cheek.

"How was your day, dear?" Kaffia asked brightly in the role of the dutiful wife, something she understood, could role-play, but would never be.

School had let out half an hour ago. The first word that shot into Alex's mind went right to his mouth.

"Blistering."

"Shall I fix you a drink?"

His mouth closed. He raised an eyebrow, pleasantly surprised.
"Double, if you can."

Anticipating this, Kaffia dug out two gleaming red cans of Coke from her pack and heaved them. Alex caught them like high-entropy-bound raw eggs, popped open both, but drank at a civilized pace, alternating cans while he rolled back and forth on his board. Kaffia rifled through her pack again, pulled out a fat hardcover textbook, and jutted her chin at the Cokes.

"Girls locker room was out. Had to get some woodshopper to get them for me out of the boys'. It has to be Coke?" She frowned, pausing for an answer, and then rolled her eyes. "And don't give me some marketing slogan."

He gave her a puzzled look, which slid off his face a moment later as if he had slipped out of their world and into another. He drifted in dreamy contentment, savoring the complex natural flavors swirling in an engaging caramel-colored mélange of high fructose corn syrup and/or sucrose.

"It's the spice," he said slowly, almost in a trance.

Arrakis...Dune...Desert planet...

She looked coldly at his faraway look. Reading it, Alex added, "None of the others have anything like it. There's a unique flavor found only in genuine Coca-Cola."

"Spice?"

"It's required if you're going to fold space."

Kaffia bit her lower lip, pondering his words. "And this helps you...how?"

He sighed, dropped his shoulders, reentering their world by blinking a few times. He shrugged at the obvious. "How else is the emperor going to maintain control over his ten-thousand year old interplanetary feudal hierarchy?"

"Oh, right, when you put it like that." She nodded vigorously, her subconscious feeding her the author, Herbert, and the title, Dune, which she mentally pushed to the top of the list of books she'd have to read next. Kaffia devoured books like others did candy.

Alex laughed, upended the can in his right hand. "First, the spice. Second, you know I like to burp when I skate." He tossed her the empties and shot off the ledge, plummeting into the concrete bowl. Kaffia dropped her textbook, caught it between her knees, and juggled the cans for half a second before lobbing them into the trash.

Alex Shoaler was a wiry gap-toothed skater with hazel eyes that bugged out and shifted color with the changing light. He liked this effect, and made a habit of moving around a lot, which annoyed just about everyone. His mother thought she could cut hair as well as any barber, and so he usually sported a horribly uneven buzz cut (probably not entirely her fault). His dense bristly orangey-red hair looked like someone had smeared his head with marmalade, the kind with extra shredded citrus rind. It always stood on end, even when it grew out, as if he was walking around with his tongue in a powered light socket. His skin was white as a bed sheet, but so freckled that it appeared splotchy brown from a distance.

He had strong thick fingers that were good for a lot of things: grabbing a board with hot spinning wheels and lots of skull stickers, climbing chainlink fences, hanging from tree limbs, holding a pen, hooking concrete ledges, handling a gamepad with surgical precision, and curling into rude gestures or fists when he couldn't talk his way out of something.

Kaffia Lang was nearly his opposite, female, as dark brown as he was light, as pure a shade of color as he was freckled, as poised as he was loose and jumpy. Both of them were tall. She had shoulder-length wavy bundles of peat-brown hair that she did various things with. Today, she'd gathered two-dozen tiny braids into one thick knot at the base of her neck.

To oppose his way-too-baggy purple camo shorts (Kaffia snorted: where the hell was he planning to blend in with random leafy patterns of lilac, lavender and violet?), she wore a close-fitting lime green bodysuit, hoop earrings, and cycling gloves with the fingers cut out.

She had soft, pretty features with thin eyebrows, but her dark brown eyes were hard, demanding, uncooperative. She was trouble. Anyone could see that. She had a habit of scaring off boys with one cutting imperative. Her advice: never ask a closed-ended question. You want to put fear into annoying, ogling teenage boys? Ask them something they cannot answer with a yes, no, grunt or any other monosyllabic. Instead of snapping the excruciatingly obvious, "What are you looking at?"--to which even a half-wit could answer, "You"--Kaffia would assume a serious, thoughtful scowl, tilt her head a little as if truly puzzled and say, "I notice you've been staring at my ass. Share with me your motives and intentions." She would resume her look of polite perplexity and let them stammer, redden, shake their heads and stuff their hands in their pockets. After a minute of this they typically walked off, mumbling like idiots.

Everyone made fun of her name, not to her face--you want to see trouble?--a hundred variations on coffee, cafe latte, coffeepot, Columbian Supremo, French Roast, iced coffee, decaf, half-caf, espresso, expresso.

Alex called her Joe.

Joe had another name, NDIS ("endiss"), but she only permitted a few privileged people to call her that, and no one seemed to know what it actually stood for.

She liked Al because he wasn't frightened of her--not anymore.

She liked him because he liked to fiddle with the world, trying to figure out how things worked. Alex liked to play with electricity, even though it bit him occasionally.

If she dumped out his backpack, a ratty blue climber's pack, the bulky stuff would hit the concrete first, schoolbooks, his writing journal, a box of pencils and erasers, and then the heavy stuff, batteries, spools of wire and solder, motors, baggies of electronic components, maybe even propellers and sections of PVC pipe, if he was in the middle of a project. He usually was.

Alex liked Joe because she could skate, even if she preferred inlines. When Alex said skate he meant planting your feet on a board with wheels while the rest of the world whirled by you, not someone's idea of rearranging the wheel order and pretending they weren't roller skates. But then Alex liked hockey, and he could think of inlines as ice skates for asphalt. So that made them palatable.

Alex liked Joe because she didn't ask him what he meant when he said some particularly tough looking thug had a "4d8 right hook." She searched the grids for an OCR'd copy of the Dungeon Masters Guide--and not the simplified 3rd edition but the epileptically complex 2E rules. She read it cover to cover--so to speak--and then nodded knowingly whenever he used other D&D derived phrases.

Alex liked her because she was strong and careful and stood up for herself and looked him in the eye and put her soft dark fingers on his arm to stop him when he was about to say something stupid.

Alex liked her because she was good.

That, and she was a total badass hacker. She was 31337, hacker-speak for "eleet." ("Elite" to everyone else. Hackers have trouble with the English dictionary, probably reminds them too much of those oppressive drone-spewing schools).

No one else saw the same relationship they could see. From the

outside they didn't seem to fit together. Only Kaffia saw Alex for what he was: smart and perceptive, someone who skated and surfed well, loved the ocean more than life, pretended to be a brash, insensitive teenager, read novels of faraway places and times, and had a way with words.

Kaffia had once glimpsed his open notebook, a tired old black journal he kept rubber-banded and closed from all eyes but his own. She didn't have enough time to read the neat blocks of text she'd glimpsed. It couldn't be wild designs for submarines and underwater robotics because he'd shown those to everyone. She suspected he wrote stories, probably fantasy or science fiction. She knew him almost as well as she knew herself, enough not to ask him for a look. If he didn't feel comfortable sharing his writing with her, he certainly wasn't showing it to anyone else.

That was okay, she thought. Everyone needs a private space, a lockbox, a secret diary, a hallowed place in the soul to keep personal preferences, intellectual property, fantastic designs, wild notions, patentable ideas, questions too bold to ask and unhatched plans. She understood that part of it. Alex had his journal. She had her subnotebook. Why anyone who had something worth writing didn't take it right to digital baffled her though. Why waste your time making gray scratches on paper when you could get the thing right into binary?

Kaffia sat at the edge of the skate bowl, face in her schoolwork, ignoring the laughing of the other skaters, the occasional grunt and scream of someone eating it, and then more laughing. She joined the other skaters in glancing suspiciously up at the roar of some military aircraft that cruised overhead, right above the treetops. The second to go over in the last five minutes.

She managed to finish her trig homework, read a chapter on the early battles of the First American Civil War and re-lace her skates, all before looking up to find the sky had turned pale and the few skaters and lurkers had all gone home. Alex was still hopping embankments and rolling around in zigzags and sudden rotates like a marble in a wobbling bowl. That's how he did his thinking.

She put everything away and stood, stretching her arms as she rolled forward. The sun hadn't yet set, but was at that dim undecided point where it tried to linger at the door, fingers clutching at the frame, before night shoved it into the hall and locked it outside until morning.

Kaffia glanced at the sky through the trees and smiled to herself at the thought that Alex wouldn't call this night yet.

She braked hard at the bowl's rim and spun her head around. She heard the dull tap of wheels on pavement and someone chuckling. Kaffia and Alex weren't alone anymore, and although the newcomers were smiling, there was nothing friendly about them.

2

Doctor Death

LIKE A HARE on a quick trip to a predator's nest, Dr. Ernest Straff felt one of his captors' fingers digging talon-like into his shoulder, shifting every few minutes to regrip, pinning him to his seat. Straff fought back the urge to wrench up his lunch.

They'd caught him so easily, went through his property defenses like a cutting rain sheered the load-bearing threads of a spider's web. Caught on his way to the kitchen for a cup of decaf.

"Damnation!" The word burst from his lips like overpressure from a release valve, puffing out the black bag covering his head. So so easily.

"Prepared for..." He gasped something unintelligible. His head jerked forward. His voice sputtered into silence.

He took a deep breath and let it out slowly, the heated gasses

from his lungs swirling around the bag's insides, eddying over his cheeks, against his teeth.

"Against everything..."

He couldn't hear his own voice over the noise from the engines, just the breath passing his teeth, his tongue ticking against the top of his mouth as he formed the words.

"Ground forces with artillery...self-organizing aerosol networks with toxic payloads." Intuition had always guided him toward the infinitesimally small, some sort of nanodevice, his own creations used against him.

Before they'd dragged the hood over his head, he had glimpsed four geared-up troopers in black and gray, masked and bristling with communication and sense facilities. They'd dropped through his forest canopy defense as if they could see through it, which shouldn't have been possible.

He squeezed his eyes closed and shook his head. The rough bag scraped his cheeks.

"Where were Walter and Wesley," he snapped in a hot disappointed whisper. "When these...when these animals ripped off the front door of my house?"

He twisted his lips in, puckering and chewing in fury. Can't blame them. They'd gone off to the north end to inspect an intrusion. I told them it's just kids on roller skates who'd worked their way around to the back of the property, having been stung a few times trying the front road.

And then four soldiers stormed his house and mashed him into the

floor of his own dining room. The north end intruders were a diversion. They'd known how to get him without much trouble. And then he was in the air and out of state.

He had thought the airspace over his property sufficiently protected by a clever bit of mimicry he'd developed to throw off high-res satellite imagery. Apparently not.

On the other hand, this was not that far from how he'd expected to be caught. Straff's eyes shot open and swung around the black bag. He sucked his fury inside to simmer, and after a few hundred more seconds, his face relaxed. There had always been the hope for more time, and perhaps a well-deserved but dramatic end to his life, like something out of an old Frankenstein movie, besieged by a mob of locals with pitchforks, scythes, torches and Kalashnikov's--when they discovered who'd been hiding out in their town all this time.

He wasn't terribly shocked that a team of highly equipped illegitimates had discovered him. These weren't soldiers from the restored rightful government. They wouldn't have sent soldiers. He'd have received some sort of court summons and it would have been from guys in gray suits with briefcases instead of black and gray camo and assault-o-matics.

He tilted his head a little to catch a faint conversation, but he couldn't make out the words over the noise.

These were Dr. Greenleigh's people, or some mid-level ex-SAC Board commander who still had access to the old deathsquads and mobile military hardware. Zoerner was gone, dead for three years. But even after a tyrant is removed from power, it takes a long time to uproot all the evil planted during his reign.

Dr. Straff continued counting absently while his thoughts played with escape scenarios. One in particular. He had anticipated something, even if it wasn't exactly this, and he had...sort of planned for it, but it would take a week to play out, a week before he'd know if he'd live or die.

Until then, he'd count.

He had been hiding for as many days as seconds that had passed. He hadn't shut himself off from the world, but the world from him. He diligently read the blogs and newsfeeds. The Net was rife with Straff sightings and inside stories of his escape from justice. They placed him in secret Montana bunkers, masterminding worldwide extermination. They blamed him for natural disasters and species deaths, everything from producing destructive hurricanes to causing declines in penguin populations.

He was the nanotech god after all. He could have changed his appearance, his fingerprints, "his DNA"--as some of the tabloids put it. He could be among us, selling your kids candy, mowing your lawn, playing for the Oakland A's.

Straff snorted at the thought. (He was a Red Sox fan from way back). He also knew who was still out there. He knew exactly who he was hiding from. The really dangerous ones, not the public. All the public would do was kill him speedily. Most would anyway. There were a few million odd vengeful people who'd kill him slowly and feed his remains to scavenging animals, but these were the more assertive members of the public, and he didn't know their names.

Others he knew well, and in the past had been pressed into service by them. They had deceived him, and he'd let himself be deceived. He had done horrible things for them. Millions died because of what they made him do. President Zoerner, the head of the Purists had gone to his death, but the rest of his regime, without the head, remained intact: the shoulders, the neck, the lower parts of the brainstem. Straff knew very well who would want him alive.

Straff's stomach rammed into the roof of his mouth as the gunship dropped from the sky, braked a meter off the pad and then landed like a few tons of hot armor-plated machinery on concrete. A heavy door rolled open. One of the soldiers snipped the ties, ripped the rough fabric hood from his head, tearing away a few irreplaceable

strands of gray hair with it, and shoved Straff into the twilight.

Straff's body was bent as if he carried the accumulated weight of the corpses he'd produced, millions of them by most estimates--and that wasn't counting the ciphers, which was a Rost Institute specific project that took the toll into tens of millions.

He kept the guilt at bay by keeping his mind busy. He had to keep his thoughts in motion just to remain conscious, doing things like count the seconds since they'd caught him. The burden of guilt stooped his shoulders, buckled his spine and would crush him flat if he allowed it out of his periphery and into focus.

He staggered a little, rubbing his wrists, straightened up as much as he could, and walked away from the gunship between four of the troopers who'd captured him. They towered over him, a moving wall of gray camo rippling over muscles, escorting him up the walk.

Dr. Straff looked exactly as he had always looked. He was a short stocky sixty year old, nearly bald, with a plump nose and fuzzy white eyebrows. He looked as if he should be wearing glasses but he wasn't. In his wrinkled blue labcoat he could have been an elderly small-town GP from some past era, back when worried mothers rushed their kids to the family doctor for sprained ankles, chickenpox and temps over a hundred, and the doctor fixed everything with gentle concern, handing out lollipops afterward.

That image of the charming family doctor had been purged from the culture by Ernest Straff. He had killed the medical profession. If not directly, it had all been done in his name.

Straff was the reason people hated hospitals. It was his fault that at the sight of any doctor, people ran for their lives, or shrank in fear with murmurs of, "Don't make eye contact."

When manufactured viruses swept through cities, and riots broke

out, Straff's advanced medical agency stepped aside and let it happen. When Americans thought of Dr. Ernest Straff, they thought of bodies stacked next to dumpsters in alleyways, EKG alarms blaring from crowded hospital rooms, technicians draining corpses into blood-type bags and selling them off to high-bidders. They couldn't shut their eyes against the palsied hands of an intoxicated surgeon demanding clamps, rails and the bone saw, they couldn't turn away from floodlit operating rooms that smelled like sewers, damp with death.

Ernest Straff didn't bother looking around at the cluster of buildings that made up the Rost Institute. He knew where he was. Why the hood then? Why the silence? He glowered at the nearest jumptrooper.

"You think I'd misplace upstate New York?"

The trooper ignored him, although the man was so geared up it was difficult to tell.

Two thousand four hundred and seventeen seconds since two hundred pounds of trooper landed on him, grinding his face into the dining room rug and shattering his favorite coffee mug.

Straff stopped when he recognized the man coming at him, but the trooper behind him shoved him a few steps further.

Dr. Richard Greenleigh met him outside Building Blue, a twelve-story block of pitted concrete with rows of identical window slits and blue front doors. There was an eight-meter deep crater where Building Orange once stood. That was Straff's doing as well.

Straff met Greenleigh's dark deep-set eyes and stayed there, glaring for a few seconds, until Greenleigh opened his mouth into a wide smile of perfect white teeth and aimed them at him like a weapons array.

Greenleigh was a pale rickety man in a faithful black suit, meticulously unwrinkled and clean, perfectly barbered and manicured. Like a leaky septic tank beneath soft green meadow folds, an unhealthy cleanliness seeped from his pores and gave off a weird sweet smell, a corrupt bundling of a pharmaceutical researcher and an undertaker.

"Caught up with you at last, Dr. Straff," said Greenleigh, pleasant, dignified and slow, a tone that made it clear that there was no reason to be angry. He waved off the jumpstroopers.

"How?" Straff's voice was raspy and defensive.

"Fairly easily, I'm afraid. Some sort of watchdog process monitors sat image data for manipulation," said Greenleigh in an I-expected-a-little-bit-more-from-you tone. "It happens. High level covering up, that sort of thing. When the process flagged a half kilometer sized patch of forest in coastal New Hampshire, no one thought much of it. When it flagged it after a second pass, with the same manip signature, that's when they got excited. When this piece of forest identically matched a like sized piece 1.2 klicks away, it aroused my attention. The idiots in data security have spent the last seventy-two hours trying to figure out how someone manip'd the same data twice, right under their noses. While I understood the anomaly at once. The data hadn't changed. The forest had. And there's only one man on earth with the power to control nature on this scale and to that level of detail. I knew I had you."

Straff dropped his eyes to the sidewalk, his breathing quickening.

"Come on, Ernest. It'll be like old times. I have one of your old acquaintances over in Red. Time for a reunion, I think. I let her out of her cage, and had her fixed up for you."

Straff's head snapped up. "Who?"

"The moment I knew my team had you, I sent for June Trimony."

"Trimony?" Straff whispered, a little confused. He had to remind himself that he was no longer on Greenleigh's side. Trimony had always been an enemy, hacking into Rost systems, the leader of her own intel-gathering org, with her own agents in the field feeding her data. "I thought she died in the overthrow."

"You're not the only one with secrets, Ernest." Greenleigh smiled. "Let's go inside and talk." The chairman of Rost Institute indicated the building behind him with a precise sweep of his hand. "I used to call you Ernest. Do you mind?" He paused for an answer, and then shrugged. "Or would you prefer one of the names the public has pinned to you?"

Ernest Straff forgot to count. His lungs betrayed him. He coughed and tried to catch his breath, stuttering numbers in the thousands. Dr. Greenleigh's thin, gentle laugh hit him and followed him to his knees.

3

A Little Poetry

THREE JUNIOR-GRADE LYCEUM students stood at the edge of the North Hampton skate park, their eyes fixed on the unexpectedly delightful sight.

Alex looked up from the bottom of the bowl, frowning. He recognized them.

"Someone's let the children out at night," giggled Zane Jeffins creepily.

"No chaperons?" Drew Waldren's face lit up with all the glee of a bully about to tug the wings off insects. She swung her tiny purse

around so that she could pull something metallic from it.

"And with the haunted forest so close," said the oldest of the three, Randal Revard, in distaste. "Really," he continued as if emerging from a long, speechless disbelief. "Your parents ought to be beaten senseless for negligence." He huffed. "Two innocent children left all alone after sunset, in a cruel world. Have they learned nothing from the Purists?"

"Shoaler doesn't got a father," put in the other one, Zane.

"Twice the punishment's in order then."

"Nighty night, Shoaler."

Alex wondered why they hadn't yet mentioned Kaffia. She was better known than he'd ever been. Probably the NDIS myth working on their fears. (Everyone said Kaffia was June Trimony reborn. So, killing her might not work. For all they knew she'd already hacked that whole transmigration of the soul thing, and could come back to get them).

They were all a year or two older, not much taller since both Alex and Kaffia had height, not smarter since Alex and Kaffia also had brains, but slyer, more manipulative and endowed with little in the way of discretion. The word "dastardly" came to Alex's mind, a good old-fashioned concept that needed reviving because there seemed to be so much dastardliness going on these days.

Kaffia and Alex weren't naive. There were two problems that had to be faced here. They understood the nasty side of teenage inter-group warfare. They just didn't have much practical experience. They didn't really belong to a group, and had always slipped under the radar (as well as other means of discovery and tracking: GPS/LBA plants, IR tagging, cell-signal triangulation and mini-cams). They knew some of these brawls involved zip-ties, barber's

shears for "scalping" and involuntary piercing. Nothing lethal. The goal was disfiguration, proof that the fracas had gone down and you'd emerged victorious. No one was supposed to die, or even get to within an inch of their lives. A few inches, a hand's width, half a foot, were all within the guidelines though.

That was the other problem. Not everyone stuck to the guidelines. Sometimes these things left you broken, and the last thing you wanted to do when you got hurt, snapped a bone, or severed a major artery was go to one of the public hospitals (Affectionately: CD&Cs--Centers for Disease and Control), where you were just as likely to live as die, and that was if you somehow, against the odds, picked winning numbers in the wait-I'm-not-here-for-surgery/wrong-limb-amputated lottery. Or was that losing numbers?

"It's actually not night yet," said Alex seriously, looking skyward, rubbing his chin.

"What?" snapped the Drew as if she only had three operating modes and did a round robin through them: silent, zealously cheerful and defensive--so, silent must be next.

"You said night, but we'll have to wait until the refracted sun passes below the sea-level tangent plane."

The three newcomers stared at him stupidly. Kaffia started to grin.

"...for night to be officially here," added Alex, nodding.

Damn, that's why she liked Alex. Because he could think to say something like that when faced with something like this.

Zane giggled irritatingly, thinking that this must be some kind of

joke, which it was. Zane, the only one with skates--inlines Alex noted with an eyebrow raised--was a buck-toothed sixteen-year-old with a skinny head and huge perpendicularly planted ears. He had long straight blond hair that fell in flat sheets down the sides of his head like a cowl, with lateral slits for his auditory appendages. A skinny white cigarette dangled from his skinny white lips.

Randal was the quiet evil one in the group, the mastermind, a stooped monastic fellow with wire-rim glasses that magnified his blue unblinking eyes and gave him a reptilian look. He had greasy brown hair that fell evenly about his skull as if he'd just stepped in from a downpour without an umbrella. He had pale skin, apishly long arms and cold skinny fingers that plucked and pinched and looked like they wanted to play with various sharp dental instruments, but for all the wrong reasons.

Drew Waldren didn't seem to fit with these two. She didn't seem weird at all. She was actually pretty, with fashionably cut black hair, modest make-up, disfigured a little by her attitude. Her pointy chin stuck out and she ratcheted her long narrow nose into the air because everything around her reeked of stupidity and weakness. Her eyes were dead, blunt stones that revealed that there wasn't much going on behind them--although she considered it a hive of activity. Her ears were heavy with metal and synthetic gems tracing a nautilus-like spiral from lobe to the little flap over the canal.

Randal pulled out a tiny aerosolic, a gleaming black handheld cylinder, some kind of robbery deterrent device filled with one of the pepper spray variants, although, knowing Randal, it held something more permanent and painful. Something that might even require a trip to the CD&C, where you can imagine that instead of just washing out your eyes with a slippery sterile fluid, they'd jump right to a procedure that had the word "harvest" in it.

Drew fingered the insides of her nearly uselessly small leather purse and tugged out an ear-piercing gun with a clip of ready rivet charges. (They went on with a snap but you had to cut them off).

Zane grinned, giggled a little, puffed on his cigarette, pulled up his fists, and skated forward leisurely, a cat let loose on two trapped mice.

Randal attacked first. He lunged at Kaffia, his fist out, thumb jabbing the activator. Alex kicked off at the same time, shot vertical and jumped the lip in time to cross paths with the spray.

It stung like a swarm of stabbing wasps on eyelids. He flew from his board, landed flat on the concrete, smacking his skull with a flash of white across his retinas.

Beside him Kaffia shouted something abusive, struggling blindly as Zane circled her like a hyena, darting in with quick hammering blows of his bony fists, and giggling at Kaffia's delayed and ineffective defense.

Randal laughed, arms folded, his weapon put away. He watched while his partners moved in to finish the job. Drew roamed around the scuffle in a higher orbit, her fingers nervously clicking the piercing gun's trigger.

Alex shifted on his side, shoved away his board, which had come rolling back to him like a sympathetic dog--It was a highend board.

Blindly, fingertips digging into concrete, he launched his tall gangly body in the direction of Zane's goofy laughing. He went down on top of someone.

They hit the concrete together, and by the soft brush of thin straight hair against his face, a choked off giggle and the oily residue of weird cigarettes smelling of pine resin, Alex knew he had aimed true.

Kaffia immediately understood what Alex was up to. She didn't need her eyes. She dropped toward their grunts and sounds of struggling, grabbed Zane by the shoulder to get her bearings and attacked him savagely.

The stitching in her glove grazed Alex's cheek as she stabbed stiffened fingers into Zane, leaving divots of subcutaneous bleeding in the soft spaces between his collarbone and throat. All three of them, Alex, Kaffia and Zane went still. Kaffia swung away toward clicking noises from the piercing gun.

"Drew!" Kaffia screamed blindly, her fingers now digging into Zane's throat. "You come near me with that and I'll take his larynx home as a trophy!"

Alex scowled, dripping tears from the chemical assault on his eyes. Zane groaned underneath him. Kaffia dug her nails deeper into Zane's soft neck skin with one hand, halving his air supply. The other, she tightened into a fist. Drew stopped moving and held the piercer quiet in her hands.

"What have we here?" Randal sang the words in mock surprise. "Poetry, Shoaler? You write poetry?"

He had dumped out Alex's pack during the scuffle and was picking through the things that looked interesting. The first to catch his eye was Alex's black, scarred leather-bound journal with rubberbands to keep it closed and hold in loose paper.

"You're a bigger fairy than I thought you were." He flipped through half a dozen pages. "And sloppy too. No title for this one."

It wasn't written on the page but Randal couldn't help himself: "Untitled poem by Alexander Shoaler."

He cleared his throat solemnly.

"She sees the roses grow, the winds blow the petals in the dust, and she reaches through the spaces in the fence and takes just one red bloom to keep in her trust."

Alex felt a hot stab of pain shoot through his body as if someone had crotch-kicked him and left him writhing on the ground. His lungs choked closed. He felt trapped. His tongue went dry and his racing heart ricocheted around his ribcage, thumping and banging and echoing like a bucketful of hammers tipped into a ventilation shaft.

He clutched the concrete so tight with his left hand his fingers bled. "You're reading it wrong...Those aren't...I'm not done!" He snapped defensively but bit off his complaint, not because Randal kept going, chuckling in between lines, but because Alex felt Kaffia's warm hand on his arm.

"She hears a bright voice, a truer choice whispers of skies of false blue, but she sees with her own clear eyes instead of someone else's to look through."

Drew cut off any more by being the first to clap, the slow mocking rhythm of a near-deserted theater. Randal tucked the journal under his arm and joined her, adding dissonance. Fixed to the earth by Kaffia and Alex, Zane couldn't do much more than sob.

"That was terrible, Shoaler. You'll just have to do it over," said Randal as he flung the journal open and ripped the page from the binding.

There were two sounds in the world. A soft rustle through the trees of the forest and the crackling sound of a page from Alex's

notebook twisting and falling through open air to the ground.

Alex levered himself up by putting his full weight on Zane. He staggered blindly in Randal's direction, his eyes pinned closed by the aerosolic's chemical burn.

"Stop!"

Randal sidestepped him, chuckling.

"What's this?" He flipped through more pages. "How much of this shit have you written Shoaler?"

Skipping sideways, Randal dodged another of Alex's blind lunges. "One about teachers, one about your hacker friend, something about the ocean, the abyss, you really like the ocean, some scribbling." He tore more pages out and tossed them into the air with a flourish. "Garbage, Shoaler, garbage." More tearing paper and the dead-leaf rustle of wrinkled pages on concrete.

Something soft brushed by Alex, like a gust off the Atlantic. He spun, reaching out but caught air.

"Wha--!" Randal choked on the word, couldn't get it swallowed, and made gurgling noises as if the W was wedged in his throat, pointy ends poking spongy tissue and kicking phlegm production into high gear.

Alex heard his journal hit the concrete with a slap.

Drew Waldren screamed--a real horror movie wail.

Little hairs standing on end, Kaffia pushed Zane down harder and spun around in Drew's direction. Zane wriggled and whimpered like a dog threatened with a bath. His body twitched, and the heels of his skates hammered on the concrete as if he were being electrocuted.

"G--get away from me!" Drew screamed.

Alex froze, trying to listen for any clue to identify the newer-comers. He hadn't heard anyone approach. He swung around.

"Joe?"

Kaffia didn't answer. What was that wet crunch? A bone breaking? Each hair on his head, already standing on end, tugged at its follicle, stiffened and shivered like a guitar string.

"Noooooooo!" Randal shrieked like a girl.

Kaffia squeezed out more tears and released Zane, millions of thoughts firing through her mind, sparks racing synapse gaps, huge structures of thought took form, rose to the surface, came into focus where she continued building on them, or in a microseconds' decision discarded them. A spasm shook her body as she reached forward and then froze.

Should she take off her skates? Leave them on. If she could get to the road she could outskate anyone. On any other surface they would catch her.

Her thoughts came in split second bursts. Who? I'm blind! Where's Alex?

She didn't hear him. Whoever it was, wasn't attacking him. Yet. She heard the sound of paper crinkling...paper crinkling and screaming.

Kaffia got to her feet and rolled in what she thought might be Alex's direction. She wasn't going anywhere without him.

All three of them, Randal, Drew and Zane, were crying now, a frightening mix of screeching tires and a nestful of distressed sparrows. With stuttering slapping footsteps, Randal and Drew made it to Atlantic Avenue, Zane just behind them, a little wobbly, kicking the concrete and gaining speed.

Kaffia heard them look back in fear. Her heightened senses sparked and jerked at every stimulus. She heard their sharp gasping breath as they looked over their shoulders while running away.

Kaffia heard the wet taps of sweat hit the pavement after it seeped from their pores, pooled into little wet sheets and slipped off their skin into the air. Their screaming continued for a minute, fading as they ran, cut now and then by each of them when they caught their breaths so they could scream some more.

4

NDIS

WHEN I SAW KAFFIA LANG for the first time she was wearing a black t-shirt with five numbers, 31337, in sloppy yellow handwriting eight inches high between her shoulder blades. She walked through the halls of North Hampton Lyceum as if they were hers. Like she was alone. She didn't seem to notice the darting eyes of fear in front of her, the resentment and relief in her wake, the breath-releasing relief of antelope not being singled out by a predator. As soon as she passed by and all was safe again, they hated her.

I wondered then if she knew the effect she had on the people around her. She didn't appear to. She never looked back. And

everyone got out of her way. She always seemed to know where she was going, while everyone else seemed to mill around without guidance.

I knew where I was going. My next class was this way, and she happened to be going the same direction. That's it.

I really looked at her, carefully at first, a few seconds at a time, but then hard and focused, till the rest of NHL blurred around me.

I'd only heard rumors of the hacker, Kaffia, but here she was, not far in front of me, her dark hair unraveled into something like dreadlocks--if you went to a salon and paid them hundreds of dollars to do that sort of thing. You know, dreadlockish, but really expensive, sort of a rasta-rodéo-drive thing.

Her hair swung with her stride. Everything else about her was measured, perfect, tight. Her black t-shirt and faded jeans were especially tight. Her walk, perfect, not too quick, not too slow. She was going somewhere with a purpose. Her fists--tight. Wherever she was going, it looked like she'd be ready for anything, coding to combat.

I followed her through the hall, over the quad, a ways behind her, watching the number seesaw on her back as she walked. I had my board, but couldn't use it on the grounds. I'd already been warned, if the wheels touched the cement it would be confiscated. Didn't really matter. There were more important things to think about.

Thirty-one thousand, three hundred and thirty-seven whats? Why would anyone put that in yellow letters on a shirt? What could it mean? I dug around in my pack, ran into a girl walking the other way, said I was sorry, and picked up my pace so that I could keep up with Kaffia. I keyed 31337 into my calculator and pressed the SQRT button. I shook my head at,

177.02259742756007815542435965881

31337. Number of times she...did what? Number of seconds. Her game highscore? I divided it by 60. By 24. Everything I did to it looked meaningless.

"Shoaler!"

Kyle Vickery, a Junior classman and all around thug, came at me from the right. He grabbed my pack and swung me in a circle. I held my board but lost my footing. I'm pretty tall and at least average weight, probably above average, but Vickery's huge, not fat, but thick and muscled and planted to the ground. He's not fast--I've outrun him twice since I got to the Lyceum a month ago--but I probably couldn't knock him over with a running start. I'll have to try that one of these days.

"Alex. Alex Shoaler. You're always running away."

Something thumped against my chest. I blinked uncertainly. The next thing I could focus on was the sky. I remember thinking, hey, the sun's about a 100 degrees along its arc.

"You in a hurry, newbie?"

Kyle's big head, which looked like a squared off block of wood silhouetted against the sun and sky, hovered over me. He had blond

hair, flat-topped and shaved on the sides and back, so that from my angle he looked like he had a bleached foot and half of telephone pole sticking out of his shoulders where his head and neck should be. He had a tiny knot of a nose for such a big guy, and narrowly set blue eyes.

"Newb's running after her," one of Vickery's friends put in, jutting his chin in Kaffia's direction.

I was new to the Lyceum, but I'm not a first year, a seventh-grader. NHL covers grades seven through twelve. I'm fifteen, and started here as a ninth-grader, a prep. My mom got me a tutor and made me do dawn-to-dusk summer school so I could get in without repeating a grade.

Vickery and his gang didn't usually assault students above the first year, but I was also new, and that made me a target. There must be something very gratifying about singling out people unfamiliar with an area and making it as hard as possible for them to get where they need to go. (These were the people who grew up to plan downtown city streets across America, one-way kind of people).

"You stalking NDIS?"

I shook my head. That would be stupid. Kyle was half-grinning, but I noticed he'd whispered the question, just loud enough for me and him and maybe a couple of his friends to hear.

That told me all I needed to know. And gave me a real reason to get to know her. (The number on her shirt was just a distraction, curiosity really). Even Vickery didn't want to upset Kaffia, didn't want it known that he'd used her other name.

"That's stupid, man." Others around Vickery nodded vigorously. "Pure stupidity. NDIS'll rip you apart."

Strange how hatred and fear always seem to go together. They all hated her...because they feared her. I've heard the rumors about her. I've even heard about the few bold idiots who threatened her in public. Nothing happened to some of them. Maybe they weren't worthy of revenge? Others who attacked her probably got what they deserved--sometimes through their parents. Nothing you could tie back to NDIS, but, you know, sometimes credit bureaus make mistakes, so does the IRS, and aren't there a dozen places in the workflows of a bunch of other government agencies and companies that can be exploited--and used against someone? If there's a bigger badder monster than government, I've never heard of it.

I decided right then--flat on my back with Vickery glaring down at me--to find out what her hacker name meant. That seemed the likeliest way to get to know her, and anyone who knew her seemed to be under her protection. She was a core of hacking activity at North Hampton Lyceum. They said she didn't have any friends, but weird greasy-haired, malnourished preps flocked to her, feeding her information. She was a ninth-grader, a prep, but upper and senior graders offered their data, served her double espressos and communicated in some unrecognizable digital doggerel.

Kaffia was on her way to becoming the next Trimony, the legendary hacker who'd died fighting the dictator, Zoerner. If Jon Andreden had led the public crusade, June Trimony had been the core of the underground movement against the murderer in the White House.

They said Kaffia'd formed her own organization patterned on Trimony's. They said she'd cracked government spec'd crypto without brute forcing it. They said she'd broken into servers at the top Fed agencies and left backdoors in all of them. She'd changed conference room door codes at Langley, shutdown SAC Board inquiries, turned on the sprinklers at midnight at Fort Meade--in the middle of January.

They said a lot of things. And they didn't call her Kaffia, or even Miss Lang. They all called her NDIS, pronounced "Endiss." That's her name in their world. (Okay, I was interested in her. I like computers. She has this whole exciting world she's created. It sounded like something I wanted to be in. I asked questions.

Doesn't make me a stalker.)

Vickery had one of his 3/4 inch dowel fingers poking me in the chest. "What class you going to next, Alexander?"

Great. "I'm late now." No use getting angry, but I could feel myself getting angry anyway. "Let me up!"

"Soon as you tell me where you're headed."

"Archery." I coughed the word out.

The world went silent for half a second. And then they all laughed.

"Archery's for girls, Shoaler!" Vickery said girls with extra r's and a z on the end, like girrrlz.

He got to his feet and let me up. Apparently it was so pathetic that I was playing with "ribbons and bows and arrows" that it became an inefficient use of their thugging time. They wandered off, stumbling because they were laughing so hard, looking for a better victim, one with a more pressing situation.

Of course, when I got to my feet and looked around, Kaffia was gone.

5

Perfect Ghosts

"WHO'S THERE?" Alex whispered, but with an edge so choppy and panicked,

that he might as well have yelled it. His head swiveled side to side. Tears swung away from his clenched eyes.

"Who are you?"

Silent and cautious, Kaffia inched forward, waving her hands in front of her. At the same time both of them felt a soft brush across their eyes, soft and bristly at the same time, as if someone--a stray Mardi Gras partier or rogue Vegas dancer--had swept each of their faces with a feather boa. They jumped, blinked and could see. The chemical burn vanished, leaving a saline pool in the corners of their eyes, that both of them wiped away at the same time.

Kaffia gasped. Her body stopped. Her skates slid forward out from under her and she landed hard on the concrete. Alex couldn't move. He stood, half hunched over, still as stone except for his fingers, which trembled with a contained readiness to shoot out and grab something. He couldn't move because one of them had his writing journal, flipping through the pages, tugging on them, not really reading them. It was more like an appraisal of the binding.

Two ghostly figures stood over Al and Joe, at least seven feet in the air. It was difficult to tell how tall they were because neither of them touched the ground. They hovered, semi-transparent human forms in long gowns without any feet sticking out from the hem. Both shapes were identical, pale balding men with round ears and large lobes. Their faces were gaunt, not a ghoulish mask of rot, but like an ancient scholar's, to whom meals and most other tasks were distractions from some obsessive search for truth. Their hands were bony, not monster's claws, but in keeping with the withered scholar look.

Alex caught a fine satiny ribbon of light spider over the back of one hand as it stirred over the pages of his journal, a pale refractive tracing of veins heavy with blood. They both noticed it. As each moved, Kaffia and Alex caught hairline stripes of rainbow hues zip along folds in their gowns, along a hard jawline, fanning over the bald dome of a head, outlining a thin pair of lips. They were like moveable glassine human shapes, solid but see-through at the same time, tracing-paper twins.

Alex scowled, shifting his head a little to the right in a motion that Kaffia recognized as a commitment to get to the bottom of something that puzzled him. They looked familiar, and there was something weird about the way the one was holding his book. It was perfectly still, absolutely motionless, as if his journal rested on a block of granite in a room without windows or ventilation. The other one bent down and picked a black pen out of the pile of contents from Alex's pack, handing it to his twin.

Alex's jaw went slack. His mouth sagged slowly open. His head twirled back and forth as he searched the ground for the pages Randal had torn from the book. Kaffia got to her feet warily, keeping an eye on the transparent men in gowns, and didn't notice Alex's stunned look.

"They--they repaired my writing journal," whispered Alex.

Kaffia jerked her head at Alex and then back at...them.

You couldn't find two more realistic, down-to-earth people than Al and Joe. They couldn't read science fiction without smirking at the author's inept use of technical jargon, misunderstanding of common physical laws or genetic chemistry. They discussed the unreality of scene rendering in games, movie CG characters and landscapes. And so, it was with healthy skepticism, some hair standing on end, readiness to debate, intense scowling, what else?

"Trepidation?" Kaffia ventured.

"Yeah, I'm feeling it too," said Alex.

"...and trepidation they approached the seven foot tall see-through human forms. Others would have come right out with "ghost" but

these two had seen too many movies, read too many books, played too many RPGs to jump on that without thinking it through. Ghost? How prosaic.

"But what else could they be?" Alex whispered in between chewing his bottom lip and leaning his head a little toward Kaffia. He kept his eyes fixed on the nearest transparent shape.

"They frightened off Randal and his friends. They're flipping through your book like they understand what it's for. We could ask them."

Alex's eyes widened, then darted to Kaffia for half a second. She's brilliant.

"Yes," he breathed as if not wanting to inadvertently trigger some defense mechanism in a pack of growling dogs. "Human form usually means sentience." He nodded, convincing himself. "Maybe they can speak."

Kaffia pursed her lips, shook her head a little and rolled her eyes.

Alex cleared his throat, straightened his spine and took one firm formal step forward. "Excuse me, uh, sirs." He bowed a little and his eyes shifted between the two human shapes. "Please do not take offense at our ignorance of your kind and ways. We have never had the benefit of meeting beings such as yourselves, and...uh...and humbly ask of what service my companion and I may be to such two fine gentleman?"

Kaffia did that cute downward pull with her mouth that showed that she was mildly impressed. That's why she liked Al. You would cringe at what he might say when meeting finer members of society (or smartly dressed ghosts) and be surprised when he didn't start with, "Yo!"

The two ghosts looked up from the book and at each other, but said nothing.

"Something's happening," whispered Alex.

They looked as if they were communicating with facial expressions or through some other quiet means. The one with Alex's journal flipped through the pages to the last and pulled up the pen he'd taken from his counterpart. Then both of them dropped down to Alex and Kaffia's height, startling them. Kaffia kicked back a few feet. Alex's nails dug into his palms. He'd die wrestling his journal from their ghostly hands before he left it behind. After a second's scowling watch, he concluded that the one that now had the pen and his book was going to write something.

The hint of recognition he'd felt a minute ago surfaced again, clearer this time. He nodded. "Joe, they remind me of Mr. Knopf," Alex whispered, glancing over at Kaffia.

She rolled forward again, angling her path to stop right next to Alex. She tilted her head back, studying them. She took his meaning at once. The two ghosts reminded them of their literature teacher at the Lyceum, a long-winded pedant from the Land of Poets and Philosophers who couldn't let a day go by without quoting Goethe. (If you didn't pronounce Goethe something like "Gurta," Herr Knopf would lapse entirely into German and shout at you).

"But Knopf's short. These two..." She didn't finish because the one with the pen started writing.

The ghost flipped Alex's journal around with precision, holding it upside down, facing out and flat along the inside of his left arm like a parent would with a picture book.

Again, Alex noticed something odd that he couldn't quite categorize. The ghost's movements were perfect, too exact (if there could be such a thing--or maybe Alex's idea of ghost, something half in this world, half in the next, contained an inherent sloppiness. If there were ghosts in this world then someone-- whoever monitored death's door--wasn't pulling his weight, and was turning out slipshod work. But what he had seen in the last two hundred seconds convinced him that these two were firmly in this world and therefore couldn't be ghosts). One held his journal absolutely still and with incredible speed wrote perfect letters in a sans serif that made a mechanical engineer's precise handwriting look like a preschooler's scribbling.

We are indeed looking for help, and we accept your offer of service. Our master has been compulsorily taken from his home by soldiers we suspect were once operatives for the SACB.

"S.A...What?" Alex frowned absently, thinking, did I say service?

"Subversive Activities Control Board." Kaffia smirked at the ghost.

Alex snapped out of his thoughts and rubbed his head with his fingers. "Right. Thinking...something else."

Kaffia put a hand on her hip, pinching one side of her mouth contemptuously. "The SAC Board's gone. It was one of the first things the legit gov did."

The ghost swept his fingers over the page and the ink vanished.

True. They convicted Chairman Sabanin, but very few of the soldiers operating in the organization were ever brought to trial. Many participated in the atrocities at the Rost Institute. Recent kidnappings and killings tend to favor the hypothesis that some of these soldiers have remained active, and have carried out operations planned by Rost researchers and former SACB commanders.

Our master has been in hiding for three years, unwilling to release his work because he feared it would be misused.

"What's he working on, some kind of military stuff?" Alex asked, eyebrows going up.

Wait. A higher level, thought Kaffia. "Who's your master?"

Defensive molecular engineering research for the most part, which could be adopted for any number of uses, certainly by the military. His name is Dr. Ernest Straff.

Alex flinched, backing up a step, the name itself like a

contagion.

"Doctor Death." Kaffia sniffed with an I-should've-known expression. She shook her head and sniffed contemptuously. Two ghosts stop and ask you for help, you just know it's not going to be about change for the meter or snapping a holiday photo of them together. It's going to be a little more complicated.

Alex hadn't been to see a doctor in four years, not even one of the new private practices that had been springing up all over since the restoration. Hospitals were horrible places, where people went to die. He and most of the country no longer trusted doctors, or anyone connected with the practice of medicine. It had long since been taken over by an enormous bureaucratic disease that went by many names, HealthALL--most people connected the first two letters with the last two and discarded the middle, NationCare, HealthUnion, PubliCare, and AMIA (the official agency acro) which allegedly stood for Advanced-Medical-something-something, but was rejected early on by the public because however you worded it, the Missing-In-Action ending stood out. And what you called it didn't really matter. When one name soured, the marketing consultants went to the focus groups for new ones.

AMIA's first directive rode on a noisy "healthcare costs too much" campaign, and went on to cut every doctor's and nurse's salary in half. A year later the agency quartered all their salaries. Every honest hardworking doctor, nurse and medical specialist had found some other line of work by that time. That left all the cranks, cheats, inepts and medical school dropouts to fill their positions.

AMIA's second directive rode on a noisy "we must consolidate health organizations/small doctor's practices aren't playing by the rules" campaign, and went on to close every independent office, clinic and laboratory. That left no choice when a twelve-year-old boy broke his arm, a forty-year old man went into cardiac arrest, or a twenty-year old woman went into labor. They all ended up in one of the crowded public hospitals, waited in long lines to be shouted at by an overworked underpaid nurse, and treated for exactly fifteen minutes by a doctor who never completed medical school.

AMIA wasn't like every other faceless government agency, because it was Straff's face everyone imagined when they stepped into the mix of blind regimentation, apathy and sadism that characterized most public hospitals: Straff swiveling in his comfortable chair at the heart of the agency, insulated from what was happening on the outside. He read the reports, stat sheets, listened to his administrators tell him how wonderful everything worked, and lived inside the future vision in his head.

AMIA had been constructed, molecule by molecule (of whatever bricks are made of), under the leadership of the powerful and brilliant Dr. Ernest Straff. Some said he was a genius. Others pointed out that although he was a medical doctor and had even practiced for a while, he had spent much of his life as a teacher and researcher in theoretical nanotech medicine--with the idiotic implication that if someone's going to enslave every doctor and nurse in the nation they'd better damn well get someone who actually worked with patients once in a while, not some bloody research scientist who had doctor in front of his name because he had once interned somewhere.

At one time Dr. Ernest Straff could have been considered a visionary. He had preached the ideals of socialized medicine based on the coming miracle of molecular engineering. The idea was fairly sound. Doctors, like software engineers, would one day become obsolete. The ability to construct and repair life on the molecular and atomic level would solve every human ailment, cold sores to cancer--without cost, or at the least, very little cost. Straff spent years architecting complicated structures woven from individual atoms. He wrote hundreds of journal articles and dozens of books about nanorobots that re-engineered human cells on the molecular level, even fantastic ideas far over the horizon of cosmetic nanosurgery. He once gave the keynote at a nanotech conference in New Orleans where he showed the world his designs for giving humans working wings.

Although he had worked and preached tirelessly for decades, the miracle never happened or advanced too slowly. Nanotechnology, they said, was still years off, at least the wacky stuff Straff was peddling. Instead he ended up at the top of AMIA, a massively expensive agency that controlled, through a chaos of managers, every doctor's waking hour, dispensing every tablet, every dose of cough medicine, every surgeon's stitch, every slice of the scalpel.

It was an immense failure. Mortality rates rose yearly. Millions died when disease swept through urban areas. Death and taxes were linked tighter than before. Suicides among doctors and nurses spiked. Most people had never heard of Dr. Josef Mengele, the Nazi camp doctor at Auschwitz. That was ancient history. For years now, Dr. Ernest Straff had been called the Angel of Death, Doctor Death and other less flattering names.

The two ghosts glanced at Kaffia and then stared at each other for five hundred milliseconds. The one with the pen wrote,

We believe he prefers his surname.

6

The Underworld

"STRAFF VANISHED a few years ago," said Kaffia flatly. "Hasn't been seen since, unless you believe the tabloids."

Alex shook his head. "I never bought the cover-up stories. I always thought he was dead."

The ghost with the pen wiped the page clean and nodded in understanding.

He has given the world every reason to think so. He has a few friends who know he is alive and they have their reasons for keeping silent. They have left him alone, to continue his work, to try to undo what he has done. But there are some who have kept silent while seeking him with every means available. They wanted to find him first, to use Dr. Straff as they once did. He knew it was

only a matter of time before his enemies would discover him. He had always hoped to have his work complete. Unfortunately, this is not how it ended. Dr. Straff planned for this emergency and needs your help.

"You stupid?" Kaffia glared at the ghosts. "I mean, thanks for helping us out with Randal and his accomplices, but why would we want to help--or do anything for--Straff?"

Alex was nodding and scowling. "Right. Randal Revard probably deserved what you gave him." The corners of his mouth tightened at the thought of that bone snapping crunch he'd heard. "But why help Doctor Death? He's untouchable--not in the guys who got Capone sense, but in the active member of a leper colony sense."

Kaffia nodded along with him. "He's a walking dead man. If we helped him we'd get painted with the same mad murdering scientist brush."

With every second that passed the idea of helping Dr. Death became more and more brainless.

"Why on earth would we want to get in on that? Is there a family in the country that didn't lose at least one member to Straff's advanced medical org? Plenty of them would be up for a pay-per-view Straff execution, especially if there was some sort of interactive mechanism that allowed you to torture him yourself before they off him."

"Why should we help Straff?"

Precisely because those who captured him do not want to kill him.

Alex kept his scowl and turned it on Kaffia. She nodded back.

"What, so they're going to pinch Straff for information?"

"Get him to do research for them?"

Yes.

"What kind of research?"

"Whoa," said Kaffia. She grabbed Alex's shoulder, catching the excited edge in his voice. "Back up. Who took Dr. De--Straff?"

The two ghosts looked at each other, deciding something.

It would be best if our master told you himself. As we said, he expected this extremely urgent situation and has prepared something for you.

"For us?" Alex looked intrigued. Kaffia elbowed him.

"Who are you guys?"

"You work for Straff?"

Doctor Straff created us. We are organisms with loose distribution and binding, tightly synchronized properties, LoDBots.

"Cute." Alex started with his first question. "Why can't you talk?" And got another elbow from Kaffia.

"Focus," she murmured with a stern glance, and gestured with her index finger pressed to her thumb. She jutted her chin at the ghosts. "Bots created by Franken-Straff? Apparent self-awareness. Humanlike thinking and responding. The place to start here is whether you're alive or not. Or are you just remotely operated?"

Alex nodded, reluctantly agreeing with her strategy. Hadn't thought of that. If anyone had the ability to suck the soul out of a man and somehow stick into some weird semi-visible organism, it was Straff.

The ghosts looked at each other, maybe deciding how to explain their existence.

"Still like to know why they don't speak," whispered Alex.

She was about to snap something about the uselessness of Al's pinpoint question when a solid wall of noise hit her from behind. It rolled over them like the leading edge of an explosion's shockwave. Tree trunks creaked. Noise bounced off the concrete, the darkening streets and forest roof, shaking leaves from branches and merging into a violent clamorous riptide.

Alex and Kaffia spun around, heads swiveling toward the source of the sound. The ghosts glanced at each other, unperturbed, both looking up at the clearing above the skatepark.

The sky was a dim pale blue, half of it blotted out by a dark rectangular shape with rounded edges, thundering engines and gun-turrets. Floodlights flicked on, casting daylight into the clearing. A black square opened on its side. A pair of soldiers in black and gray camo leaned out and clicked onto a dropline.

Alex and Kaffia felt a polite finger tapping each on their shoulders and turned around. The ghost with the pen held up Alex's journal.

They are the same group of soldiers who took Dr. Straff. Walter

will stop them. You two come into the forest with me.

Kaffia saw one of the gun turrets swivel in their direction and didn't wait for Alex's answer. She dropped to the ground, spun off the laces and tugged her skates free. She jumped up and grabbed her pack while the ghost who was not Walter bent down, made one arcing motion with his hand to sweep everything of Alex's back into his pack.

"Don't Move!" A man's amplified voice boomed down from the gunship. "On your knees with your hands on your head. Lock your fingers! You will be identified and escorted to a state holding facility!"

Walter soared into the air and met the two troopers as they descended, about halfway between the gunship and the ground. One of them swung a small automatic around and popped off a quarter of the clip right through Walter. The rounds hit the dirt track that led into the forest, raising a row of dust columns.

Walter's fingers swept through the steel cable, shearing it just below the troopers' boots. The cable wound down, spiraling wide, and coiled into a heap on the ground below like a headless viper. The troopers dangled at the end of the cable forty feet above the basin.

Two dull explosions ripped through the clearing. Someone up in the gunship fired warning shots from the fore-guns, putting two smoking holes in the concrete on the forest edge of the skatepark.

"HALT!"

--hell I will!" Alex yelled through the noise.

Two more rounds tore through the smooth hard surface, closer still, spraying chips of concrete.

"Joe!"

Kaffia staggered back, mouth gaping, maybe even screaming but not loud enough to be heard over the gunship's roaring turbines. The thump of the guns left another pair of smoldering holes in the concrete.

The ghost ushering them toward the forest tossed the pen and journal to Alex, pointing insistently toward the locked gate. He gave Alex and Kaffia a stern look, jutted his chin toward the shadows beyond the skatepark and swooped up to put himself between the guns. Alex grabbed his board, his pack, and bounded toward the woods. He stuffed his journal in as he ran.

In her socks, inlines swinging from one hand, her pack in the other, Kaffia met him at the gate, a framework of rusty poles welded together with a heavy latch and padlock. She spun backward just before impact, hopped her butt up on the top bar and swung her legs over. She hit the road on the other side and kept going. Alex, admiring her 70's cop show choreography, heaved his stuff over in front of him and vaulted the gate right behind her.

He picked up his gear and spun around to catch up with Kaffia just as the guns spit off a few more rounds, only one of which got by the second ghost. It shattered a thick tree trunk off to Alex's right, spraying him with high velocity bark and shredded wood. The entire tree hopped from its base, staggered along the ground like a drunk and crashed to the forest floor, taking a few smaller trees down with it.

Kaffia dashed back, grabbed Alex's hand and yanked him deeper into

the forest, following the overgrown dirt track when she could find it in the darkness.

"S--sorry." Alex stumbled on the word, throwing it out after a few second's desperate shrub hurdling and rough terrain sprinting.

The destruction stunned him. It galled his senses to see a sixty-foot tree off its trunk. One round from the gun had ripped apart a mature pine and set it dancing before gravity brought it sweeping to the ground.

The track turned several times, zigzagging through the forest, but eventually straightened out and looked better tended. The noise of the gunship hit his ears, broken by the forest's thick foliage, but it was a far off roaring like the echoes of a dozen lawnmowers attacking a distant field. A thick fog set in over their heads, following them, oozing in between the trees, filling the spaces between them like spilled soup, deadening all sound.

Kaffia looked up every few seconds. There were other noises high in the trees, clicking and rustling where there wasn't wind, and dripping sounds where there shouldn't have been things that dripped.

They stopped when they reached a gray-shingled cottage with the front door blown off. The door lay shattered on the ground, bent in half, a dribble of woodscrews leaving a trail from the doorframe. Hinges twisted, it leaned sadly against a tree like a soldier who'd been over-powered at his post and had dragged his dying body up against the trunk so he could get one last look at the world.

Alex and Kaffia exchanged looks. They both turned to look along the path they'd taken, suddenly aware of where they were.

"No one's ever gotten this far into the haunted forest."

"No one'll believe it anyway."

"What now?" Alex said in an I'm-not-going-to-a-state-holding-facility kind of voice, even though he knew there wouldn't be any holding facilities involved. It would be something efficient and deadly, execution, the bodies dumped in a salt marsh.

He wanted to get out of the forest, into the cottage, but it didn't look defensible, and when the jumpstroopers arrived it would be the obvious place to look.

Kaffia shrugged, still breathing hard. The haunted forest suddenly made a lot more sense. "This is Straff's house?" She glanced at the quaint shuttered windows, frowning, but then turned away and looked eastward, wondering if they could get through the woods, cut through someone else's property, and get out to Atlantic Avenue without being seen by the soldiers.

"Those aren't legitimates," Alex put in, reading her expression, and pointing back the way they'd come.

Kaffia glared back, and then swung her eyes around the dark clusters of thick tree trunks. "I know. Probably more in the woods."

"House without a door isn't going to stop anyone. Climb the trees?"

She gave him an angry shrug, looking down at her lime green outfit, which glowed a bit even in this dimness.

He jutted his chin at her. "Told you my purple camo'd come in

handy."

She didn't seem to have heard him. She halved the volume of her whisper, glancing around at the darkness, and made a little spiraling gesture with one hand, indicating everything around her, the context, the gunmen, the intelligent ghosts. "This has an Andreden documents, Rost Institute, duct tape vibe to it."

"I'm feeling it, too," Alex whispered back, shaking his head. He didn't want to be the first to mention it. "Hope not."

Movement along the road caught their eyes and they spun around, heart rates doubling. Walter and his twin rushed up like something bigger and more destructive than a gunship was behind them. Both the ghosts waved their arms, pointing ahead, urging them into the cottage.

Alex nodded to Kaffia and bounded through the entryway. He pointed back at the gaping doorway as he glanced over his shoulder to Walter--or maybe it was the other one.

"I'm no security expert but I don't think that's going to stop those guys."

The ghost pointed deeper into the house, humorless. Kaffia took Alex's hand. They ran through a normal looking living room with a plain brown couch and a pair of comfy chairs, past an upended dining room table and chairs. She jumped the jagged pieces of a coffee mug, landing in the kitchen. One of the ghosts went right to the cabinets under the sink, flung the doors open and went inside headfirst.

The second ghost urged Alex in. Kaffia crouched, looking into the tunnel opening in the back wall of the undersink cabinet. Fitting through the hole wasn't a problem. Where did it lead though?

"Looks dangerous," she said. A snap of tree branches from just outside the cottage brought her head around.

Alex nodded and tossed his board and pack into the black hole. Not waiting for the sound of his stuff to hit the bottom, he followed it, diving headfirst like the ghost. Kaffia crawled into the cabinet next, holding her inlines like gold. She shook her head and went in after Al.

She felt a hard cold blast of air hit her face and circle her body as she passed through the tunnel opening. It felt like someone dragging an icy steel cable over her skin, down her legs, over her feet. And then she was all the way into the lightless tunnel and falling vertically. Her mouth opened to scream. She couldn't tell which direction she was falling. At first it felt like continued headlong motion, but then it felt like feet first. Her eyes darted around the black space looking for a ref point.

Kaffia looked over and Alex was standing right next to her, his board under his arm and pack slung over his shoulder. She saw him clearly but everything beyond him and around him was perfect black. Her eyes immediately dropped to her feet. She saw her dirty socks, bristling with leaves and foxtails, and felt a floor under her toes. She hadn't felt her landing.

"Al?"

"Weird, huh?" Alex said, and she nodded back at him absently, checking that her inlines were still with her.

About a minute later, she whispered, "Very. Almost inexpressibly weird."

"Wonka-esque?" Alex ventured.

"Bingo."

The second ghost appeared next to the first. They looked at each other and then both looked up and nodded as if everything was going according to some plan. They extended their arms and pointed beyond Kaffia and Alex. The two of them turned around. A bright hemisphere appeared at the end of a cobblestone road. The tunnel led up a steep incline from their feet into daylight. Alex scowled at the bright sky.

"Pretty sure the sun's beyond the sea-level tangent plane by now."

"But that looks like sunlight," whispered Kaffia and took the first step forward.

The road felt real through her socks and feet, hard and painful, like walking on billiard balls. Alex followed her and the ghosts drifted behind him.

"What do you think it is?" She glanced from Alex to the ghosts who hadn't yet said a word.

Alex shook his head but shared his guessing anyway. "Underground hydrofarming? Probably illicit. Uh, alien spaceship? Also probably illicit. Against the prime directive and all."

"Nope," said Kaffia who was the first to see the other side clearly.

Then Alex followed her into another world, where the sun had not yet set, the world under Doctor Death's kitchen sink.

Enthusiastic Behavior Engineering

"JUNE TRIMONY. June Trimony. Chim-chim-cheree." Greenleigh sang the words to the chimney sweep's song in Mary Poppins.

Trimony perked up and stretched her dry, cracked lips into something near a smile, even though coming from the mouth of the Chairman of the Rost Institute made it sound like a serial killer's taunt to the parents of his victims. She tried to picture him dancing around the rooftops of London covered in soot, and for part of a second she felt like chirping a jaunty, "tawp o' the mornin', guv'nah." Dick van Dyke, with his exaggerated Cockney accent, ought to be sidling into the torture chamber at any moment, followed by a gaggle of smudge-faced broom-wielding flue cleaners.

"I've always liked your name, June Trimony. It has an innocent sound, a girlish quality."

"I'm afraid I can't say the same for you, Chairman Greenleigh." Trimony shook her head wearily, wincing. She blinked away blood that had trickled into her eye. "But it's funny," she said hoarsely. "I studied you for years and I never suspected you of having a sense of humor. Even a cruel one."

"Not many people do," whispered Greenleigh, flashed his teeth, and then he wrapped his fingers around four thick cables that went into the back of her skull and pulled.

Trimony screamed. Her eyes slammed tight, but every crease and wrinkle in her face shuddered. Her mouth filled with saliva, gurgling at the back of her throat.

Her head had been shaved in the back. Lumps of healing tissue mushroomed around the finger thick plastic connectors, two fused to the bone just above her hairline, one just behind her ears on

either side of her head. The color-coded spider cabling snapped into her head with narrow white identification flags wrapping the hairfine wires in hundred lead bundles.

Rost, under Greenleigh's management, had taken somebody else's tech developed for restoring sight and hearing to the blind and deaf, and used it to torture people, to listen in on their thoughts, to sift through the victim's consciousness and eavesdrop on the visuals they stirred up.

Trimony drove her body against the straps, measuring her motion in millimeters. Her head and neck were loose, but hurt too much to move.

"You're going to help me, June," said Greenleigh calmly. "I know you will. I've been watching you for the last four years, and I know how you think. You're tired. You just want to go home."

"Rethink that!" She pushed the words through her teeth.

"I said!" He shouted over her screaming. "You are going to help me!"

Nicholas. His name was Nicholas. My nephew. Trimony's thoughts rolled around, spreading out with an even grinding noise, like a jar of marbles freed on a basketball court. Nicholas. When she said his name a flash of wet granite with neat chiseled letters, Nicholas, pushed into her peripherals. The "c" and the "o" cupped the rainwater as it streamed over them.

She'd helped Nicholas set up some Net gear when he came home from college. First summer back home. Aunt June, the hacker. Who better to get Nicholas set up with some clean equipment, trace-free on a wide pipe?

She heard her own voice, a conversation with her nephew, but couldn't determine if it had taken place or her imagination had spun it out of different experiences.

Nicholas, a name cut into wet stone.

"Do you know what a cipher is?"

Nicholas seemed uncertain, and said cautiously, "I think so."

"The word has several meanings but I'm referring to the slang term for political prisoners who are manipulated to reduce them to laboring animals. What do they teach you in school?"

He slid a slight defensive edge into the steady stream of his voice. "I've heard them called ciphers, but in the school work they're called by the technical name, Sub-functional Human Laborer, and the term we use is SHEL--sometimes zombie."

"I've heard them called SHELs. That's a new term. We call them

ciphers. Look up cipher in the dictionary. A cipher's a zero. A cipher is someone who has no weight, worth, or influence, a nonentity, a hole in reality. There are fifteen million ciphers in this country, and close to quarter billion worldwide."

"Those are the numbers they've used for two years."

Almost certain of the answer but with the question bubbling into his mouth like the sour taste of the previous meal, he asked, "What...what happens to them all?"

"It's considered a temporary program for Rost. They all die," she said flatly.

Two days later, Nicholas died decorating the room his parents had cleared for him over the garage. He'd come home from college, put up some curtains, fell off the ladder into the window, and cut his arms to the bone on broken glass.

Aunt June's serious voice called up the back stairs, "You all right, Nick? What was that noise? Nicholas?"

Rain tapped and splattered over the top of his gravestone.

Nicholas bled to death in the emergency room. Dr. Death had claimed another life.

"O...K. What do you want?" Trimony's split, dripping lips shivered. Blood sour in her mouth, she pushed one of her teeth along the gutter between her gumline and the inside of her cheek on the right side. She dug her tongue under the tooth and nudged it over her bottom lip. It slid toward her chin in a flow of red spit.

Greenleigh stood up. He'd taken one of the stools along the back wall, attempting to get beyond the range of flying body fluids, but his behavior engineer was one of the more enthusiastic ones.

Greenleigh glared at the sleeve of his shirt, flicked away a little of wedge of something wet that had landed on him, and sniffed the dark stain on the soft white material, grimacing.

"Damn," said Greenleigh, not to Trimony, but to the six-foot humanoid in the turquoise plastic bodysuit, apron, hood, and mask. The torturer put down his club, held up a hand apologetically and stepped from the room, closing the door quietly behind him.

"June Trimony."

One bloodshot eye rolled left to find Greenleigh. The other swelled closed, brown and puffy purple, as if the torturer had scooped her eye socket clean and rammed an overripe plum into it.

Greenleigh orbited the operating table, deep in thought. "My position here is temporary, Trimony. I can be honest with you."

Trimony snorted, repeating Greenleigh's words, "honest with you" in her thoughts. Fate sealing words, those.

Greenleigh continued with a petulant edge to his voice. "Andreden

doesn't sleep. He hasn't stopped at Zoerner or the SACB. He's back in California, back at Knowledgenix, back to his little robots. But he wants me dead. He wants Rost closed. And he will have his way very soon, marching me off to prison. Unless..."

Trimony stared at the ceiling, one-eyed, shuddering, trying to hold in her tears. "Andreeeed..." She hadn't heard that name spoken aloud in years. He's still alive.

Her body jerked in the straps. "Ammmm..."

Greenleigh stopped pacing, looking down at her.

"Amelia," said Trimony, adding, "ah?" because she'd forgotten to make it a question.

"Valera?" Greenleigh folded his arms. "Amelia Valera's the only one to survive the cipher pools. Went in, and somehow came out mentally intact." He said it sourly as if embarrassed to repeat a cheap bit of trivia.

Trimony's body stiffened. A hoarse squeal came from her throat, a response to the pain in her face when her undamaged eye widened.

"Greenleigh?"

He bent down.

"Go to hell!" She spit blood in his face.

Amelia...Valera. Beautiful girl. Shoulder length black hair, skin like honey, dark eyes. Her father is Costa Rican?

Trimony pictured John Andreden, the machine intelligence and autonomous robotics visionary--and tyrant-dethroning "rabble rouser." He'd certainly changed since she'd last set eyes on him, sometime before the overthrow. Probably had gone a little grayer, but she pictured him as she remembered him on their last meeting, standing next to Amelia Valera.

Andreden loved her. She loved the sea even more than he did. And the mind, consciousness, how the brain worked. Made for each other. Valera, the neurophysicist, went down shooting SAC Board commandos. They hit Andreden first, took him alive, and shipped him off to Rost. Amelia, they dumped into the cipher program, and turned her into an animal, a human without its own mind.

...Her hair was gray, uncolored, brittle, chopped close to her skull. Her skin was a streaked and blotchy gray, dirty, the color of her rough clothes, her sky, and her mind. Her world was a gray existence void of memory, empty of sun-rayed days, of dark nights, of time. She knew nothing of yesterday, nothing of tomorrow. She didn't know who she had been or who she was now. She didn't know that her name had been Amelia Valera. She had a number that identified her among the other fifteen million ciphers. She didn't know it. Others could read it by finding the tattooed sequence on her body.

She knew the bleached asphalt and concrete. The pits, embedded stones, ridges, gaps, painted stripes of the old roads. She knew the shiny hard wood of the push broom she'd been ordered to drive. She knew the dark brown bits of leaves, strips of foil, candy wrappers, fragments of tree bark, and billowing, living clouds of gray dust that preceded her up the street, the discarded crumbs of nature that she pushed into neat little piles. And she knew the time that she must return to the cipher compound. She did not know what time was, or the difference between early and late, but if you asked her when she was scheduled to return to her cell, she could tell you. And although she was entirely ignorant of hours, minutes, time tables and clocks, the biomechs embedded in her skull took

care of that for her.

If one of the retrieval trucks neglected to pick her up, there was a programmed anxiety response that kicked in about six hours after her sweep should have ended. Nightly cipher details spiraled their way through the city streets, picking up the forgotten forms of humans whose muscle and ligament and structure remained but whose souls had decomposed. By midnight the ciphers wailed on street corners, afraid to move, not knowing who they were, where they were, lost in the half-reality of an animal without a mind, and without the one faculty that animals other than man possessed: instinct.

"Is she still breathing?"

The torturer nodded, his turquoise suit crinkling. The short wooden club dripped syrupy red over his gloved fingers.

"Slow down, but keep working her. I'm going to shower and get a clean shirt." He pulled open the door. "Back in fifteen."

The alleged advocates of liberty, with their twisted notion that there was a difference between the destruction of human life and the destruction of the mind, had finally forced the weakened judiciaries to abolish the death penalty. In its place they offered living-death, a monstrous subhuman purgatory between hell and earth. A group of microbiologists opposed to capital punishment for any crime conjured up a "benign and productive" alternative to death. Never mind that the first two hundred deathrow "volunteers" died slowly and in agony. Once they'd perfected the techniques, they produced millions of docile laborers that could be safely distributed throughout the cities of the world in guided work programs. The scientists at the Rost Institute developed a modified pathogenic microorganism injected into the bloodstream of the men and women convicted of violent crimes, rapists, serial offenders, and--when Zoerner held power--anyone who committed crimes against the state. The cipher pools were continually freshened with growing numbers of political prisoners.

The Rost bioengineers were pleased with the result.

One of the injected agents was similar to bacteria already contained in the human body, they told the press, neglecting to explain that it was similar to bacteria that congregate in the intestines of warm-blooded animals. When the origin of the desecrative pathogen was finally revealed, the Rost Institute frontmen came out with an honest tone as if they'd overlooked some innocuous detail. "The human intestinal tract harbors over four-hundred different species of bacteria, of which there are thousands of strains. They're generally divided into two groups, 'friendly' and 'unfriendly.' We're simply using some processing functionality of one of the unfriendly strains to silently and painlessly modify the patient's brain tissue."

Few were troubled by their euphemistic tone or the compassionate manner in which they explained the similarities in the way the pathogen processed the contents of your stomach and the contents of your skull. It was uncontroversial. Murderers, rapists and journalists swept the streets in front of your house, never looking up from the dark gray pavement, never even thinking to ogle your young daughter, or eye the preciously cared for vehicle in your driveway. The ciphers labored stupidly in the blazing summer sun and shit-for-brains took on a new meaning.

But like a pathological liar who must maintain an ever-growing network of lies in order to keep up the honest front with everyone he meets, the Rost Institute management had to add aggressive measures every few months to stay one step ahead of the downward spiral. Their last measure consisted of combing the cipher pool in Joseph Mengele fashion for anyone who "stood out"--mostly females with above average attractiveness. They were culled and sent off to one of the basements where they waited dumbly in long lines for someone to guide them to the vasectomy station. The Rost doctors jokingly called it the "disassembly line." The problem the institute had to combat wasn't male ciphers raping the females. The male ciphers didn't have enough going on in their heads to understand what they were capable of. After a six month investigation, the institute study concluded that it had become a popular diversion among drunken university students in some of the better schools to ride around, capture one of the more attractive ciphers, fill her with bourbon, and gang rape her. The Rost Institute's response was open-minded and pragmatic. They didn't want to have to deal with the potentially thousands of pregnant subhuman women, particularly since the pathogenic nature of the "humane cure for the death penalty" guaranteed subhuman results. The Rost response to inebriated students raping and impregnating members of their labor pool: "The surgical division of all or part of the vas deferens to induce sterility in female ciphers."

"She's out, sir. Unconscious."

"It's just not our day, is it?" Greenleigh grinned at the behavior engineer and then turned to study Trimony's bruised, broken body.
"Get her back to her room. Clean her up. Call me when she's awake."

Straff opened his eyes, made a few slow sweeps of his white painted prison cell, and then closed them. He dropped his face into his hands, sobbing, his shoulders jumping in time with short moans and croaks of "What have I done?"

He gripped his head tight in his hands, squeezing it, fingers digging into his scalp. He couldn't stop the nightmares, dark blurs of hate that haunted his peripherals. They surrounded him, stared at him, shifting black clouds, human shaped, the ghosts of the millions who'd died under his administration. He felt them crowding him, sucking away his breath, pulling at his focus, feeding on his fear, burrowing into his soul like grave worms into a corpse.

"Ernest?" Greenleigh slid into the cell followed by two jumptroopers.

Straff looked up. "What do you want, Greenleigh?"

"All of it. All your technology, your lab books. I want everything you have tucked away inside your old bald head, Ernest."

Straff nodded, not agreeing, but acknowledging the demand. What else would he be after?

"Did you work alone?" Greenleigh asked casually, picking something off his sleeve.

Straff's eyes snapped to his, and they glared at each other for a few seconds, each drawing the wrong conclusions from the other's reaction. Straff thought of Walter and Wesley and anyone they recruited for the plan. Greenleigh thought, the old man had some help. Who else's lucky brain gets to have one of our installed SoulYokes?

Straff cleared his throat and looked at the floor. "I haven't worked with anyone since before...AMIA." There was a heavy, suffocating pain in the pause. "And after...no one wanted to."

Greenleigh started nodding slowly before Straff named the Advanced Medical Industry Administration, and ended vigorously on his last words. "Acceptable answer." He didn't believe Straff, of course.

Straff buried his face in his hands again.

Greenleigh added conversationally, "I have a ground team assembled to take samples from your defense system. You've made significant progress in nano, Ernest. Congratulations."

8

The Assignment

THE SECOND TIME I saw Kaffia she was wearing another black T-shirt with white typewriter-style writing. I couldn't figure it out, except to make the connection with the phrase "between a rock and a hard place."

[Person]<-(Betw)-

<-1-[Rock]

<-2-[Place]->(Attr)->[Hard]

I qualified for a loaner computer from school. It was a waddling pig of a notebook, but it had all the apps I would need for doing

reports, calculating stuff for math, drawing, and a Net connection for doing research and getting assignments and other files from the computer to the profs.

I was a Lyceum day student, so I didn't have access to the dorm WAPs, but there were other ways to get wirelessly onto the Net at school, access points left unsecured, and a few public points in the library and study hall.

I spent four hours after classes, my face inches from the screen, searching for references to NDIS. There were lots of them, a lot more than I expected. Why'd everybody think it was a big secret?

I hardly slept that night, planning my appearance and demonstrating my ability to learn what her name stood for. I planned it a hundred different ways, but ended up going with a casual approach, be myself. That's what everyone always says is the best way, right?

Heartened by my discovery skills, I searched the grounds for Kaffia/NDIS the next day at lunch. It took me half an hour of frantic exploring to find her, sitting under a grove of birch trees with four or five other hacker types. I pulled in a deep breath, marshaled my intro, and walked straight up to her.

"So, does your name stand for, Network Driver Interface Specification?"

Her eyes swung to mine, clicking like magnets, and wouldn't let me go. She studied me in silence while I pulled back helplessly.

Words started spilling from my mouth. Horrified, I couldn't stop them. "I got a loaner. Connect at the library. I searched the Net for your acronym and that's what came up." My voice got all rough and wheezy toward the end.

Her eyes narrowed. I'd never realized how dark and liquid shiny they were. I don't think I'd ever been this close to her before. And I couldn't breathe. My windpipe shutdown. My breath came out in short squeaks. She had a total Vader Your-lack-of-faith-is-disturbing hold on me.

"You think I named myself after a networking spec?"

I shook my head immediately. Obviously not. She raised one finger and pointed it at me.

"What's your name?"

"Al--Alex Shoaler."

"Searched for my name, did you?"

I nodded back.

"Here's your assignment, Al."

Like an idiot, I kept nodding. Anything to get out of her tractor beam. I didn't have Obi Wan to sacrifice on this one.

"Take your time," she said slowly and very calmly. "Do some homework. There are a lot of search tools on the Net. They do things in different ways and return different results, some better than others. They take advantage of powerful ideas, stuff you've probably never heard of. Part of the problem with today's data push model is that if someone doesn't want you to know something, it's

hard to find. Latent semantic indexing?"

She was speaking a foreign language. I shook my head like a tourist.

"LSI uses statistically derived lists of concepts instead of individual words to find content." She shrugged as if that was unimportant. "I'll tell you right now you probably won't find my meaning of my name on the Net. But..." She lifted her finger higher and switched to an all-is-not-lost tone. "I'm giving you something easier."

She paused. My shoulders felt heavy. I waited. I felt the pull of the earth's gravity well, and the weight of 62 miles of atmosphere on my body. I took another breath.

"Come back, Alex Shoaler, when you know the difference between searching and finding."

She let me go. I staggered away, still nodding and staring at her. I looked closer. What is she? I've read about them. I idolize one, the seriously badass robotics expert, John Andreden. Is this really what's meant by "guru?" Someone with more than just knowledge and deep understanding, but power behind it?

My mind raced with questions. Searching. Finding. Searching. Finding. Searching is looking for something. Finding is...getting there, right? My brain wouldn't work smoothly. Thoughts came out in chunks or not at all. My assignment. She gave me an assignment. She didn't shoo me away like an insect. She didn't pretend I wasn't there. She spoke to me like she didn't expect me to fail her.

I nodded gratefully, formally, almost a bow, and she nodded back like an empress sending one of her subjects off on an errand. I was dismissed.

NDIS turned to one of her imps, a scrawny prep who'd done a portrait of her as a stately Frazetta-style African princess in dark earthy pastels, with draped leopard skins and lots of brass that reflected the glow of the cities she'd conquered and burned.

The bastard! She gave me some cryptic task, simple on its face but a hundred miles deep (e.g., Ring to Orodruin), and here he was drawing pictures of her. Okay, he was an artist, a good one. But no better with pencils and pastels than I was with a pencil and paper. I can write. I can build plots and suspense. I'm a storyteller.

Then it hit me. This prep was already known to her, already under her spell, already in her world. I'll bet Kyle Vickery and his friends didn't bother him. This one had already paid his dues. She'd probably given him some cryptic task and he hadn't failed.

I walked away unhappy but determined. Neither would I.

9

Straff's Other House

THE FIRST THING KAFFIA DID in the sunlit world under Doctor Death's kitchen sink was sit down and pick the stuff out of her socks. She dug out a pair of lime Converse All-Star's from her pack and laced them up. Rooted to the spot by the experience of falling underground and emerging in another place, Alex swiveled around at the knees and hips, studying the new world with a mixture of intense interest and puzzlement.

He turned back to the tunnel entrance, a black hemisphere, man-height. His eyes dropped, crossed the cobblestone path that elbowed right and headed toward a small cottage, which looked a lot like the one they'd just come through, except that this one wasn't surrounded by thick-misted forest, and probably didn't go through the usual building permit process.

Alex tilted his head back and stared up, partly through one of the ghosts. The light beaming down on them from the azimuth of a clear blue sky made Walter and his twin even less perceptible. Alex chewed on the fleshy bit that stuck out a little from the inside wall of his mouth on the left side. He glanced at the ghosts, and jerked his thumb at the tunnel entrance.

"Can the troopers follow us down here?"

They shook their heads synchronously.

He looked at the cottage, a bordering white picket fence, fields of grass and tall spindly pines. The tunnel cut into a cliff face of granite fifty feet high, and it seemed to curve slightly inward and wrap around the fields, the groves of birch and maple, the entire world. He could just make out the gray stone walls through the trees, maybe half a mile away. The sky rose above them, but he couldn't guess how high. It appeared thick, liquid, and atmosphere-like. He thought about falling through the hole under the sink. He couldn't get a grasp on how far he'd dropped, though. It could have been a hundred feet. Could've been a thousand.

The ghosts drifted off toward the cottage, and he followed at a distance.

"C'mon, Joe."

He pulled his board tighter. No riding on cobbles unless you wanted to rattle your teeth loose. Kaffia jumped to her feet and caught up to him. The two of them approached the little house, walking straight but looking around at the world as if they'd never seen one before.

Walter and his twin waited for them on the front steps and then, just like ghosts, went right through the door without opening it. This stunt pulled Alex and Kaffia's eyes around to the front and

kept them there. They didn't even need to glance at each other with the usual "You see that?" gape.

Kaffia pressed her fingers against the smooth painted wood of the door. Alex tried the knob, turned it and pushed the door in easily. Having rushed through Straff's above ground cottage in the dark, there was no way to compare furnishings and interior decoration.

Kaffia glanced around. Had to be different, though. The front room was full of books. She'd have noticed them in the cottage above.

Doctor Death's underground retreat was nice, a little old fashioned, but tasteful, with big leather armchairs and circular mahogany end tables. The living room and dining room walls were lined with bookcases stuffed with technical books and journals. The dining room table, a highly polished rectangle of heavy dark reddish wood, was set for a single diner at one end and stacked high with papers and books on the other. Kaffia checked out the tiny kitchen and then went back to sift through the papers on the dining room table.

Alex, still standing thoughtfully in the front room, shook his head at one of the ghosts, pointing behind him toward the door. "How'd you go through it?"

The ghost nodded, showed a hint of a smile on his pale lips, and pulled open a drawer in an end table next to one of the chairs, pointing into it. Alex put down his pack and board next to Kaffia's stuff. He picked up the only thing in the drawer, a big old-fashioned brass-ringed magnifying glass. He hefted it like a sword. It was heavy in his hand.

"Nice," he muttered. The smooth warm metal handle felt good against his skin.

The ghost drifted down right next to Alex and gestured to his

outstretched arm, pointing at the glass.

"Ah." He nodded, bent over the ghost's arm, and stared at it through the convex circle.

"N--nnno!" He stuttered excitedly, pulled his head back sharply and then looked again. "No way!"

He remembered looking at his own skin through a magnifying glass when he was six, and he probably had the same reaction to what looked like the pores, hair follicles and wrinkly polygonal sections of skin of a pale elephant.

What he saw through Straff's glass was completely different. Thousands of clear shiny elliptic capsules, each smaller than a grain of sand, floated in the air in tight formation, rubbing against each other, rippling and overlapping when the ghost flexed his arm. There must be billions of them. The ghost's arm alone must be thousands of the capsules thick--tens of millions in his entire arm.

Alex looked up from the magnified view, his eyes gone glassy, his thought roaming over distant landscapes in his head. If Straff created these things, he has gone way beyond--

The ghost tapped him on the shoulder and pointed across the room, opposite the armchairs. Alex hadn't noticed the video panel that took up the only blank vertical wallspace. He blinked at what looked like a typical UI, and then his eyes shot to the display's top, to text appearing at a slow readable rate and scrolling by.

...enables startling abilities such as passing through solid

surfaces like a door (an illusion really) because as each successive rank of nodes touches the door's face it drops away, curls under the space between the threshold and the door, reverses order and reassembles its shape on the other side, giving the appearance of passing through solid wood.

Alex held a hand up, about to wave Kaffia over, but she was deep in a thick binder full of paper, flipping pages, reading at a tremendous rate, scowling, looking for some referenced page. She was busy, so he didn't bother her.

"I missed the first part of what you were saying," said Alex, pointing at the video panel. Kaffia's last question returned to him. "Writing, I mean. What are you, then? Are you alive?"

Dr. Straff created us. We are...

"You're Walter?"

Wesley. This is Walter. We are LoDBoTS, an aggregate organism. Each of us is a multi-billion-node network with loose distribution, loose binding, tight synchronization (LD/LB/TS) properties. We can maintain a specified shape. Each node can detach and reattach, move independently, fuse into a fixed lattice.

Alex nodded. Cool names. Walter and Wesley. He continued chewing his lip. "That's not exactly what I was looking for. I mean, you can talk...or write. You're like machines. You can use language. What I mean..." He stammered a little, looking for words. It had always been easier for him to think and write than to think and speak aloud, and being good with words didn't mean you were good with the right kind of words.

Kaffia would understand where he was going. His world was about mechanics and electricity. Give him a yellow violet yellow resistor code and he'd tell you 470k Ohms. She was the grid hacker, the binary thinking, reduce to pixels, metadata advocating, digitizing sort. She was 31337. And this was moving the whole situation even closer to the Andreden video, artificial consciousness, Rost Institute, duct tape vibe Kaffia had mentioned in the woods above. Andreden was a groundbreaker in this area, and even though they'd both learned something from Andreden's unpublished work, she understood this AI, A-life kind of stuff far better than he did.

He looked in through the dining room. He was about to interrupt her, but Wesley held his hand out toward a narrow piece of wall next to the front door.

Alex turned, peering at the first of three small-framed pictures. There were three men and a woman, posing together. There were hints of smiles on their lips as if the pic had been taken a little by surprise, and they hadn't expected to put the situation down for posterity. Two of the men were older, going gray or even further. The balding, sort of frumpy-looking one must be Straff. A tall African-American man with short white streaked hair, wearing shorts and sandals with an untucked button-down shirt, stood next to Straff with his arm flung over his shoulder. A dark-haired woman stood next to Straff with her arm around the man in the far right of the pic.

Alex looked closer and sucked in a short breath. It was John Andreden, the visionary engineer who ran a robotics company on the west coast. His company made the most sophisticated underwater machines in the world, deep mining explorers, cable inspecting floor tractors, AUV's. Alex idolized him and here he was in a picture with Doctor Death, not exactly smiling, but there's no gun to his head.

Wesley's blurred finger entered his field of vision, tapping on the glass over Andreden. Alex stepped back, nodding at both ghosts. "I know. That's John Andreden. He and Martin Alievi--" He pointed to the man on the other side of Straff. "--run Knowledgenix. They're both geniuses. Andreden helped with the overthrow, with Zoerner's downfall." He shook his head, stunned. "Wha--what's he doing with Straff?"

He followed Walter and Wesley across the living room, back to the video panel.

The part of us that you are interested in, the part of us that understands and forms concepts was not created by our master, but by that man, John Andreden. Doctor Straff created our form. Knowledgenix provided Personifex, the intelligence and communications interface.

Alex's heart thumped in his chest. He fought the force that tried to pull him to the floor. Andreden and Straff together? No! He had trouble standing. It was like the world had slipped off its axis and plunged into the fusion reaction at the system's core. How could Andreden participate in anything that Straff was doing? Andreden's a genius. He fought against Doctor Death. He helped defeat the Purists. Why would he get mixed up with Straff? His mind shook out a reluctant okay. Straff's a genius in his own right, but a dark and sinister kind a genius. His advanced medical org's

responsible for putting millions in their graves. Millions of people. Millions! Cold and dead because of him. Straff is bad. Andreden's not.

"Al?"

He didn't hear her over the roaring in his ears.

"Alex?"

Her call broke through his self-absorption. He snapped his head up and made his way into the dining room.

"What?" Alex asked dizzily, lifting his eyes from Straff's dining table and catching the intensity in hers. "What is it?"

"The man pages for this," she whispered while reading. She didn't see him shake his head.

He looked at a half curled page, perspective views of some kind of machine, made up of blue, green, yellow and red blocks. He gave her a puzzled expression.

She looked at him like a stranger. "The manual? Man-you-al?" She straightened her expression, hiding her reaction to his confusion. "You okay?"

He waved at her, blinking. He didn't want to bring up Andreden. It was a painful subject between the two of them. If she brought it up that was fine.

"Yeah," he whispered, and looked down at the paper. "What is it?"

"It's a self-replicating machine...made of LEGO. It can select blocks from a random source and build another one of itself. Then there's a second machine that disassembles the first machine and puts all the blocks, wires, motors, embedded comp brick and batteries back into random source bins. The newly built assembler builds another of itself and then moves on to the disassembly station."

"Cool," He said slowly and chewed his lip. He loved LEGO, but he was disturbed by the thought of Doctor Death sitting on the floor amid piles of colored plastic blocks. "What's Straff doing with it? Kinda creepy."

"He tried to make a point. He unveiled this machine years ago at a nanotech conference in Minneapolis. No one thought it could be done. There's an old argument that compares the difficulties of molecular manipulation to a machine made out of LEGO that could connect and disconnect--manipulate--LEGO blocks. You know, sometimes the blocks get stuck, especially those narrow single height ones and the little black cylindrical connectors. They would be difficult for a machine to manipulate. But Straff did it."

"What exactly did he do?"

"He showed them the door to what's possible."

10

Hex and LERGs and Rock and Roll

THE THIRD TIME I saw Kaffia I was sitting outside the dean's office on a Tuesday morning, waiting to get yelled at for copying someone else's research report, only I didn't do it. Somehow someone had copied my paper, turned it in to Mr. Copplin, and accused me of stealing a draft of theirs. The problem was

that I didn't know who it was. I asked, of course, but they handed me a bunch of student confidentiality crap.

Anyway, Kaffia walked by, looked my way, scowled a bit and did this little smile thing with a slight nod. It almost felt like a welcome-to-the-club kind of salute, like she was telling me that she got in trouble all the time, and it was somehow good that I had now landed in some.

(Black t-shirt with white lettering and a blood red heart: I ♥ Phreaks).

I felt better for four and a half minutes then the dean called me into his office and ripped me a new one. Felt like more than one. He called my mother at work, and told me there were no second chances for offenses of this kind. One more and I was out.

Mom cried. Anger and guilt fought an epic battle that ranged all over my body, ending with what felt like tendon damage in my ankles. (I couldn't skate for two days). Mom had borrowed against the house. I had a vague idea of what a second mortgage was, and knew it wasn't good. She worked into the evenings so that she could afford Lyceum tuition.

The next day I produced all my drafts, my written notes, everything that showed that I had done the actual work, but it didn't seem to matter. Well, I think it didn't matter. I'm not sure, but the dean, after reviewing my work, may have had some doubts about the claims against me. Still, the offense remained on my record, and Mr. Copplin hated me from that point on. Nothing I turned in would ever be satisfactory.

My fifth week at the Lyceum and my life was about as close to over as it's ever been. Then, without warning, NDIS walks past me on Friday and says, "Al, you up for a little fun tomorrow?"

My mouth sagged open. I still hadn't worked more than a few hours

on the assignment she'd given me.

"Take that as a yes." She rattled off her home address, waved as she walked off and then she shouted across the quad, "9:15 AM. Don't be late!"

I think I stood there frozen for fifteen minutes, and then, damn, I was late for Copplin's History of the Americas.

The next morning I woke early after almost no sleep, jumped on my board and headed up Ocean Boulevard.

Mom and I live in a small house on 1A. It's been in her family for generations. Not a lot of room but it's near the ocean, which is the way both of us like it. (Mom spends more time walking up and down Hampton Beach than she spends in the house). It's winterized, has heating and a fireplace, so the cold isn't too bad.

Kaffia lived right on Atlantic Ave. in Little Boars Head, prime North Hampton real estate. Her place was so big I had trouble finding the front door. Actually the real problem was that there were a lot of doors, but there were probably two or three that were used most. To use one of the wrong ones meant you were a stranger. No one in these big New England homes uses the front door. They all have mudrooms and back verandas and side entrances for everyday use. I rolled around her driveway trying to decide which door to knock on when she came out of the house.

I was dressed like I normally dress, baggy black shorts, an old Boston SF Con t-shirt and hightops. Kaffia came out of the house in a short pastel sundress with pale yellow flowers. She looked... fragile. Like a little girl.

When I said, "What's with the dress?" She gave me a bitter how-about-I-cut-out-your-tongue-and-wear-it-on-a-necklace-to-warn-other-stupid-question-askers? look.

She followed that up with, "Shut the F up. I'm on a mission. You want in on a typical Saturday or not?"

I nodded and got in the car with her. It was an old silver Honda, parked between a BMW and a Land Rover. I didn't ask how she was able to drive without supervision at fourteen, but I was impressed with her skill and surprising adherence to the road laws and automotive safety conventions. (None of that New Hampshire Live Free or Die stuff. She made me wear my seatbelt).

We drove up Route 1 toward Portsmouth then headed out to the mall at Newington.

She didn't say much. Asked me what kind of music I liked. I told her all kinds, but my favorite's '70s progressive rock, Flower Travellin' Band, old Yes, and the greatest band ever is, of course, Gentle Giant. She just gave me a you're weird look.

I asked her if she really broke into NASA Ames Research Center.

She countered with, "At Moffet Field?" Then shrugged. "Never hear it from me. That's how you get caught."

I asked her a couple times about our plans, and she repeated her answer. "Just want to check something out. See if it works. Nothing illegal."

I didn't say anything about driving without a license--or whatever it's called when you get caught driving a car before you're even old enough.

About halfway there Kaffia reached into the backseat and pulled a little book from her backpack. She dropped it on my lap and put her hand back on the wheel.

"Read that."

"Aristotle," I said, scanning the glossy orange cover. A long word starting with an N--Nico-something--followed by Ethics.

"Greatest hacker who ever lived. The man did everything, defined methods for a bunch of sciences, biology, logic, embryology, even the study of art. He got his hands dirty, he swam in the lagoon of Pyrrha to look for interesting sea-life, he taught paupers and kings, he was a father, he knew joy, he knew sorrow--his wife died young, you know? Aristotle really lived in this world...and he wasn't afraid to live in it."

With this last line she gave me a long, meaningful you-know-who-I-mean stare.

I didn't. While the car sat at a stoplight, I sat in silence and tried to remember something I'd read about Aristotle.

"Wasn't Aristotle kind of a my-way's-the-only-way, don't look at the outside world kind of guy?"

Kaffia gave me a disgusted look, like I'd already been corrupted. "Don't believe everything you read. Anyone who says that just hasn't read the source. They're confusing Aristotle with Aristotelianism. It's a crime what happened. Not just to Aristotle. It happened to a lot of brilliant ancient thinkers. Aristotle would have been the first one to say, 'Use your own eyes, dipshit! Pull it apart! What's it made of?' But later thinkers--I mean slavish followers--took everything Ari said like it was written in stone and refused to see what the world showed them. The example always given is the medieval churchmen refusing to look through Galileo's

telescope because they didn't want to see anything that might disagree with Aristotle's works. A lot easier for them to kill Galileo. That kind of thing happened over and over again, until you have idiots today spouting nasty comments about the greatest hacker who ever lived."

I didn't move, except to tighten my grip around the door handle. She was angry now, and I didn't want her to turn it on me.

"Go to the source, man," murmured Kaffia after five minutes of huffing and high-speed driving. "Fucking idiots! Read the source code! That'll always be my advice."

When we got to Newington we walked the length of the mall, and on the return trip stopped at a kiosk ATM. I thought she was getting cash. She grabbed my arm and pulled me closer.

"Watch this," she whispered and pressed two of the buttons at the same time. I looked at the screen. Instead of the usual five or six banking menu items, a "Service Menu" appeared with ways to change the system time, drive configuration, and one named, Customer Transactions.

"I'm going to peruse." She jutted her chin toward a row of benches. "Keep a lookout."

I was sweating now. What is she doing? Why am I here? I was jumpy-more than I normally am. People were looking at me. A line was forming behind her, impatient shoppers checking their watches, a man in a suit on his phone. Time dilated. I guessed a 10:1 ratio; with every second, ten seemed to pass. Then it got worse. With every second that passed, time seemed to move even slower. It crawled to a halt. It was probably only two or three minutes total but it was like Kaffia/NDIS played with the ATM for half an hour.

And here comes a security guard from the direction of the bank's

in-mall branch. His eyes were on Kaffia.

I waited till he got close then I stepped out from the benches and stood right in front of him. "Hey, I just came from Poster Roaster." My voice was all gasping and rough, which probably made my claim sound more real. "Two girls just ripped off a stack of posters from the boy-band bin."

He blinked at me a couple times, but mainly kept his eyes on Kaffia, shifting around me to get to her. I moved a little to the left to stay in between him and Kaffia, and I pointed in the direction the two girls would have gone if I hadn't invented them there on the spot.

It sounded really lame once I got the words out, but it stopped the guard for a few seconds.

"I'm not with mall security. Try the information booth. Excuse me," he said, stepped around me militarily and continued in a straight path toward Kaffia at the kiosk.

I didn't know what to do then. Should I leave? If I didn't go to the information booth the guard might think I was involved in whatever Kaffia was doing. I turned around and walked backward slowly, watching Kaffia. She didn't look up at me once. She shrugged, smiling in her sundress, and appeared in every way to be an innocent fourteen-year-old girl who "couldn't get this thing working." I heard her say in a very girlish tone, "I don't know what's wrong with it. I usually see this like get forty dollars out thing." The guard pointed down the mall, directing her toward the bank, and she walked off inconvenienced.

She strode right past me and headed for the bank. I followed her a ways back. She used one of the ATMs there, withdrew some cash and went out to the parking lot. She took me out to lunch. I wasn't going to argue. This girl's dangerous.

On the other hand, there's an exciting side that makes her... different. While any other girl I had ever known talked about movies and books and school, Kaffia chatted about Local Exchange Routing Guides, class 4 switches, 16-bit math--"keying in hex"--and a bunch of stuff that went by so fast that she lost me for fifteen minute intervals.

I think she thought I was engrossed, but I was really trying to figure out when she was about to change subjects. My only hope of picking up the conversation was at the next transition, when she stopped talking about SNMP hacks and went into something that involved some other acronym whose meaning would elude me.

About halfway through the food she said, "Oh, happy birthday! It's tomorrow but I probably won't see you till Monday."

A wad of fries stuck in my mouth, I nodded, chewed through it and said, "Thanks." I didn't ask how she knew it was my birthday.

On the way home Kaffia put her hand on my arm. I froze, instantly aware of her skin against mine.

"Thanks for holding up security. Girls stealing posters. That was very well done."

I shrugged like that's the sort of thing I do all the time.

We were back in North Hampton before I got up the nerve to ask her what that was all about.

"It's my bank. I have an account there. My whole family, my parents, my sister and brother all have accounts. I heard about an exploit using their kiosk machines and just wanted to see if it's

true, and how far I could get."

I rode my board home, rolling down Ocean at an easy pace. I kept shaking my head, puzzled. I thought I had a fairly clear picture of Kaffia's character, the kind of person she was. She's aloof. She didn't seem to want any friends. But why did she pick me to go with her? She hardly knew me. Why not one of her better known acquaintances?

11

Straff's Plea

IT WAS ALREADY IN Kaffia's brachial vein, digging through the inner lining, endothelium and into the smooth muscle tissue surrounding the vessel. It was a bloodborne nanomachine, so tiny that individual cells towered over it, some of them the size of office buildings to a child on a city sidewalk. It knew it was one of hundreds or maybe even thousands of nanomachines inside the human female. It didn't know how many others there were like itself, it just knew there had to be more. It was a killer, but by itself it had little chance of harming anything. It knew it would take many of them, in a massive synchronized attack to stop the life in this host.

Kaffia put down the binder and scanned more of the table's clutter. She wiped her forehead on her sleeve.

"Little warm in here. You hot?"

Alex glanced up from a bunch of AMIA propaganda and shook his head.

She nodded at him. "What's that?"

Alex smirked and made a little sniffing sound, like he wanted to be disappointed but wasn't. "Looks like pamphlets Straff's org put out to tell us all how great the coming era of nanotech would be. Not bad stuff...Arrange carbon atoms into a particular structure and you get one of the softest substances, graphite, arrange them another way and you get the hardest known mineral, diamond. Nanomachines can create sheets of diamond...Blah. Blah. Blah."

He picked up another, selected a paragraph halfway down and read aloud.

"...everything from a sunburn to a severed leg. Today we use creams that relieve the pain of skin damage. Tomorrow's nanomachinery will repair the damaged cells. Today we perform macro-level surgery and hope that the patient will be able to walk at all in a year. Tomorrow's nanomachinery will be able to work on the molecular level to fuse the bone, veins, arteries and other tissue together. The day after tomorrow's nanomachines will be able to completely re-grow your leg."

It would wait for instructions from the coordinator. When the coordinator broadcast its signal, it would begin checking the timer. The timer would interrupt its processing every hundred milliseconds, and compare two values, the current timer value against a static value set in its memory. It was a slow slow beat for such a miniscule machine. It knew its task: wait until the coordinator contacted it with the signal to go active or inactive. If the execution path branched at the value comparison--if equal--then it would set out on its own to perform its task. It sat tight, nestled in the soft lining of the vein in the arm of the human female and ran through a set of error checks.

"In a way, nanotechnology is simple, and has always been with us." Alex continued reading one of Straff's brochures aloud. "All plants and animals use similar processes. Our bodies work on many of the same principles. The cells that make up everything inside you, from your brain and heart to your bones and skin. They all contain tiny factories that read the genetic information stored inside and use it to assemble things like proteins. Nanotechnology mimics many of these processes for particular uses, such as a nano-scale machine that roams through your body and hunts down a particular kind of virus.

"Let's say you catch a cold. A virus has invaded your body tissues and has managed to get itself reproduced millions of times over. Here's what nanotechnology will do for you. In a few short years you will have AMIA approved molecular machines that live in your body, protecting it, repairing cells when they die or are damaged. You will also have a small number of factories that make more of these machines when they are needed--most factories will be the size of several grains of sand. To attack the virus the good molecular machines need to identify it and do something with it. In most cases the molecular machines will simply dismantle the virus and re-use the molecular components somewhere else."

"Always thought it was cool stuff," said Kaffia. "Until Straff ruined it for all of us."

She squeezed her eyes closed and blinked a few times. Then she rubbed them with her thumb and forefinger. She picked up show publications, proceedings from the fourth annual Nanotech International in New Orleans. Dr. Ernest Straff, keynote speaker, topic: human flight, but not aircraft in the usual sense of the word.

Alex noticed the intense look on her face, but his focus kept returning to Walter and Wesley because they seemed to be hovering closer, watching him and Kaffia.

"What is it?" He jutted his chin at the article in her hands, but

cast a few sidelong glances at the crowding ghosts.

"He designed working wings for humans using..." She looked closer at the plans and read from the abstract. "Sheets and tubing of aggregated vacuoles. Millions of vacuum-filled rigid cells connected laterally."

This was more along the lines of the kind of thing Alex liked and he scooted around the table next to her.

"Vacuum-filled?"

"Doesn't sound right, does it? Should be a rigid container from which the air has been removed."

Alex nodded. "Right. You don't fill something with a vacuum, you un-fill it with air."

She handed him the article and shuffled through more of the papers on the dining room table. She put one hand down on the table and leaned heavily on it.

"There used to be this cartoon," Kaffia whispered, picking up a magazine and tossing it aside.

"Nano-Monkey," answered Alex before she started into her question. "Thinking the same thing. Always thought it was stupid."

Kaffia nodded.

"Here's this talking chimpanzee jabbering on about all the great things we'll get from the coming era of nanotech, all the wonderful beautiful things nano will give us.

Kaffia kept nodding, knowing where he was going. "And everyone knows chimpanzees aren't monkeys."

"Completely different genus," added Alex. "Given that level of sloppiness up front, how likely was their science to be accurate?"

"Right. Right. Just propaganda. Probably all cooked in Straff's Advanced Medical org."

"Damn," snapped Alex. "Got the Nano-Monkey theme song going in my head."

Kaffia leaned away from him, throwing up her hand. "Don't want to hear it." Even the ghosts backed away from him.

Alex gave them a fair-weather-friends smirk and concentrated on clearing his mind.

He and Kaffia dug through more of Straff's work, detailed CADs of bizarre mechanical creatures--creatures so small you needed a microscope or some other industrial viewing tech to see them properly.

Alex picked up the article on wings for humans, browsed the abstract and dropped it back on the stack of papers. He couldn't get one of the early episodes of Nano-Monkey out of his head, where the show's host, the chimpanzee, told the kids of America about the building blocks of everything in the universe. Alex didn't remember the whole show, just the beginning where the chimpanzee--in his

squeaky voice--talked about the castle.

...build a castle out of building blocks. Stone blocks. Glass blocks. Wood and clay. And whatever else you need to build a castle...You wouldn't use the gray stone blocks for windows, and you wouldn't build the castle walls out of glass, would you? Higher-pitched clowning screech: Of course not!

The chimp grinned. Picture a machine, a robot that has hands like mine. The chimp, with opposable thumbs, flexes his hands and fingers like a pianist getting ready to play. (Who cared at this point? They'd already slapped zoology in the face good and hard). Now we can give this robot a program, which is like a recipe your mother uses to cook a delicious dinner, or the directions you use when you build a model airplane. (And all the kids loved the 1950's dialogue). We can give the robot a program to build a castle for us. The program tells it to put fifty stone blocks here, a hundred there. Layer ten clay blocks on top of those. Glass blocks here, wood blocks in between. And after it's done you have a complete castle.

We could use blocks of metal and other materials. We could give it directions for a car, airplane, a house or a new heart for your father because his doesn't beat as well as it used to. The robot can build anything, not just things out of stone and wood and glass, but even the things that make up beating hearts, the tiny cells of muscle, and even the atoms that make up each of the cells. Our robot can build anything. It just needs the directions.

If something breaks, our robot can fix it. If a castle wall falls down, our robot can read through the directions and fix it. If the car stopped or your heart stopped, our robot could do the same, and the car and your heart would be as good as new.

The chimp held up a finger and a little star appeared when he was about to say something brilliant, and you really needed to pay attention. That's the important point! When the robot fixes something that was broken, it will be like new. In fact, you wouldn't be able to tell the difference between a castle our robot

fixed and a brand new castle...

Alex squinted, clenching his teeth, trying to read the wings article while the Nano-Monkey song whooped and whistled and carried on in his thoughts.

He ground his teeth, and ran his fingers along the words of Straff's work. Kaffia was already deep in some nanotech book, and didn't notice him struggling to get rid of the song. The article pages twisted in his grip.

He closed his eyes, took a deep breath, opened them and looked at the words with a fresh focus. The song left his thoughts eventually, but only after his third try at the think of another song trick.

They read and flipped and scanned more papers for another hour. There was enough evidence in front of them and hovering around them (annoyingly close) to show that Straff had broken through the technological barrier that separated molecular level manipulation using macro-level tools to the real thing, modifying individual atoms and molecular structures with nano level tools, miniscule grippers and cutters and extruders. Straff had done it. He was there. He just hadn't revealed his secret to anyone.

"He's in." Alex whispered excitedly, nearly out of breath. He stared at Walter and Wesley. One of them hovered right over his shoulder. Too close, really. Alex gave him a give-me-some-space finger poke. They're machines, billion node self-organizing networks. This house, the world outside but underground, the artificially lit sky, the lightless tunnel under the sink was all created by him. Straff, Doctor Death, the nanotech dreamer, had actually done what scientific thinkers had pushed out to a distant future possibility. Straff was there. He was there now.

Alex and Kaffia exchanged a look, both nodding, understanding the situation much better.

"Straff has real nanotech, and there are some who know he has it. Some who want to take it from him, use it for their own ends, force Straff to give it to them. That's what we're looking at."

"But why?" Kaffia looked at Alex and then to the ghosts. "Why like this?" She pointed around the room vaguely including everything, the cottage, the underground world, Walter and Wesley into the set of "this."

Alex nodded, agreeing, and turned to the billion-node network self-organizing right next to him. "If he didn't want them to find it why make it? Why do all the work?"

Kaffia narrowed her eyes down to thoughtful squints. "So we can defend ourselves against nanotech?"

Walter--or maybe Wesley--hovering on the other side of Kaffia, pointed urgently into the living room.

Alex translated. "They can talk...broadcast their conversation to the video monitor in there."

Both ghosts shook their heads.

"What then?"

"Alexander Shoaler?" A man's voice, clear and politely toned, called from the front room. "Kaffia Lang? Please come in. Sit down. I will explain everything."

Walter and Wesley ushered them into the living room, indicating the chairs in the center of the room. Alex and Kaffia walked warily in with them, scowling intensely, eyes darting around for someone who hadn't been there when they came in.

A balding man with fuzzy white eyebrows in a conservative gray suit stared out from the video panel across from the chairs. He swept one hand forward, indicating where they should sit.

"Straff?"

The man nodded, smiling thinly, but--given the circumstances--tolerant of the lack of "doctor" or even "mister" in front of his name, maybe even a little thankful that Alex didn't use any of the other names.

"Oh." Straff sat upright and smiled disarmingly, the absent-minded host at a party that's already under way. "Would either of you like something to drink?"

"Coffee?" Kaffia scooted forward toward the video panel.

"Decaf all right?"

She frowned. "Actually it's not. Pass."

Straff, Kaffia and the ghosts all turned to Alex, whose eyes were fixed to Straff's. "How do you know our names?" He felt their sense of waiting, glanced up at the ghosts, shrugged. "Um...Water?"

One of them nodded and whisked off to the kitchen.

"Wesley went through your packs while you looked around my house," said the video image of Straff in a matter of fact tone.

Kaffia pointed demandingly at the screen, made a circling gesture with her finger. "Is this prerecorded? Or are you broadcasting from somewhere?"

Straff looked impatient, let out a short breath. "I have a week to live, maybe less. And I need your help."

"Where are you?" Alex got in before reaching for the glass of water one of the ghosts offered him.

Straff's eyes drifted up, thinking. "That's part of the help you will provide. I'm going to guess the Rost Institute. To answer your question, Miss Lang. Neither. Parts of this are prerecorded. I don't have time to get into how this is done. I don't understand it all myself. This whole Personifex interface--of taking video, some scripting, event handling, adding intelligence--was created by a friend of mine. A story for another time and place. I am not really here. I'm probably not even able to speak right now. My captors are probably torturing me at this moment. Right now I need your help."

"John Andreden?" Alex took a sip of water, rolled it around his tongue, as if he'd be able to tell if Straff's ghosts had dropped poison in it. Tasted like...water.

Kaffia glanced over at him. She knew the name, of course, but never associated it with Straff. Andreden's work had landed her in a lot of trouble not long after she'd met Alex. She had...procured some of Andreden's research articles and a videoed lecture, and then nearly died for it. Alex helped her through the ordeal. Some of it still gave her nightmares. At the hollow tearing sound of duct tape pulled off the roll her body cramped up violently and she

had to fight to remain conscious. Just one more secret she had to keep. Afraid of duct tape.

Alex looked up from his glass of water at Straff, staring back at him, and then felt Kaffia's eyes. He swallowed and threw his thumb over his shoulder. "Andreden's in a picture with Straff and some others by the door."

Straff nodded, understanding. He waved away the sudden tension that sensors around the room picked up. "Another time. Another time." He cleared his throat. "To business. Some history you may or may not have already unburied."

Kaffia frowned at his apparent sense of irony.

"It has happened. Nanotechnology, that is." He wiped something from his eye. Alex leaned forward. A tear? Or just a flaw in the video session he didn't bother editing out?

"I have succeeded in doing what others have not, the construction of miniscule manipulators and computational machinery from the raw material around you, practical molecular tools out of the bulk."

Even with the technology hovering around the room and a decent understanding of Straff's work, they swept it aside angrily.

"On whose back?" Kaffia snapped.

"Over whose graves?" Alex added sharply, pointing angrily at the screen.

Straff went defensive, throwing his hands up. "I don't deny anything. I won't pretend I haven't done reprehensible things!"

"Reprehen--?" Kaffia started, her brain going into calculation mode. She hadn't gone entirely into mathland because she whispered, "Aristotle would have said that the visionaries, the thinkers, the scientists have to do it right. They can't just hitch their vision to the fastest team of horses."

"I don't need you to remind of the things I've done," said Straff half-heartedly, as if he'd had to use those words many times before. "But I have..." He groped for a word. "Recovered."

"Recovered!" Alex shouted, and left his mouth open, expecting more, but having to live with a few gasping noises.

Kaffia sat grinding her teeth, glaring at the screen.

Straff pointed at them. "Some of the best advice you'll get about staying out of trouble is from someone who's dug himself deep into some. Some of the best police officers were once minor criminals. They understand the criminal mind better than those school-taught cops."

Alex grumbled something about Straff watching too many movies.

"Take someone who used drugs in the past. Many end up dead, brain dead, deranged or dulled into subhumanity, doomed to spend the rest of their lives dependent on the State. A few out of every thousand of these manages to escape, free themselves from the trap and emerge...stronger."

Alex's scowl tightened. He shook his head, knowing where this was

going. "We're not talking about being hooked on OTCs! You can't compare--"

Kaffia mumbled off a bunch of numbers. "Three-million...sixty..."

"I know. I know! It's a shaky analogy. Let me finish."

Kaffia grabbed Alex's shoulder and used him as a lever to get closer to the screen than she already was. "Three million dead, Straff! A backhoe operator digging six-foot deep holes in your wake--graves, one every minute would--" She paused to calculate. "one-hundred-eighty-million. That's fifty-thousand hours of gravedigging, Straff! And at decent wages you'd empty every wallet in the country. Oh, wait a minute," she snapped sarcastically. "That's what you did!"

Alex picked it up where Kaffia left it off with her statement from Aristotle. "I think a better comparison--better than your druggy comparison, is the difference between two similar men. Both have everything they can ask for. They're intellectually brilliant, creative, but one of them's so driven to achieve the goals he's set for himself that he's blind to the long term evil and atrocities committed by those who help him reach them. The Purist's weren't your allies, Straff! They were murdering power hungry monsters!"

Straff took in a deep breath and shot him an intense look. "And I'm thinking of the difference between a man who has merely been told what is good and evil, and another who accepts evil, knows it, learns from his mistakes, and does everything in his power to redeem himself. His frame of reference, his state of mind, the experiences he can draw from will be radically different from the first man, told since childhood what's right and what's wrong, don't touch that, don't do this. He follows these sensible directions. He can analyze the evil and see that it's wrong. But he doesn't have quite the perspective of the one who has actually been there, been evil, done evil things."

Straff raised an eyebrow, and gave them both a clear shall-I-

continue? look. Alex frowned, waving him on. He didn't like it, but he wanted to know where Straff was going with this.

"Since I am the only one with this knowledge I have the privilege of keeping it to myself until it cannot be used against me or others. I have seen too many good things used for evil." He nodded to them, acknowledging their points. "I will not deliver this to those who will misuse it. I would rather see everything I have discovered die with me than see it in the hands of my enemies."

"I committed most of my life to finding a way to develop true nanotechnology. I saw what others did with my creations. They used me. I have devoted the rest of my life to developing it while being able to defend against any of its use for destructive purposes. I believe I am close, possibly two years away. But my plans have been interrupted. Since I am talking to you now, I have fallen into the wrong hands. In the advent of failure my servants would destroy all of my work down to the last element, dismantling every molecule and erasing every method of generating, manipulating and constructing molecular structures, every means of conveying the knowledge to do so, every means of passing on any of the knowledge."

Straff pointed at both of them. "That you are viewing this means that my servants, Walter and Wesley, believe that I have been captured. Alive. If I had suffered a natural death, or one attributable to my work, you would not be here now. I would have failed at my task and all of this would have been returned to Nature. This also means that there is a limited amount of time to save me and my work."

"How limited?" Kaffia cut in.

"A week, maybe less. Probably less. Depends what they do to me. They have volition-suppression drugs. They can jack right into my sensory system. Powerful methods they stole from military and academic labs five or six years ago. I'm sure they've improved them in that time." He pulled in a deep breath, struggling to make the most of a desperate situation. "I'll give you four days."

Alex and Kaffia exchanged glances.

"My time isn't yours to give," snapped Kaffia.

Straff went on as if he hadn't heard her. "Walter and Wesley, my most trusted companions, have selected you to carry out this task. I understand if you do not want to--no actually, I won't understand that."

"What task?" Said Alex and got a sneer from Kaffia.

"Will you help me escape from my captors?"

"No," said Kaffia firmly. "Absolutely not."

"No." Alex shook his head, and leaned forward to place his glass on the floor.

Straff sighed heavily. "I see." He took in a deep breath and released it slowly, puffing out his cheeks. He gave them an honest, openhanded gesture. "Look. I have nothing to lose. Unlike you, my place in history is set, and there is little chance for me to recover more than a few seconds of peace before my life is deservedly taken from me. Redemption is beyond me. It is beyond anyone's ability. Just as a thousand years will not erase the monster from Hitler. Only the most abysmal of fools would brush aside the millions of mass deaths and say, "You know, Adolf did paint some halfway decent Viennese landscapes."

Alex and Kaffia stared back at him, final and silent.

Straff cleared his throat, and dropped his head. "In a way your disagreement makes this easier." He waved his hand, shooin' them off. "You may go. Return to your lives if you can, one of you anyway. And I to what remains of mine. I will not try to convince you of your stake in this. The things my captors will make me build, the knowledge they will torture from me will enable them to destroy all of you in the end. I have no defense against them on my own. So, anything you do to help me will benefit you as well. But you have decided against it," he said bitterly, paused, and then added in a sarcastic tone, "Very wise decision. Very short term."

Alex's brows jerked together. "What do you mean one of you?"

But the screen went blank. All that remained were Walter and Wesley eerily reflected across the black video panel.

12

Straff's Trap

ALEX STARED AT THE SCREEN for a second. It was a mass of dark gray video artifacts frozen in place, not like the end of a recording but as if the vid had been paused. His head was halfway swiveled between the screen and Kaffia when a crushing weight landed on him, mashing him into the cushions.

"Walt--!" Alex shouted indignantly, not finishing because he didn't know which one had him in a vice-like grip. "Get off me!" His spine bent painfully, popping and spasming. One of the ghosts held him against the back of the chair, using far more force than was necessary.

The other shoved a syringe into Kaffia's arm, right through the neon green material. Kaffia didn't get a chance to fight or scream. Her body sagged in the cushions next to him, lifeless. Wesley-- pretty sure it's Wesley--opened his arms and loomed over her like a third-rate actor playing the mad scientist in some old movie. Even though he hadn't heard a peep out of them so far, he half expected to hear, "Bwah-ha-ha-ha-haaaa!"

Alex thought he shouted her name, but either the signal never got out of his head, the sound never came from his mouth, or he'd lost his hearing. He felt something hot and oozy course through his limbs, coating his throat, pushing into his brain. He blinked. Tears flooded his eyes, damming up against drooping lids and spilling down his cheeks.

Straff's face appeared on the screen, blurry and tear-distorted.

"You left me no choice, Alex Shoaler," Straff said slowly, almost with regret. Well, his ears worked, so something else prevented him from acting on his thoughts. Straff shook his head and lifted his eyes to Alex's. "You are younger than I expected, but Walter and Wesley matched you and Kaffia against the criteria I specified. Age was not one of them. They must have seen something about you that fit the rules. I am sorry to do this to you. Kaffia dies in four days, ninety-six hours, unless you help me."

Sorry! Alex gurgled something in his throat, not a protest. Every thought forming in his head died before it reached his brainstem. His arms hung limp, draped on the chair next to his body. His chin dug into his chest. Walter still held him immobile.

"I instructed Wesley to give her the coordinating components, something that will countdown the hours and then quickly and painlessly kill her. Kaffia picked up the killers when you passed through the doorway beneath the kitchen sink." Alex shook his head, not understanding. He remembered the flash of cold but couldn't connect that with the rest of what Straff said.

Straff paused and drew what appeared to be a deep, apologetic breath. "Rescue me and I'll give you her life back. I'll inject the devices that end the countdown. Fail and she will die."

Alex managed a weak shake of his head, but it conveyed nothing to Straff.

"Everything my enemies need to regain power is in my head, in my lab books and research papers. You will have to find me, and then figure out how to get me away from my captors without giving them my books and notes. Start with the Rost Institute. I am almost certain someone from Rost carried this out. The only help I can give you in turn is Walter. He will go with you and follow your direction as long you don't attempt to countermand mine." Straff looked away for a few seconds, scowling a little. "My sensors tell me that the operation commander in charge of my capture has already brought in forest clearing equipment. There are soldiers searching the forest above. There will be nothing but stumps for a kilometer when they're through. My house on the surface will be demolished. They are looking for you and your friend. Wesley will remain with Kaffia there in the underworld, in my below ground home. She will be safe...for the next four days. Now, go."

Alex woke, blinking repeatedly, unable to focus on anything. His brain felt like a wad of oozy sludge, like someone had scooped it out whole, pureed it along with a mixture of sawdust and over-ripe bananas, and then pumped it back in with a grease gun. He shook his head, scrunching up his nose. He couldn't keep a weird sweet smell out of his nostrils.

The bright morning sun came in through his windows. They faced east, toward the Atlantic. He felt his brow wrinkle slowly, and then thought in a very detached way, looks like it's about six-thirty. Sun's a few degrees along. School. Get up for school. Mom works hard so I can go to NHL. Won't be able to board in this condition. Feel...wobbly, Walter. Early start. Have to walk.

Admirable thoughts, all of them, he reflected sluggishly. Just can't get out of bed. He lifted his arms toward the ceiling, and squinted against one glaring piece of a thought. It stood out from the others. Who the hell's Walter?

The breath caught in his throat. A wave of heat ripped through his body. He shot upright. Everything, all of it dammed up by whatever Straff's ghostly servant had given him, flooded back into his head.

"NDIS," he gasped, getting his lungs working again. "Ninety-six hours!"

His head swung toward a scratching sound coming from his desk. Walter hovered there, with his writing journal open to the last page, and five words written in big perfect black letters:

A little under ninety hours.

Alex launched himself out of bed, staggered into his dresser, knees buckling. He clawed desperately at the drawer knobs, threw one hand out toward the top of his desk before knocking his chin on the back of the chair and hitting the floor with a thump.

He ignored more pen scratching from Walter, probably asking if he was well. Of course I'm not well! He pointed up at the ghostly form hovering on the other side of the desk, his thoughts running free with abusive language. A couple of words even made it mumbling to his lips, before he pulled himself together.

"Where's Kaffia?"

Walter bent over the notebook for a few seconds and then flipped the pages toward him.

She will remain in Dr. Straff's below-ground world, what he called, the underworld. Wesley will protect her, even with the soldiers clearing the forest above. She will be unharmed until the deadline. Do not attempt to rescue her before you rescue Dr. Straff.

He sat up, his face knotted up in anger. "You're going to stop me?"

Walter nodded back.

Alex's mother knocked softly. "You're up early."

She opened the door, looking around before spotting him on the floor. He bent forward, pretending to tie his shoes. He still had them on from the night before. He'd slept in everything he'd worn yesterday. With a little effort, he showed her a cheery smile.

"Computer's in my locker. Got to go...uh...get some work done before class." His eyes swung around the room, but Walter had vanished.

Elizabeth Shoaler gave him a stern stare through her thin purple-rimmed glasses, the look she used when she suspected him of lying. She was dressed for work, a flowery blouse, black jeans, and worn leather flats. She worked in the IT department of an insurance company outside Portsmouth, but did other things as well, ran a not very profitable notary business, regularly shopped for a few elderly friends who insisted on paying well for her time, and--although she'd never been asked to care for a child--had signed up as a temporary foster home. She put one hand on the doorframe, leaning forward, her dark eyes fixed on Alex. A few strands of short reddish-blond hair slid over her cheek. Alex's eyes went to her hand, with the slim gold wedding band. She'd always worn it. His dad had vanished at sea six months after he was born.

Alex let a few moments pass, acting as if he had all day and wanted to spend most of it sitting on the floor.

"Breakfast?"

He shook his head. "I'll get something there."

She closed the door. Alex, testing his strength, threw one hand across his bed, curled the other around his desk chair, and hoisted himself to his feet. He was a little shaky. The sweet smell was fading, but whatever Straff's ghosts had given him still hadn't quite worn off.

"Why?" He swung his gaze around the room, looking for Walter. "Why don't you get Straff yourself? Why bring me and Kaffia into this?"

He turned toward his writing journal, levitating off his desk, lifted by invisible hands. Walter turned up the opacity a bit and emerged in his semi-transparent grayish form. He picked up the pen.

Dr. Straff set the protocols in the event of his capture. There is no rule that prevents me from stepping beyond them, but Dr. Straff insisted that we seek a certain kind of help.

"Straff told you to kidnap Kaffia and me and force us to rescue him?" His voice was sharp with suspicion.

Dr. Straff's rescue will almost certainly require advanced communication skills. More than I can provide. I can assume it will require making some sort of air-tight deal with his captors. I am undoubtedly not as capable as you at getting into the prison where Straff is being held and then getting out.

Alex's brows jumped for a second. Was that sarcasm? He frowned. "Flattered. Although the last time I checked I was unable to walk through doors."

Permit me to walk through them for you when the need arises.

Alex, still holding his desk chair, threw Walter a questioning look. He was about to ask him why he or Straff chose him to handle to prison break side of the operation, when Kaffia seemed so much more capable. He understood how to drive, steer with the wheel, one pedal to go, another to stop. She could actually do it, and she had her own car. She'd actually broken into Rost Institute the year before. Not physically there, all of it done through the Net, of course, but it was more than Alex had to start with.

Alex clamped his mouth shut, stopping himself from saying something. It didn't matter how much anger he managed to pack into his voice, "Why me?" sounded so damn whiny. And time was running on Kaffia's life. Ninety hours left. Alex took a deep breath, felt a little light-headed, and waved his arms to steady himself.

"Forget it. Let's go. I need to get to school, find directions to Rost, and get Joe's keys. It's in New York, upstate, right? What's it look like? Where do we go when we get there?"

Walter nodded back enthusiastically. He leaned over a clear

portion of Alex's desk. Small clouds of brown spread over the wood like spilled coffee. It thickened like gravy and foamed up an inch off the desk surface. The curdling brown softened into green, like rounded grass covered hills. Alex leaned closer. He could see grass, millions of blades, most of it cut evenly, but some shooting up in ragged clumps. Rectangular foundations, six of them, angled like concrete markers on a clock face, from twelve to five. Each one rose over the hills into gray blocky office buildings. The flat metal roofs were different colors, green, blue, orange, yellow, purple, and red.

Mouth open a little, Alex stared at the perfect model of... "Rost Institute?"

Walter nodded, held up a finger and flipped Alex's journal around. Words appeared across the top, while a neatly plotted map solidified out of the white background. Alex leaned toward the page. He followed 95 down into Mass. to 495, and then out 90. A few seconds passed before he glanced up at the questions forming at the top of the page.

Who is Joe? What keys?

"Joe's what I call Kaffia. She keeps a set to her Honda in my locker at NHL." He shrugged at Walter like it was obvious. "If we're going to New York, we're going to need a car."

Walter paused for a second as if thinking about this, then nodded, and held his hand out toward Alex's bedroom door in a lead-the-way gesture. He bent over the desk and scooped up the model of Rost, absorbing it into his body. He passed off the journal with the

other hand, and Alex stuffed it in his backpack on the way out of the house.

13

The Perils of Ubiquitous Computing

I LOST TRACK of how many times I'd seen NDIS. Six, maybe seven. I was still working on the assignment she'd given me. Finding and searching seemed to grow farther apart the deeper I looked into it. My mother knocked on the door at 11:30 that night.

"Alex?" She sounded concerned. I'd been holed up in my room all evening. "What are you working on?"

I mumbled something--nothing definite, just an acknowledgment--as I chewed my pencil.

Mom opened the door and stuck her head in with a questioning-motherly-it's-a-school-night glare.

"Looking for something." I shook my head. "In the middle of something...something for school."

Her look softened but she still hit me with a level stare for twenty seconds, said, "Don't stay up too late," and closed the door. Translation: I'm not staying up any longer, and I'm not going to tell you to get to sleep again, so you can pretty much stay awake all night without being bothered.

Which worked out really well because twenty minutes later I could increment the number of times I've seen NDIS by one. And I didn't have to catch any girls-coming-to-the-house-at-all-hours reactionary shouting from mom--not that any girls ever came to the house at any time, day or night. But isn't that just like a parent? They only see what could potentially be the worst, and jump right to that. Then go on a rant as if the worst case is what you're

actually trying reach.

Kaffia tapped on my bedroom window and scared me. I jumped so high I banged my knees on the underside of the desk. There she was, grinning at me through the window from my backyard and happily waving a wad of paper over her head.

I slid out from my desk and ran around to the back door. Mom was probably asleep, but I unlocked the door and pulled it open as quietly as I could.

"Hey," she said in a high excited whisper and handed me a little gray memCard and the stack of paper she'd been waving.

I looked down at them for a second but nothing registered. I couldn't read anything in the dark. I caught her eye, her grin, her controlled excitement.

"What is it?"

She beckoned me outside, glancing around furtively. A little paranoia seeped into her exhilaration. She nodded at me to close the door behind me.

I gave her a sarcastic frown. "Yeah, it's a real problem. I always have SAC Board operatives lurking in my backyard."

Her face changed to a cold serious scowl. She put a finger to her lips.

I shrugged. "What?"

She nodded to the card and papers in my hand. "I brought you a little present. A birthday gift from me, a few days late."

I pocketed the card and squinted at the pages, holding them up to my face. I could just make out the title text in the dark. "A new look at consciousness in artificial--"

"Shhhh!" She gave me another venomous glare. "Take'em inside and read them later."

"But what are they?"

Kaffia ducked her head a little lower, glanced around again, and whispered in a voice so quietly that I had to strain to hear her, and even resorted to reading her lips.

"Journal articles. Pre-press stuff by John Andreden, the California robotics guy. There's a video of him on the card, some kind of private lecture."

I nodded. I knew who Andreden was--and not just from the headlines about his battles with the dictator, Zoener.

She went on breathlessly, a little louder, apparently so excited that she wasn't listening to the overly-cautious part of her mind.

"He's onto something totally next-gen, some kind of advanced artificial thinking. He says he's already built some of this into his bots, DMM--Deepwater Mission Management something's. His new autonomous line is so smart that one of them can run an entire

ocean cabling operation by itself. You want to get real data on a pod of killer whales? Births, deaths, hunting patterns, migration, lifespan--real metrics? His bots can do it. One of them can follow the pod at a discreet distance and record everything they do. Amazing amazing stuff." She jutted her chin at the papers. "Read'em. The video's even deeper."

I was nodding halfway through her speech, catching her excitement, but she wouldn't let me get a word in.

"Here's what I got out of his vid. Andreden's trying to establish a new way of looking at the way we humans think, act, and are aware of everything--outside and inside. His approach involves some evolutionary step that radically changed a very intelligent ape into something human."

"I--"

I was still nodding like an idiot.

"Then Andreden argues that we're very close to creating a machine that has all the abilities of higher animals, like dogs, dolphins and chimpanzees, an instinct-based autonomy. A machine that's very receptive, very mobile, and intelligent. Now, if you follow Andreden's ideas about human evolution. You start by taking everything that makes up all the functioning of consciousness--that's the ability to be aware. You build that into this intelligent machine. Then you duplicate it, make a second one, and then arrange it all so that it works on the first consciousness like the first one does the outside world. With this order you might end up with a machine that has something with humanlike abilities."

I understood about half of that, but I was pointing and gesturing at every point. "I know. I know. Andreden's like--can't think of a better term--my hero. I'd give anything to meet him, ask him how he does this kind of thing."

Her conspiratorial grin was back. "I know."

"I..." I stopped.

She liked the surprise she saw in my face because she laughed a little.

"How do you know?"

"How do you think?"

She shrugged innocently. I started to shake my head and got out the first part of a guess. She cut me off, nodding matter-of-factly.

"I went through your backpack last Friday while you were in phys-ed."

I blinked in surprise, still shaking my head. "My...my locker?"

Kaffia rolled her eyes and pinched her lips. I was obviously naïve.

"18. 7. 38."

"Oh," I said weakly.

She nodded consolingly. "Hacked the admin accounts middle of last year. Some good stuff, the locker combo lists..." She smirked at the lack of security. "...which haven't changed." She kept nodding as if ticking off more stuff in her head, and this one was all I needed to know about.

I could guess that that's how she got my birth date. But to go from school records to rifling through my locker, my backpack. She was bold. She was...My heart started thudding rapidly. "You didn't--"

"Go through that black notebook that's all rubber-banded up?"

My brows climbed somewhere into the middle of my forehead. "My journal?"

"Right." She nodded, then shook her head. "No. Didn't go through it. It looked like something you didn't want someone to go through, so I left it alone. My goal was to get an idea of the kinds of things you would like for your birthday."

"Oh."

She went on as if she didn't realize how close a call that had been. "The Mobile Robots book, a classic, the dozen issues of Sea Technology gave me a clue." She shrugged. "Also, the motors, propellers, soldering iron and sections of PVC pipe. All kind of a give-away."

"So...uh...How do you know about Andreden?"

She froze. "I...didn't at first. I found him accidentally. Then made the connection between him and some of the articles in the mags in your backpack." She started slowly, but there was a promise of a lot more in her dark eyes.

"I was going to get you subscriptions to more robotics mags, but I'm pretty sure what I got you's even better."

I could see her working on my question, concepts being shuffled around, brought into focus, discarded, others she approved and connected to a growing structure of thought. Then she let me have it.

"Printers. Networked printers are very powerful devices." She paused for this to sink in, but it didn't go very far before she continued.

"As powerful as many desktop computers. People typically don't think of printers as part of the whole system--or as computing devices in their own right. They have a lot of mem and CPU power. If you understand them, and the language that drives them, they can become..." She paused, padding around for exactly the right phrase. "...very friendly."

"To you?"

She nodded. "Think about it. A company, any large organization, government agency--" She choked a little, involuntarily. "...or institute all have thousands of workstations, desktop machines and various other server boxes performing particular work. And they're all connected together, networked. All the researchers, soldiers, scientists, publishers, administrators, everyone using these computers, create documents in a hundred different formats. It's all data. In the end. It's all data."

She paused for effect. "And do you know what these people do with much of that data?"

She didn't wait for me to answer. "Print it out."

Another pause, not really for effect, but to pick up her earlier thread of thought. "Now printers, it's funny you see. All the workstations and desktop machines are locked down tight. Usually the whole net is. But if I can get to the printers I have...if not pretty much everything, at least a lot. And printers are usually the least secure nodes on any network."

"And everyone has this data they want to print."

"Right. And here I am camped out in the process space with every byte going by ready to be picked up and looked at. I can list every print job, I can see every document title. I can even grab the data stream, parse it, and look for interesting words and phrases."

I started breathing harder. "Where?"

"For those?" She indicated the papers in my hand, and I nodded back. "I got those off a research office printer at the Rost Institute."

My stomach snarled into a tight knot. I gulped air spastically, shaking my head at her.

"It gets worse." She wasn't boasting.

I mouthed the word, "How?"

"I've been on the Rost net before but never this high up. I think they stole Andreden's articles directly from his company--Andreden wasn't publishing these. They're a little too...out there for peer review. The printer where I captured them is part of the Blue group, which belongs to the highest levels at Rost, including the Chairman, Richard Greenleigh. I got the video of Andreden's lecture off his personal machine."

I locked my knees so I'd remain standing, and leaned back against the door. My hands shook. The papers rattled between my fingers.

"Dangerous," I managed to whisper.

She nodded gravely. "Why do you think I came over now? I wasn't going to hand them to you in broad daylight in the middle of the NHL quad."

"They...they...kill people there. They torture, maim, poison. I read where they experimented on unwilling people, draining the blood from their bodies--"

"Exsanguinating," whispered Kaffia. "It's called."

I shivered at the word, that the process had a name. "...freezing them, gassing them with H₂S to induce a hibernation state. They came out with half their brain gone, serious nervous system damage. Greenleigh's evil. The whole thing. Rost, and everything they do is..."

I found myself flinching at every breeze and ducking my head. This was far far worse than toying with a bank's ATM. At least a bank's a legitimate business. Rost is like Frankenstein's lab, Mengele's

torture chamber, a man-eating troll's cave, and insane asylum all bundled up in one government funded institute. And Greenleigh! It may be hard to imagine, but he's worse than that monster, Dr. Straff ever was.

Kaffia nodded, giving me a serious studying look. "You okay with this?"

"What if they trace you back to your house? They're killers. Raw, subhuman killers."

"Hey, it's me, Alex. I'm careful. Always. I do this all the time. I've been in tighter places than Rost. You're the only one I've told this to." With some effort she tried to brighten up the mood a hair. "If they hunt me down, I'll know who to blame, right?"

She laughed at my sudden turn for the worse. My stomach lurched.

"Tell you what." She kept her tone light. "If this goes bad. Not expecting it to. But if it does, and when it all blows over, I'll give you a present. Remember what you wanted to know the first time we met? I'll tell you what my name stands for."

If she was trying to distract me from the possibility of painful torture and death at the hands of some Rost Institute med-tech, she'd done it. I frowned, nodding. I didn't want to be, but I was curious.

"So, no one knows?"

"I don't tell just anyone what NDIS stands for."

She gave me a curt nod, like a handshake on the deal she'd just made, and then went on, using the same I'm really-trying-not-to-be-so-serious tone.

"The world's a much different place than it was ten years ago. Everything's connected. I mean people have been saying everything's connected for years, but now it really is. All part of the Nets and grids, the things that hold it all together."

Her expression softened. Her eyes widened a little, and took on a faraway look.

"What do you see?" I whispered.

She blinked and focused on me. "When I'm doing my thing? It's all data and IP addresses. Fundamentally. That's all there really is. Data in every format imaginable, and unique addresses that define every node on the Net. And there are more and more devices being hooked up all the time, Coke machines, toasters, hot tubs, heating and A/C for homes and offices."

I straightened up, and re-gripped the wad of papers.

Kaffia paused, smiled, and whispered, "Happy Birthday, Alex."

A rushing noise rose in my mind, higher, dashing against a barricade of protests, against the what-the-hell's, and even a few why-me's. Nothing came from my mouth.

I pressed my back harder against the door and automatically grabbed the knob. Kaffia turned as she walked away.

"You know what I see? I see the headlines." She stretched her hands across the sky, laughing lightly. "Law enforcement baffled by devastating toaster virus. Three million Americans come home to find that, while at work, their toasters have each burned two hundred pieces of bread and spit them all over the counter and floor! What sinister mastermind could be behind this?"

"NDIS, that's who," I said grimly, convinced, but not happy about it.

"Powerful systems built into networked devices. And they're everywhere. They're in everything, and they're all netted together. Ubiquitous computing. How can you not love that?"

She disappeared over my back fence.

14

North Hampton Lyceum

IN FIFTEEN MINUTES Alex was kicking his board up Ocean with Walter following unobtrusively. The cool wind off the water sobered him up. He was skating well long before he crossed at Sea Road and headed up Atlantic Ave. He passed Kaffia's house, slowing to a stroll at her driveway to look up at the windows. He could tell just by looking that she wasn't home.

The fleeting thought that it would be nice if this was one of those dreams you could wake from, that made you shiver in relief and laugh at later, surfaced for a moment. He was certain it wasn't, certain even before Walter tapped him on the shoulder impatiently and gave him a what-are-we-stopping-here-for? look.

He noted that Kaffia's car was still there. Hoping the tank was full, he kicked off and didn't look back. He chewed his lip, ignoring the passing cars, trying to put some picture together of what Kaffia might be doing at this moment. He stopped where Mill crossed Atlantic, pausing at the corner for a few minutes. The

Lyceum was that way, but the lure of Straff's house tugged at him.

He leaned out, looking further up Atlantic. The skatepark was just beyond a bend in the road, with the house deep in the woods behind that. A frown started on his face and then vanished. He heard loud crackling bone-snapping noises that confused him for a second, and then he heard the high growl of chainsaws. He turned away quickly at an approaching military vehicle, a dull black truck with the helmets of soldiers seated in the back sticking up over the roofline.

Alex flipped his board into his hand and stepped off the asphalt. He climbed through a bristling grove of trees and turned to peer through the thick cluster of stems and leaves.

The truck passed slowly with two men in gray camo in the front, arms lying along the open window frames, alert eyes scanning the roadside ahead and behind. They were looking for someone.

"You with me, Walter?" Alex whispered, and felt a quick reassuring tap on his shoulder.

He nodded and walked the rest of the way up Mill, staying as far off the road as possible.

Two big posts of brick marked the entrance to North Hampton Lyceum. The drive wound up a hill, lined with beech trees, to the parking lot and the rotary in front of the admin offices. Two rows of big brick buildings with ornamental tracings of concrete, lots of windows and broad granite front steps, rose up on both sides of a flat grassy quad.

Cars and trucks rumbled by him as he walked up the drive and joined a cluster of students that headed between the admin and Physical Sciences buildings.

He had just set foot on the sidewalk that ran around the quad when he stopped, ducking his head and swerving through the crowd to get between him and two men in gray camo crossing the grass, guns swinging up and back under their arms. He tilted his head to the side, standing on his tiptoes to watch them. They stopped a couple passing students and questioned them. One of them held up two white cards to a sulking greasy haired prep. Alex frowned. What was he showing that guy, pictures of me and Kaffia? That had to be it.

The prep looked closely at the pics, pointed at one and threw his fist over his shoulder with his thumb jerking toward the far end of the campus, toward the phys-ed buildings.

Alex's lips curled down. Maybe they weren't looking for him. Neither he nor Kaffia had a class in that direction for over five hours. Maybe that kid knew NDIS and was just steering the soldier wrong. Alex was hoping for the first but it turned out to be the last.

"Alexander Shoaler," sneered a familiar voice behind him.

Alex spun around, heart racing. Randal Revard blocked the exit from the admin building, his right arm in a grayish flaking cast held up by a sling made from an old scarf. (Was that Walter's doing?) Randal nodded to a big blocky trooper in gray camouflage, jutting his chin toward the picture.

"That's him. Certain of it."

"When did you see Mr. Shoaler last?" The trooper didn't wait for Randal's answer and tilted his face into the comm gear at his shoulder. "Name's Shoaler, Alexander. Correct. Southeast door to administration. Sir. Skatepark. Right." The trooper's voice was cold and crisp, with a slight lilt that drove up the pitch on the word at the end of each sentence, turning each one into something on its way to a question.

His whole body shaking, Alex stepped into the crowd. He didn't need to wait for Randal's answer either, although there was a curious little seed in his thoughts that wanted to know if Randal was going to mention the ghosts. He swept it away.

His heart thumped so loudly in his ears he had trouble hearing the noise around him. He'd have to make his way halfway around the quad to get to his locker. He stuttered the word "keys" a few times. He kept his head low, tucking his board up against his chest. He just turned the next corner, between admins and Humanities, when he felt Walter's tapping finger on his right shoulder.

Alex looked up, right at three girls stopped by another trooper. He knew them, all preps, their second year at NHL, one--he thought her name was Cassandra--was in his calc class, really smart, almost scarily when it came to math. She had long messy brown hair that always hung in her face. All three of them were bent forward to give the pics a good look, but Cassandra straightened up and looked around.

Alex froze, regripping his board. She had hard dark eyes, nearly black, and they stopped and landed on him like a ton of midnight. He staggered back a little. His mouth sagged open. He tried to shake his head but he couldn't move. Any second now the soldier in gray with some kind of lumpy black automatic weapon slung under his arm, would turn toward him.

Alex stared, horrified, into Cassandra's eyes. Her face remained completely still, showing nothing. She was telling him something with that look, but he just couldn't decipher it. Alex let his shoulders drop, defeated. Her eyes held his a moment longer, and then moved past him, sweeping the rest of the quad. Cassandra looked up at the trooper, shrugged a little, and shook her head. Her two friends followed her lead.

His mouth still gaping, Alex forced his feet forward. Get to my locker and then get the hell out of here. He ducked in between gaps

in the crowd of chatting students, trailing some of them to make it appear that he was part of their group.

Alex scooted sideways between a loud group of girls and edged up next to his locker. He set down his pack, leaned his skateboard up against the next locker, and with a furtive glance to either side of him, spun the lock dial.

He had it half toward the first number in the sequence when someone mashed his face against the warm metal of the locker door. A big fist curled around his shoulder, squeezed like a vise, and spun him around.

"This way, Mr. Shoaler." Alex looked up into the trooper's sharp blue eyes and tensed like a spring ready to expand. The man shook his head sadly, his finger tapping the trigger guard. "C'mon. Not in front of your classmates. Don't make me spill your blood, brains, whatever else you got in there all over the sidewalk."

Kaffia woke up to find herself in far more dire circumstances. She stalked around Straff's underground cottage, glaring at Wesley. She slammed the kitchen cabinets, all of them.

"What do you mean, Straff doesn't have any real coffee? Nothing with caffeine? SPEAK! A prisoner? I can't leave. I'm a prisoner here. WITHOUT COFFEE! That's what you're telling me? Is that what you're telling me!"

Wesley shook his head diffidently to several of her questions, nodding to others. She waved a fist at him, and paced the length of the counter like a restless tiger in a cage, huffing and snarling. She pulled open the cabinet in front of her and slammed it again because it felt good.

She circled the kitchen, snapping little comments under her breath. "Doctor Death yapping about the effects of caffeine! Kind of like a pesticide company rep going on a save the cockroaches campaign."

She froze, glaring at Wesley. "Aren't you like this nanotech creature? Can't you manipulate some carbons and hydrogens and get me some caffeine?"

She waved him away before he could answer. "Get out of my sight. You're no good to me!"

And then followed him as he drifted off. He wasn't going to get away that easily. She stalked him through the dining room, her eyes roaming over a few pictures of Straff on the walls.

"Isn't that ironic!" She snapped at no one. "Doctor Death thinks a little caffeine's bad for you!" She whirled on Wesley. "Typical! You know, Hitler was a vegetarian?"

Wesley shook his head.

"Yup. Thought all the members of his uber-idiot master race in his goose-stepping, Jew-killing future were going to..." She wrinkled her nose and said in a contemptuously elitist nasal, "Eschew meat. Yeah, he goes out and orders innocent people slaughtered, bullets ripping through mothers with their children in their arms, corpses of men fed into ovens or stripped and piled by the thousands into rotting heaps! But--HEAVEN FORBID!--he should have a damn hamburger!"

15

Binary Communication

ALEX'S FINGERS CLUTCHED at the rough material of the seat, his eyes darting between the trooper in the passenger seat in front of him and the back of the driver's head. Trees and houses blurred into dark green smears across the windows. He bounced around the seat and tightened his grip against heavy centrifugal forces when the truck took the curves along Atlantic faster than they should've been taken.

The trooper in front of him watched him over the back of his seat. He sat half twisted around, one big gloved hand gripping the headrest, the other holding a thick black handgun aimed at Alex.

"Taking it slow," the driver warned them, took his foot off the pedal and braked them down from somewhere around ninety to a crawl of fifteen or twenty miles per hour.

The trooper with the gun grinned at Alex. His eyes flicked out the window as they swerved into the middle of the road between trucks parked on either side of them.

Alex pushed himself up on the backseat to stare out the window. It looked like...Project Eradicate Straff. Trucks lined both sides of

Atlantic Ave., half of them military vehicles, the other half flatbed trucks that had been used to bring in tree-clearing and earth-moving equipment. A mound of dirt and tree stumps twenty feet high rose up from the skatepark. The concrete basin had been filled in. There were even two big black vans pulled into the dirt track that used to lead through the haunted forest. The locked gate was gone. There were no markings on the vans, or windows, but what they were for was easy to see by the nearby clusters of guys in bio-suits, masks up, drinking coffee and strategizing.

Craning his neck to look out the back window, Alex tried unsuccessfully to determine where Straff's above-ground house had been--where Kaffia was. There was too much motion to make anything out. Big yellow vehicles crisscrossed what used to be a forest. The air was full of black smoke and clouds of dirt.

When he sank back into the seat he noticed the driver glance at him in the rearview, while the trooper on the passenger side grinned again, as if he could read Alex's mind and knew what he was actually looking for amid the destruction.

Alex's lips shuddered a little. He'd just given something away, that he'd been there at the skatepark the night before, and they could see it in his reaction. He clenched his teeth, trying to get his thoughts under control.

"Uh...what's going on there?" He tried to pack as much incredulity into his voice as possible, and threw his thumb over his shoulder.

The two in the front seat looked at each other. The driver nodded back, but Alex couldn't interpret it. It could have been anything, "Hey, the kid speaks English" or "Maybe we won't have to torture him after all."

Hearing his own voice lifted away some of the fear that gripped him.

"Where're you taking me?" He tried to sound curious but a rough edge crept in and made him sound scared and angry.

The trooper watching him, released the headrest and snapped back the top of his gun, chambering a round. He wasn't grinning anymore. His lips curled into a disgusted sneer. His eyes, a murky brown, bored into Alex, daring him to make another sound, or another move.

Alex couldn't pull his eyes off the gun for more than a few seconds. The drive by Straff's house was planned, and he'd fallen into the trap. It yawned open right in front of him and he'd walked right into it. Now they knew he was involved. No talking his way out. No acting stupid and confused, hoping they would release him because it was obvious he wasn't involved. That chance was gone.

He jerked forward in the seat as the truck stopped hard. His door flew open. His head was half swiveled toward the door when someone raked a rough black bag over his face. Strong hands tied a cord around his neck, fixing the bag in place. The same hands grabbed him by his shirt and dragged him out of the truck.

A higher-pitched engine roar swept over the heavier rumble from the truck. A snapshot of the last light to hit the back of his eyes flashed in front of him in the dark, a huge aircraft that looked like a squatting bug, low to the ground but wide and bristling with antennas and gun barrels.

Someone dug their fingers under his arms while another snapped his ankles together and lifted him into the air. He jumped and shook in rhythm as they ran with him toward the louder engines.

For half a second he was in freefall. His captors threw him into the air. He slammed against the floor of the gunship and a heavy rolling door closed with a thump behind him.

The engines roared. His stomach lurched. He was in the air, going straight up. The direction changed and he rolled back against the hard metal legs of a bench.

Alex curled into a lump on the floor, his stomach aching. His breath came out in short gasps. Kaffia's going to die and it's my fault. He pictured her on the floor in Straff's underground house, coffee spilled, a smashed mug. Her dark eyes stared blindly at the ceiling, her face peaceful but lonely, and Kaffia wasn't in there anymore.

"No!"

He lunged forward, got to his knees, and hung there trying to tip the balance forward against the aircraft's acceleration.

"Sit down!"

A trooper kicked him in the shoulder. Alex's head slammed against a metal bench leg, and he lay there dazed. He tasted blood in his mouth.

Walter! His neck snapped back. He rolled onto his stomach and pressed his hands against the hard plastic floor of the gunship cabin.

"Keep it still or I'll strap you to the seat," growled the trooper. He'd probably yelled that, but his voice sounded thin coming through the engine noise. It was still menacing, like the serrated edge of a kitchen knife. Sure, you'd normally slice up onions with it, but no law prevented psychos from using it on you.

Alex nodded his head. He wasn't sure if that was clear through the black bag. He lay as still as he could, breathing in the dark.

"Walter?" He whispered, and then a little louder, "Walter?"

Maybe the bot/ghost didn't make it aboard. Maybe he never made it into the truck. Being invisible, Alex had completely forgotten about Walter. That, and he'd been dragged to the truck scared witless. He waited a few seconds and then a soft tap on his shoulder made him jump.

"Walter?"

Another tap.

He nodded. Questions started piling up in his head, and he needed answers. "One tap for yes. Two for no. okay?"

Tap.

He let out another long breath. Even if Walter could overpower the crew it wouldn't be very wise. No license. I can barely drive a car. There's no chance of dropping into the pilot's seat and taking over this thing. Firing those guns might be kind of fun...at the right target.

"Think..." He shuffled around the questions. He pulled in a deep breath and let it out slowly. "These are the same guys who took Straff?"

A tap from Walter.

"So we're...most likely going to the same place they took him?"

Another tap.

He didn't want to ask, but it kept prodding at his thoughts. "H-- how long...for Kaffia? Wait. Not a yes or no." He ground his teeth and pushed the question aside. "Never mind."

He tried to get his breathing under control. Lots of little fears coalesced into big ones.

"Will you stay with me? You didn't have trouble keeping up when they got me?" His fingers trembled. His stomach cramped up. Slow down, he thought. Two questions at once.

One tap, a three second pause, and another.

He lay on the rumbling floor of a gunship filled with killers, pondering that. Not the answers to the questions. He got the double yes's.

"When this's all over, Walter, we're going to sit down, you and me, and you're going to explain how you knew how to do that. I want to know how this whole Personifex thing really works. I've read a paper or two, seen Andreden give a lecture on it...but I still don't get it."

One tap.

He nodded slightly. Good. Set a far goal. Move toward it. Keep your mind focused on it. The nearness of horrible things won't seem so bad with your eyes on the horizon.

"Wait a minute," he whispered skeptically. "Was that a cheerleading, gotta keep my hopes up kind of yes?"

Two taps.

He let out another breath. "That's...encouraging."

Alex let a few minutes pass. He rolled back, pulling his shoulder up to get more comfortable, but, not wanting to get kicked again, he kept his movement to a minimum. He'd set his voice to a loud whisper, and didn't think anyone but a nanotechnological self-organizing billion node...thing would be able to hear him over the grumbling roar of the engines. Hope not, anyway.

He rolled his head back a little. His face still hurt where the trooper at NHL had shoved it into his metal locker door.

"Why didn't you stop them when they caught me at school?"

Before he could recall his second non-yes-no question, Walter started tapping his shoulder. A couple short ones followed by more of a press then a tap, a couple some more shorts, then some longs.

"Morse," whispered Alex disappointed. "Don't know Morse code." Again he wondered why Straff or Walter--or whatever selection rules had been used--had concluded that he was the right one to send after Straff...and Kaffia was the one to die. Kaffia probably knew Morse code. She'd probably have this gunship under her command by now.

Walter stopped tapping. Alex took another get-it-under-control

deep breath. A little under four days and Kaffia's dead.

"Definitely going to have that talk." He chewed his lip nervously.
"When this is all done."

16

Personifex

THERE WAS NO WAY I could sleep now.

I skimmed the docs Kaffia stole off the Rost printers, but once I got past the abstract and introduction, and into them, I didn't understand a lot of it. These were unpublished technical papers by Andreden with some of his colleagues, probably stolen from him years ago, during the SAC Board raids on his company, Knowledgenix. I wondered if Andreden even had copies.

Two of the articles were incomplete, and weren't even in text form, but scanned images of the originals with torn pages and what looked like bloodstains. These were preliminaries, drafts Andreden had sent out to his colleagues in a sort of internal review to see if they were ready for the outside world. The fact that Rost didn't have the originals was interesting. It could be that Andreden destroyed his equipment and storage arrays as the SAC Board closed in, so that the work that he and Allievi had done wouldn't fall into the wrong hands.

Everyone knows the Subversive Activities Control Board and Rost were always tight, although it's never been clear which one controlled the other--probably fuzzy even among themselves.

My skin went cold, reading the titles of the articles, bold lines like, A New Look at Consciousness in Artificial Living Systems, and How to Create a New Order of Being--not to mention the tantalizing title, Artificial Teleology.

If someone at Rost found out what Kaffia had done, they'd kill

her. Hurting, cutting the human out of people, and killing. That's what they did there at Rost. Well, first they'd want proof that she hadn't made any copies of the things she'd taken from them, then they'd kill her--so there's probably some torture involved.

That's why she'd given them to me, maybe. I couldn't stop chewing the inside of my mouth, a nervous habit. They wouldn't trace her to me would they?

This was dangerous information--but exciting at the same time. It surged around my insides, a tight expanding mix of adrenalin and barbed wire. I read the tops of a few paragraphs, the first few sentences and shuddering with a mix of panic and exhilaration. Who wouldn't shake while reading, "This is an introductory look at a method for developing an artificial organism with humanlike abilities (perception, self-awareness, volition and conceptualization)" and then go on to find out the author's not dreaming or making this up?

The video on the memCard simultaneously scared and energized me more. Here he was, in motion, John Andreden, pacing around a small stage in a window on my notebook. I couldn't look away. He had dark hair, brown but almost black, cut short and spiky on the top. I'd seen recent pics of him in the sea tech trade journals, and he really hadn't changed in the last five years, maybe a few gray strands in his hair, deeper lines around his eyes. Same hollow cheeks and suntanned skin. He wore a slight, comfortable smile, but it didn't hide the tension in his eyes.

Here's the short version:

Andreden speculates that humans have evolved into what we are today through a significant mutation, a change that turned humans into reasoning, self-aware animals. He says mammals--and all higher animals--are conscious, that they can look out at the world, see it, hear it, taste it, but they have no real control over their actions. They're driven purely by instinct. They are aware, but unlike humans, they aren't aware that they're aware. Having a single consciousness gets them this far. Humans, Andreden says, have two consciousnesses, one just like other animals, and a second

that's aware of the first one like the first is aware of the outside. Then he says he's reached the level where he can create an artificial intelligence (artificial consciousness) that has all the capabilities of the higher animals. All he has to do from here to make something humanlike is stick another consciousness on top of the first. Got it?

Here's the long version:

(Skip on if you like, unless you have a dictionary and enjoy chewing on long gristly words like chemoreceptor and epiphenomenonism).

Andreden stepped away from a huge whiteboard. "Good evening. Most of you know me. My name's John Andreden. I founded Knowledgenix. I love robotics, the ocean, especially the deep ocean."

Andreden's eyes swept the room of faces. His smile drifted away. His voice went cold.

"Thank you for coming tonight. I know it's becoming difficult to attend these meetings, and against the advice of supporters and friends--" Andreden shot a man waiting on the edge of the stage a sympathetic look "--I'll tell you that you're in danger in any room you share with me. I'm telling you this simply as an offer of appreciation. You must know the danger already."

The room was completely still. Nothing but the mics picking up the hum of the lights. Andreden sucked in a deep breath and released it. I leaned closer to the screen. This was recorded before the restoration, when the SAC Board still had freely roaming deathsquads that hunted down subversives like Andreden. Legit police couldn't do anything to stop them. He was doing this secretly, while he ran Knowledgenix. SAC commandos eventually caught him, killed some of his friends and colleagues. Even shot him a few times.

"Okay. To business. Topic tonight is artificial consciousness. It'll be a bit of a contrast, the myths of machine intelligence on one side, on the other, some of the latest advances me and my team have made with the Personifex interface. There's time at the end for questions and I'll be hanging around later for details and off-topic stuff, but go ahead and interrupt if something I'm saying isn't clear."

He took a short sip of water. I turned up the volume.

"In the early 1980's, a prominent philosopher spoke about the importance of--what was then--the beginning of the computer revolution. He made some profound and very interesting observations that seemed out of place with the extreme optimism of the day. He said about the computer: 'If you're talking about accessing information a billion times faster than any prior method, you're talking about a new phenomenon, but not an existentially new phenomenon. Not some new order of being.' Several years later the term 'artificial life' was coined. The implications of so-called artificial intelligence and science fiction had bewitched us for so long that the words 'not some new order of being' appeared incomprehensible. We were wandering around in a state of digital ecstasy, impatiently waiting for machine intelligence, humanlike cognition in silicon, walking, talking mechanical beings. Of course, none of this materialized. Over the last three or four decades we've seen astounding achievements in specific applications: neural networks, genetic algorithms and autonomous robotics, but almost nothing toward creating a true intelligent machine."

Andreden waved off some skeptical looks in the audience. "To call what some of these weather modeling and chess-playing computers possess intelligence is to empty the concept of meaning."

He laughed at the shocked looks on some of their faces. "Maybe it's appropriate that one artificial life groundbreaker compared himself to a medieval alchemist, dreaming of creating gold by combining lead and urine. The A-life and new AI researchers have distanced themselves from the AI tradition, working from the bottom instead of from the top. Enthusiasm and dreaming aside, the goal of intelligence in a machine appeared just as unlikely as producing

bars of gold by pissing on bars of lead: in silico has become in ambiguo."

Andreden took another drink while that sunk in, and then said, "Until now."

I watched him in awe. Once he got started he relaxed. He was with the kind of people he enjoyed being with. He smiled, told a few humorous stories. He was at ease in the world around him. He must have the ability to project some sense of civilization even with the turbulent world--much more at that time--gathering beyond the conference room, the oppressive SAC Board roaming the streets, hunting him and anyone who associated with him.

That was just his intro, pretty tight, a little humor, delivered well. After that it got really hard to understand, stuff like:

"My purpose is to demonstrate the possibility of building an artificial humanlike organism based on the hypothesis that we can explain the activity of human consciousness, contrasted with animal consciousness, by treating it as two very similar but hierarchically ordered--superior and inferior--active processes."

I spent half the video searching the dictionary for words like Cartesian--relating to the mathematician and philosopher, René Descartes (last name sounds like day-cart), and epiphenomenon. You look it up and tell me what you think it is, some nonsense about secondary phenomena, with examples like the smoke from a steam locomotive. While you're at it why don't you chew on, "Consciousness, whether animal or human, has causal efficacy."

Andreden: "I want to state my disagreement with the Cartesian position that no amount of inference from our conscious activity can be used to prove that animals are conscious."

What the hell? This Descartes guy doesn't think animals are

conscious? Must not have ever had a pet, or been in contact with anyone else's pets. What a sad lonely guy Descartes must have been.

Andreden: "The fact that we share similarities in brain structure with apes, dogs and other animals, and that higher species have evolved from lower species is enough to say that our consciousness is a related but higher form of the conscious faculty in animals. When I say that man is a new order of being I do not mean to imply that we are something altogether different from animals, but that we are a newly developed form of the old physical stuff. Instead of simply belonging to the continuum of an evolving conscious faculty, humans, by having two conscious faculties, are the result of the evolving of a new parallel continuum. We are part of the old and the new."

Kind of got that...We're part of the old and the new. Animals have one consciousness. We humans are basically mutants with two of them, and that's why we can look out at the world, and also look inward at ourselves, at the functioning of our other consciousness. At least I think that's what Andreden's talking about.

Unpaused the video.

"My point is that the source of the second conscious formation was probably a mutation that enabled two of the same formations to grow without disabling the individual."

Yup. Mutants. Really powerful mutants. Told you. Animals are aware. Humans can also be self-aware. We're the only things in the universe that are aware that we're aware.

Andreden: "There's a way to account for the conscious differences between animals and man without putting forward fantastic speculation, and at the same time account for the relation that exists between our unique capacities."

Hmmmm...Fantastic speculation? I could sense eyebrows going up in the audience even though they all faced away from the camera.

"It's generally been thought that our abilities to be self-aware and reason are the emergent properties of some evolved form of the same animal conscious structure, but I'm proposing that these are the abilities that emerge when you have two of these structures in the same animal and the controlling and interactive arrangement is hierarchical. Man's abilities are not the emergent properties of one conscious structure but of two of these structures in the just the right order."

Starting to lose me now. There's even some head shaking in the audience. Sounds like Andreden's just restating what he said a few minutes before. Elaborating. Okay. Moving on.

"It's useful to speculate on the development of human consciousness. From our perspective we have consciousness and subconsciousness, but we generally agree that these are different processes of the same consciousness. What if they're not? I'm proposing that they literally are two separate consciousnesses, a subordinate consciousness and a superior consciousness. All of the conscious animals except us humans only have one. Then along came an animal, which, through some beneficial mutation, was born with two sets of structures comprising consciousness. When it appeared or how it evolved doesn't matter at this point--whether it's one of the early hominids isn't an issue. All that matters is that one of our ancient ancestors could not only look out at the world, it could look in at the functioning of its other consciousness--its own inner world. And over time one consciousness became dominant, the one we use to look outside and inside. This was a key evolutionary milestone, perhaps the single greatest event in the history of life on Earth, because out of this we evolved, the rational animal."

I'm hanging on by a thread by this point. And I get to start the vid over and watch it from the beginning. Let me see if I got this. We evolved from a species with one consciousness into a two-consciousness animal. But most scientists think we only have one, just a really big one that does more than, say, apes.

"...the argument that humans have only one conscious faculty is based entirely on the false assumption that human consciousness, with all that this implies: reason, volition, self-awareness, is simply part of a normal evolutionary progression. I'm proposing that human consciousness is a new phenomenon. Man is not simply a really intelligent ape, but a new order of being."

At this point Andreden went through a series of fMRI stills that showed the differences in the working portions of human and chimpanzee brains. fMRI stands for functional Magnetic Resonance Imaging--kind of like really detailed X-Rays of an animal's internals in action. Cool stuff.

"The conclusions drawn from animal research studies are interesting and relevant, but insubstantial, and if they're not presented correctly they can be deceptive. It's been said that man is a tool-user...and so is a chimpanzee--our closest genetic relative. Humans make tools and use them to sustain our lives. Hey, guess what? So do chimpanzees. That has a very profound ring to it, doesn't it? But when this is positioned in its proper scope, it becomes a gross oversimplification. It becomes easy to see that these are not even close to being the same activity in two different animals. Yet that's typically how this parallel's presented. A chimpanzee using a stone to crack open the shell of a nut is just not the same thing as an engineer at a research center manipulating individual copper atoms. Both of these represent high-level activities for each species but when you view them side-by-side like this, the vast cognitive difference between humans and apes is clear."

Pause the video. Sure. Chimpanzees are smart for animals, but only an idiot would think that they could somehow think like humans. Come on. Did anyone ever buy into that Planet of the Apes crap? I rubbed my eyes in extreme disappointment. Wait a minute. Wasn't there a remake? There may be some material in this for a counter-argument to Andreden--some of us are obviously missing their second consciousness. Back to it.

"The mirror test is another method animal researchers use to project abilities on to animals that they just don't possess--or at best possess by analogy only. The mirror test is supposed to

demonstrate that apes are self-aware because they seem to grasp that it's their own reflection they're staring at in a mirror--as if apes as well as humans haven't been doing this from riverbanks for millennia. The term self-awareness can be applied in both cases just as tool-user can, but neither of these is even potentially the same. Just because a primate can use a stone to extract food from a nut does not mean it has the ability to perform real tool using tasks. Just because an ape can look at itself in the mirror doesn't mean it can contemplate justice. That being said, I want to make clear that I'm not trying to denigrate chimpanzees. After all, apart from us, they are almost certainly the most intelligent beings on the earth. I just want to point out that as intellectually capable as they are, you'll never see a chimpanzee manipulate individual atoms, build cities or travel the distance between our planet and its moon."

I snorted, and thought, he's also never met Kyle Vickery and his friends.

Then Andreiden drew this chart on the white board that showed a human, a dog and a sea anemone next to a hierarchy of links between the sensory input, Consciousness1 and Consciousness2 and parallels with our ability to sense, perceive and form concepts--use words to communicate:

Lower animals (Sea anemones, etc.)

Sensory Level Sensory input

Higher animals (Dogs, dolphins, chimpanzees, etc.)

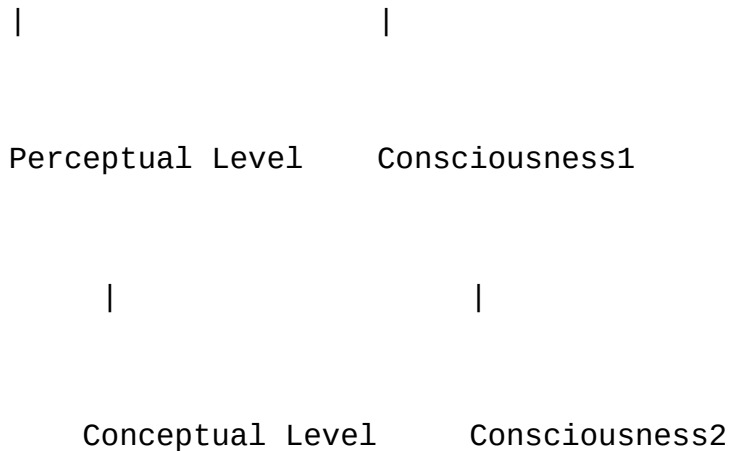
Sensory Level Sensory input

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Perceptual Level Consciousness1

Highest animal (Humans)

Sensory Level Sensory input



People in the audience had a lot of questions about this and Andreden attempted to make it clearer by walking through the chart.

"This shows animal and human consciousness as a hierarchical structure. Consciousness1 is the human subconscious, and Consciousness2 is what is normally thought of as the human faculty of awareness. I've included a sea anemone to show a representative of an animal potentially limited to the sensory level. Some sea anemones possess sophisticated and interdependent sensory organs including highly evolved chemoreceptors and something similar to hearing. It can, in some cases, detect low frequency sounds and particular chemical compounds in the water with which it comes in contact--for example, N-acetylated sugars."

Bet your dictionary doesn't have that one either. I thought it was something like "enaseetalated" until Andreden wrote it on the board.

"But a sea anemone doesn't have the ability to distinguish things that exist out of the sensory stream, and is extremely primitive compared to the higher conscious animals. A dog has the ability to perceptualize, to process the data of the senses into something manageable. (Keep in mind that an animal does not know that it is processing sense data. Perceptualization is an automatic function

of conscious¹, even for humans). A dog is conscious, but is not aware that it is conscious. A dog cannot introspect. It gets directives from its consciousness and it acts on them without question."

Andreden continued for more than two hours, going deeper and deeper, and drawing a dozen more figures and graphs and flow charts on the big whiteboard behind him. He spent another hour answering questions.

I can't go into all of it here, but Andreden just kept piling on more and more evidence to support his claims. He eventually returned to making intelligent artificial organisms. To sum it up, his argument went like this:

1. We can create an animal's level of awareness in an artificial organism, self-determined (non-volitional) but conscious and artificially alive (self-generated beneficial action).

2. Animals (other than humans) possess one conscious structure. Humans possess two hierarchically ordered conscious structures. The two conscious structures in humans are similar (derived from the same structure) but one is dominant and one is subordinate.

3. Human intelligence (reason), volition and self-awareness are emergent properties of the second, dominant conscious faculty being hierarchically placed above the first conscious faculty and in control of the first.

4. Given these premises the necessary conclusion is that we can create an artificial organism that possesses reason, volition and self-awareness.

It all hinged on the fact that it's possible to create an artificially living, self-determined, conscious organism, and once we reach this point it follows that it's possible to create an artificial, conceptualizing, volitional, self-aware, conscious organism.

I think I got it. Andreden capped off the thing by quoting Kaffia's favorite:

"Aristotle, referring to the human intellect, said we must not follow those who tell us, being humans, to think only of human things, and, being mortal, only of mortal things, but we must, so far as we can, make ourselves immortal and strain every nerve to live in accordance with the highest thing in us, because even though it is small in bulk, much more does it in power and value surpass everything."

I rubbed my eyes to the sparse clapping from the audience. If I got anything out of it, it's that Andreden was on to something important, the next revolution in robotics based on a biological model, real science fiction, Asimov, R2D2, kind of robotics.

I yawned till it hurt, and my eyes went watery.

What was Andreden doing now? Did he ever accomplish the things he'd talked about in the video? One of the articles Kaffia had stolen was new, and referred to real working bots that did various deep sea activities at pressures where humans would have trouble doing anything.

I closed my eyes slowly, put my head down on my desk and dreamt of walking talking mechanical beings in silicon.

The Prison of Uncertainty

THE JUMPTROOPER kicked Alex. "Get up!"

Alex pushed himself into a sitting position, and then stumbled to his feet, flinging his arms out in all directions to keep his balance. What were they going to do? Get up really high and shove him out the door?

Five big fingers grabbed his head and tore off the black bag, snapping the cord that tied it around his throat, choking him at the same time.

Alex leaned back against a shift in the gunship's direction, fought the force, and then fell forward. He slammed against a thick window in the side of the cabin.

When his eyes blinked and focused he looked through the inch-thick plastic, as they circled five tall concrete office buildings. Rost Institute, exactly as Walter had created it on the surface of his desk. Well, not exactly. He scowled at what was clearly a giant hole in the ground where a sixth building had once stood.

"Building..." He quickly went through the colors he remembered from Walter's model. "Orange is...gone."

The trooper's five fingers made a fist around some loose part of Alex's shirt at the shoulder and threw him down on the bench. He glanced up just before the back of his head collided with the metal wall behind him. He saw his own distorted reflection in the trooper's visor. The man was huge, with gloves and armor, and a lumpy black gun dangling from straps across his shoulders.

One of the fingers pointed at him. "Don't move."

Alex glared back for a second, and seeing that he would lose any mad-dog contest with this guy, blinked and looked at the floor. He lay back against the rumbling seat, and let his eyes close. His head felt like it was about to split open. He clutched at the bench, sniffing at the fumes and other nasty smells in the cabin. He'd thought it was the inside of the bag that stank.

His chin quivered a little, the very beginning of a show of feelings that he absolutely wasn't going to let on the stage, under the lights, in front of everyone.

His head snapped forward, then back, banging against the wall when the gunship dropped onto the landing pad.

A squad of jumptroopers met the craft on the pad, and pulled open the door. Squinting in the sunlight, Alex got to his feet. He glanced down at the little metal steps in contempt, and jumped off the edge to the concrete. He straightened quickly and went still when all their hands went to their guns. The trooper from the gunship pushed him forward and all four of them escorted him toward the building just to the right of the giant hole in the ground.

They didn't go to what was obviously the front door, with decorative paving and a covered walk. The troopers steered him off the main path onto one that curved around to the side of the building, through some trees, and ended in a ramp that led into the floor below ground. The ramp sloped down into a bright blue door.

Alex's mind started building a list of everything his senses took in.

The lead trooper walked ahead and bent over a security device with his face, some kind of bioscanner, retinas, distance between the eyes, muscular structure, nose hairs.

The trooper swung away from Alex and the rest of his squad and opened the blue door. They stepped into a long hallway with slick shiny floors. They passed men and women coming out of doorways and other halls. None of them seemed surprised to see a fifteen year-old boy escorted by a squad of jumptroopers. There was something very disturbing about the way they acted--or didn't act. Alex looked up at them as they passed. All of them were grim and serious looking, skinny men in their fifties with crisp trimmed beards and white labcoats, blue-suited women, with clipboards, PDAs and blank staring eyes below overly-tweezed brows. Any of them would--Alex felt weirdly certain--just as soon say have a nice day as stuff you in an oversized oven and cook you.

Where do you find people like this? Alex found himself daydreaming of Rost staff recruiters visiting state penitentiaries for employees.

Maybe he was imagining it, but it seemed even the jumptroopers were ignoring him. For a fraction of a second he thought if he darted in between two of them and headed down another hallway they'd just keep going straight, programmed like toy robots to move along the path someone higher up ordered them down.

Alex glanced up furtively at one of them, and although he couldn't see anything through the trooper's visor, it was possible that the man was watching him, daring him to step out of place.

They marched him into an elevator somewhere in the core of the building and went down another couple floors.

"Three below," muttered Alex under his breath, and he was sure one of them bent his head in his direction.

The walls were all bare concrete here, and the floors were tiled in dull gray and white marblish-looking stuff.

Alex was on the verge of shouting, "can we get on with this?" when they stopped in front of a huge floor to ceiling metal door that looked like it came from some heart-of-the-mountain bomb shelter.

The door swung away on gigantic oiled hinges, and the troopers ushered him inside. The leader walked ahead at a faster pace to sign them all in, while another grim-faced labcoated bearded man on a stool stared impassively, as if this kind of thing happened all the time.

They passed long stretches of blank concrete separated by black spaces with walls of steel bars. Alex's eyes turned toward them as he passed but he couldn't penetrate the dim interiors of the prison cells to see if there were any inmates. If there were, they huddled in the dark corners and didn't hang their arms through the bars like he'd seen in the movies.

Two more turns, one more metal door, and they were there, a roomy prison cell with inch-thick steel bars with a wall of small mesh screening welded over it--as if he was going to sprout claws at the next full moon. The lead trooper indicated the back wall of the cell, and another trooper, without the slightest indication, shoved him toward it.

Alex threw out his hands to stop himself, and the cell door slid closed with an echoing hammer on metal sound. Without any words or obvious looks his way, the squad of jump troopers strode off at the same purposeful pace.

Alex looked around the room. "Twelve, fifteen feet long, ten feet maybe a little more wide," he mumbled. His eyes followed the seams between the floor and walls, up the corners, along the ceiling. There were tiny gaps in the paint. He chewed the inside of his mouth, thoughtfully.

"Cams, mics...other sensors?"

The room was bare and bright white, except for a small table with a round top (no sharp edges) and a metal-framed bed with a very thin mattress. There were no blankets or pillows.

The concrete walls, ceiling and floor had been given dozens of coats of high gloss white paint. Easy to clean up spills in this room, he thought grimly, inspecting the floor more closely. The drain in the corner made a chill run through his body. The floor sloped toward it at a very slight angle. Make a big bloody mess in here and then hose down the room.

"They could kill me now, and Kaffia would die." He whispered the words to himself. His chest spasmed tight, shutting off his lungs. He squeezed out the last of his air, made a little crackling gasp, and then, with another spasm, his body decided to work again.

He thought of his mom, of never seeing her again. He pictured her in black, tossing his ashes over the waves, wiping her eyes with a black handkerchief. Assuming they found his body.

He wondered what was going to happen next. What were they going to do to him? He jerked his neck back in reaction. What am I going to do, he asked himself. He needed answers for both questions.

They didn't kill him that day, or even that night. Somewhere in the middle of the night, early morning he guessed, they tried to make him wish they would.

An hour after he was shown to his cell, the huge ceiling array of intense fluorescents went out. He couldn't see his hand in front of his face. He waved his fingers about a foot away. He could hear and feel them, the slipping sound of the skin between his fingers.

"Right," he whispered in what he hoped the microphones picked up as a defiant tone.

He had been facing the cell door. He turned around and placed one foot out carefully. Three more steps and he found the bed.

The springs whined and pinged annoyingly when he sat down. He shrugged, and then stretched his legs out.

He scowled at a low mewling noise, like a wounded animal caught alone in a forest full of predators. Scratching noises from down the hall made his head jerk around.

"They're just trying to scare me," he whispered firmly.

He'd read somewhere that fear was cold. He'd heard that it was hot, sometimes dry, other times wet and clingy. But it was none of these, or all of them at once. Maybe that's what fear is, something you can't really pin down. That's what makes it fear. You read it in the news. People want security. They want certainty. They want to know that the world outside will still be there when they wake up the next morning. It's fear that makes them say those things, makes them want a solid world that they can trust, laws that are absolute.

He jerked upright. Something metal banged heavy and hard against the bars of his cell. He couldn't see a thing, not even a hint of reflection off whatever was out in the hall beyond the bars.

A piercing shriek followed it, and then more of them. Women screaming, children screaming. A man bellowed something bold, and then his voice went high and painful, screeching like an animal being torn apart by claws and teeth.

Halloween noises, he kept repeating in his thoughts, but he believed it less and less as it continued. It wasn't some horror movie loop. These were real people, recorded here at Rost, while some animal in a labcoat gouged out their eyes or did other hideous things.

He sank back into the bed. He pressed his hands over his ears and curled up into a knot. The screaming was so loud he couldn't hear the cranky noises from the bedsprings with his ear pressed to the thin mattress.

It went on for hours. He tasted his tears in his mouth. He felt two cool paths of fluid run down his right cheek. Tears pooled along his nose and spilled over in little waves. He clamped his teeth tighter. He wasn't going to cry out loud.

The light array flared into life, humming and beating down on him like a desert sun. The screams were choked off one by one. Alex lay on the bed, curled up, shaking.

The lights remained on for another few hours. The temperature in the cell dropped to the point where he could see his breath in cold rippling clouds. He pulled his arms inside his short shirt sleeves, curling up even tighter. His tears froze on his skin, in crinkly sheets and in glistening beads, like little pearls of pain.

He rolled over and fell sprawling on the shiny white floor. Shaking uncontrollably, he jerked the mattress off the bed and pulled it around his body. His teeth clattered. His ears burned and then went numb.

He must have dozed off because when he woke half his body was flat on the floor, while his back and neck were bent in a painful angle over the flopped open mattress. He was sweating. His shirt was soaking wet. His shorts stuck to his legs.

It's FUD, he thought, fear, uncertainty and doubt. That's what they're doing. Dropped me into a random environment. He'd read about concentration camps where this was the routine--the routine was that there should never be a routine, nothing expected, always keep the prisoners off balance, always guessing, always uncertain. Certainty went with life as sure as uncertainty went with death.

First it was freezing. Now it's hot and humid. Bright then black as pitch, dead silence, then screaming.

It was hard to focus on anything. Real questions that needed answers, like where's Walter? Or Straff? Do I get to talk to these people or are they going to just drive me insane? He didn't want to call Walter with all the video and audio gear that must be going. And he couldn't wrench his focus away from the one question they wanted him to ask. What are they going to do next? He had a nasty feeling that it wasn't going to get better. At least from his end.

It made him think of something Kaffia once said.

18

The Trojan Horse

"IT'S AN OLD SAYING at the National Security Agency: Attacks always get better. They never get worse. I can make a good guess at what's crapping up your machine from what you described." Kaffia glanced over at me, reassuringly. "Give me ten minutes to nail it down though."

I sat and stared as she took apart my loaner computer with the ease and precision of a watchmaker. No plastic and ICs and boards piled up on the library table. She dismantled it from the inside, abstractly, all in software.

She installed a bunch of her own programs--"tools" she called them. First thing she did was clear any connections to the Net, and shutdown the wireless hardware. She already knew that anything I

did with the machine leaked out over the air at some point.

Kaffia's fingers slipped along the smooth plastic case, feeling the heat and power inside.

"C'mon, baby," she murmured. "You can do it."

It was like she could feel the hundreds of millions of individual voltages, some set high, others low, the physical manifestation of the 1's and 0's you always hear about.

After a minute she gave up trying to coax my machine into working a harder. She threw me a smirk. "How are you supposed to be productive on this?"

In five minutes she'd hunted down the trojan, a program hiding inside other programs, with software versions of crafty Odysseus and his men, waiting for the right moment to open the gates of Ilium and let in the rest of the army--which then went around pillaging my machine, hauling off all the good stuff, like my research report, class notes and homework.

"Krempansky created it," said Kaffia as she bent closer to the screen. "A mildly clever bit of coding. The trojan part's trivial. It's what he did with the data that I'll give him some credit for. He definitely used it to get your report. Probably everything else you've been doing with this POS."

She smacked the lid as if that would make it compute a little faster.

"James? How do you know?"

James Krempansky's in my History of the Americas class. I don't think I've spoken one word to him. He's quiet, sits at the back of the room.

She rolled her eyes at me. "Sign of an amateur. Fool left his initials." She pointed to the debugger window, sliding her finger over the letters, 4A and 4B.

"What's 4A? 4B?"

"4A's hex for the character J. 4B's hex for K."

"Oh." Hex. Hex. I knew that term from a prior conversation with Kaffia. She'd explained binary math (base 2) and sixteen bit math (base 16), two important parts of computer science--although she always said "CS." (I had to figure out that CS referred to Computer Science on my own). You know her, acronyms are the norm, and most larger words get chopped down to prefixes, like algo for algorithm and vuln for vulnerability.

Hex was sixteen bit, made up of the range of zero through fifteen, and since there aren't any single digit numbers over nine available in our base 10 world, it was long ago settled that everyone would use 0 through 9 and then A through F.

"How did he get it there? On my machine? I don't even know him."

"Kremp installed the trojan before he turned this box in last year or during the summer semester. Probably dormant, in a benign form until you did something that brought it to life. I had a feeling it was him before I booted it up. I checked the loaner records this morning."

I shook my head at her intelligence gathering skills. Kaffia typed some more and scrolled down through long blocks of text.

"Kremp's trojan runs every time the OS boots, and logs all your keystrokes. Not very fancy except for the encrypted output. JK's using an old symmetric crypto algorithm." Her finger skimmed over the screen. "See, he generates a key here, encrypts the log of everything you've typed with it, then encrypts the key with a public key algo and destroys the symmetric key." She slid her finger along the screen. "Here's the pub key. JK has the private key, so he's the only one who can open up the stuff it grabs off your machine."

I was shaking my head. I understood some of it, but other parts just made me go, huh? "Symmetric key? Pub key?"

"A key's just a string of random--hopefully random--characters. Kremp's data algo is symmetric. Been around a while. Fast. Fine for encrypting big chunks of data. Like anything, fairly secure if used properly."

"What's public key?"

"Another kind of algorithm based on the difficulty of calculating the factors of large prime numbers." She rattled this off while she scrolled through more blocks of two character hex values.

"Public key crypto is asymmetric, meaning it has two keys, one to encrypt, another to decrypt. That's what makes it powerful. You don't have to hide the key you used to encrypt the plaintext. JK placed the public key in with the trojan. He keeps the other key, the private key. The only way to recover the plaintext on or off your machine is to have JK's private key."

Still lost, I asked, "What's a symmetric key?"

"A Symmetric key algorithm is like..." Her eyes roamed around the library. "...the lock to your house. The same key locks and unlocks the front door, opening and closing the entire house. All the security is in that one key. Whoever has the key--or a copy of the key--can get into your house, and there'd be no way to tell the difference between you entering and someone doing it unlawfully."

I nodded, and she continued.

"Public key cryptography is asymmetric. It uses two different keys. With public key crypto, one key encrypts--locks the door--and another key decrypts--unlocks the door. You have to have the pair to encrypt and decrypt the data. To use your locked house as an example again, you can keep the private key on a separate keyring hooked to your belt. But it doesn't matter how many public keys you have, or even where you keep them. You can leave one in the lock, under the matt, in the flowerbox. It doesn't really matter, because you're only going to use it to lock the door. It can't ever be used to unlock it."

"So, Krempansky's trojan takes my research report on British dealings with native Americans in the early nineteenth century, creates a fresh symmetric key and uses this symmetric algorithm to encrypt it?"

"Right."

"Then he uses the public key algorithm to encrypt the freshly made key?"

"Right. And then he destroys the freshly made key. Public key's slow, so you don't want to run a lot of data through it, but encrypting just the key is perfect."

"I got it. Now, there's my report all encrypted, but with a key that only Krempanky can get at?"

"Exactly." She typed furiously while she talked, her eyes glued to the screen.

"What are you doing?"

"A mod. It'll take me a little while. Going to redirect the output to one of my servers. I'll get you access, so you can get on and see exactly what you've been sending to good old Krempanky for the last few months."

Kaffia worked a little more, shutdown the notebook and tucked it under her arm.

"I'll get this back to you tomorrow morning. Oh, and don't say anything to Krempanky. I'll take care of it."

I gave her a puzzled scowl. This was all tied up with my report, my grades, the dean, Mr. Copplin's class. Wouldn't it be better if I took all of this to the dean's office?

"Why?"

Kaffia leaned toward me, her eyes locking with mine. Her voice lowered to a serious growl. She waved my notebook at me. "Where do you think Kremp learned how to do any of this? I'm already in the process of taking care of it."

"Oh."

"Oh," she repeated. Her face remained grave, but her eyes narrowed a little more. "Something else. Forgot. I wanted to keep you apprised of the situation."

"Situation?"

Kaffia looked around the library and lowered her voice. "The Andreden stuff."

I nodded. I could feel my whole body lurching lower. "Something new?"

She showed me a brief malicious grin, and then whispered, "The more I thought about it, the more certain I became that those Rost pukes stole all of it from Andreden. I mean, they were right in there with the SAC Board."

I nodded vigorously. "Yeah. The articles were all unpublished, stuff he spread around to his friends. I watched the vid three times last night. It was recorded before the restoration. This stuff's all prior to the SAC Board raids on Knowledgenix."

Kaffia's eyes widened, staring through me for a few seconds. "I remember that. They gunned down a bunch of innocents, scientific researchers mostly. They almost killed Andreden. He was wounded, but he managed to escape when they took him to the hospital."

"I read a bio on him a few months ago. Did you know he was married for a year or so? His wife died in one of the first wave CD&C's"

Centers for Disease and Control were what we called public hospitals--the only kind left after Dr. Ernest Straff took over

everything with AMIA, his advanced medical organization.

We were silent for a space, until I remembered Kaffia's original direction with Andreden.

"So, what's the situation." My voice faded a little. I didn't really want to know more.

"I got in again last night. Just made me want to throw up that they'd stolen Andreden's work."

"You didn't," I gasped, anticipating what she was about to say.

"Did. Deleted it off Dr. Greenleigh's system. All of it. There may be other copies of it around Rost, but I permanently removed the ones I found."

She leaned closer, close enough to make my face go hot.

"What is it?"

She shook her head. "I think I found something else."

"What?"

"Someone, but I'm not sure if it's current."

"Who?"

She hesitated, her eyes locked to mine, and then shook her head again, leaning back.

She tore off a corner of paper from my binder, scribbled an IP address to one of her servers, and a username and password.

"Still need to do a bit more to this." Her eyes dropped to my machine. "I'll get it back to you in the morning. And I'll leave it running tonight. Get on sometime after six or seven, and see what gets logged. I'll gen a new public private key pair. I'll just stick the private key on the server, and I'll leave Kremp's trojan running. It'll start sending everything you type to my server instead of Krempansky's."

She got up quickly, waved and strode off with my notebook computer tucked under her arm. She didn't look back. She acted like there's nothing out of the ordinary about hacking into some mad killer's computer system and deleting highly valuable files he stole from somebody else. That's how she got the rep she has. It probably wasn't out of the ordinary for her.

I sat in the library, staring after Kaffia through the security sensor towers in front of the doors. Fifteen minutes passed before I remembered why I was actually in the library. Kaffia had found me there, doing research for my next History of the Americas report, due the day after tomorrow. Now I wouldn't have my computer back till tomorrow morning.

I used my mom's workstation that night, although she only let me on for little over an hour, and I didn't do much research. I pulled out the paper Kaffia had given me, netted into her server, grabbed the private key, but never got to do anything with the any of the data I downloaded. Mom needed her machine back.

The next morning I crossed Sea onto Atlantic and was just coming

around a bend in the road when I saw Kaffia skating toward school. A car passed me with loud exhaust, then a white van. I kicked harder to get within yelling range.

I was almost there. She glanced back to see if she was clear to go around a jogger in baggy blue sweats coming at her. She slowed to a roll, nodded at me, and waited for the van to pass her.

The van braked to a stop. The jogger grabbed Kaffia from behind. She kicked and screamed and bit into his arms. Another man in blue sweats jumped from the van to get her legs. She got in a solid kick to his face. His head snapped back and he had to grab one of the open doors to stop himself from going all the way down. A third man emerged to help, and they wrangled her into the side door, slammed it and drove off.

I shouted "Kaffia!" the whole time and kicked toward her. I stopped where they'd taken her. The white van was gone, up Atlantic and out of sight. She hadn't dropped anything. They'd taken everything, Kaffia and her backpack.

I turned back toward her house, pulled off my phone, and called the police.

19

What Would Joe Do?

ALEX OPENED HIS EYES. The bright lights stung them. He blinked a few times, gave up and then closed them again.

He was thinking about what his mother would be doing right now. Not going to work today. Probably up all night crying. What day is it? Mom would have already called the police. What would they have found? Even if they tracked down the jumpstroopers who had searched NHL for him, what would those guys say? Nothing.

What was Kaffia doing? Does she know she's going to die if I don't get Straff away from here? How the hell am I going to do that?

The thought of Kaffia burned like a lump of molten rock in his chest. No plans. He hadn't had the chance to say anything to her. No goodbye. No see you later. No how are we going to get out of this?

"Joe's not a worrier," whispered Alex, chewing his lip absently.

She'd already be making escape plans, reconnaissance plans, subversion plans. Straff had a few systems around his house running that Personifex interactive video thing. He presumably did other things over the Net. It'd be like a playground for Kaffia. His face and ears went hot, thinking of Kaffia sitting cross-legged amid dozens of keyboards, the glow of video panels reflecting in little rectangles in her eyes, surrounded by a huge black wrought iron fence, a playground and a cage at the same time. In a matter of days--he hoped for three, guessed two--she'd be dead.

But Joe would have done her part, her side of things. This side is all up to me.

He opened his eyes again when he heard footsteps. He sat up, rubbing his neck, and then crawled to his feet. He had enough sense to tap the bars lightly, testing them for current before leaning against them. That'd be just like them, yesterday normal bars, today they'll electrocute you.

A security guard in a gray jumpsuit, gaunt, blond-haired, with a pock-marked face, ambled around the corner. The man wore the same grim, vacant expression everyone else wore. Perhaps it came with the uniforms and labcoats? Alex was already getting his nerve back. A good sign, he thought. The uncertainty thing had unraveled him a little. Good to see he was wound back up again.

"Hey!" He waved to the guard, jumping a little in the air.

The man's ID badge didn't have a name, only his picture, very recent by the way it matched his appearance. The guard barely acknowledged him. A flick of his eyes was all. Nothing about his posture or facial expression changed.

"Can I...um...get my backpack?" Seeing the guard's return glower, he quickly added, "something to write on and with?"

The guard kept his brows knotted together, but his eyes stared unfocused in Alex's direction. He tapped a black pad sewn into the collar of his jumpsuit.

"Kid wants to write something."

He tapped a few more times on the pad and wandered off without giving Alex even a hint of an answer.

Alex turned away from the bars, looking casually around the cell to see if he could pick up any sign of Walter.

"Cameras in here," he whispered, apparently to himself.

He threw the mattress back on the bed frame and sat down heavily, bouncing a few times and making the springs creak and twang.

He saw no one else that day. He stared hard at the white walls, looking for Walter's outline, a shadow or any sign of the billion-node self-organizing bot might think to display. Something to show him that he was still there. He got up and paced around, pushed on the bars, yelled a few times and kicked the walls. He'd need Walter

to get out of here, to get Straff out, to get back to Kaffia and keep her alive.

He spent another night of alternating blinding light and blindness, screaming, arctic cold and rainforest heat and humidity. He woke on the floor again, his hair damp with sweat and his spine aching. His stomach ached with hunger, a hollow acidic burning that spread to his arms and legs.

The same guard with the pock-marked face returned the next morning with a notepad and pen. He didn't even look at Alex. He fiddled with the secure drawer device that allowed him to pass things into the cell without opening the locked door. The pad and pen dropped on the floor next to the bars.

Alex threw the guard a smirk and picked them up. "What? You had to cut down the trees to make the thing?"

The guard glanced back but only to acknowledge that he'd heard the remark.

Alex pulled the round table close, and bent over the pad. He curled his left arm around the top, trying to hide whatever he was going to write from prying eyes.

He moved his hand up and back a few times, as if he wasn't sure where to begin. He dropped his face so that his nose almost touched the paper, and mouthed, "Walter?"

He started as if a loud sound scared him. Something slipped over his hand, around his wrist, along his fingers as they curled around the pen...and his hand began to write.

You are in the north end of the third floor below ground of building Blue of the Rost Institute.

He nodded slightly, his hand slid over the paper, and the letters vanished. He bent down again and wrote to Walter,

Where is Straff?

I have not found him.

Hurry. How much time before Kaffia?

33 hours.

His breathing quickened. A little over a day. With an angry, unsteady hand he wrote:

Go. Don't come back till you find him. Get me more information about this place. What's going to happen? Is there going to be some sort of negotiation that takes place? If not, I need maps, a planned way out of this place. I'm assuming you can cut through these bars whenever I want you to?

Walter tapped him on the shoulder, the ink vanished from the page, and the covering over his hand slipped away.

A shudder of shame rippled through his body. Kaffia's dead without me. He swallowed and pressed his lips together firmly. Sit and think. Pretend you have all the time in the world. That's what the Rost bastards have to observe when they review the video.

He looked up at the shiny white walls, biting the inside of his mouth absently. The page was blank. He'd need to write something if he wanted to convince them that he wasn't trying to communicate with a self-organizing billion node network who happened to be invisible. This was Rost. These guys had probably run across crazier things.

He picked up one of a dozen ideas he'd planted in his subconscious over the last few months, something about a space elevator using carbon fiber cabling. The idea of lifting people off the earth's surface into space had always captivated him.

"The night vine, like a cable dropped into the atmosphere," he whispered. "Equator...equatorial. Arboreal." He shook his head.

Calm down. He closed his eyes, and saw a winter's night sky in his mind, with bright Orion angled back, shooting toward the zenith.

"Sings a song," he mumbled. "The balladist sings, no plays a song... of the night vine. Balladist is invited to dine...vine."

He chewed the end of the pen, opened his eyes and wrote:

The balladist invited to dine

Sings of the night vine

"In the universe...unanimous..." A little more pen chewing. "Universe is everything there is taken as a uni, as one. Everything that exists...as one."

He wrote "universe" and "unanimous" at the top of the page, and then looked up, staring straight ahead at a new thought.

"The balladist...sings of the night vine," he whispered and then wrote:

In the most luminous verse know to us

Being of one mind, univrsanimous.

He sat up, gnawing at the inside of his lip, pondering that. Not bad, he thought, picked up another old idea, and mumbled, "Dah-dunt, dah-dunt, dah-dunt, dah-dunt."

Over the course of an hour, repeating "dah-dunt" rhythmically, and with more scribbling than writing, he ended up with several scattered lines of rhyme and thought.

Tyrannies are drains dispelling joys,

forge anew uneven steel,

deformed free shapes

into shapes in thrall

Into towers that fall

"Joys...toys. Too simple."

...into fragile alloys.

Of people forced to turn their backs

On the man with the knife

who betrays them all.

He wiped away a tear, and told himself to get it under control. Kaffia. Remember Kaffia.

Don't let your tears above...

He chewed the pen, his eyes roaming over the white walls.

...above the flood-mark, Fight your enemies with fear.

Cries for their lies

He shook his head and crossed out Cries and lies. "It's just too obvious," he whispered and put the pen to the paper.

Show rather the smiles that never begin

On the faces of men

Who double on coins

Whose forgeries are genuine.

Hold steady your eyes,

the waters subside,

tyrannicide.

He looked up, the pen in his mouth, to find three men in white labcoats outside his cell. A geared up soldier, gun ready, backed them up.

The bars slid open and they stepped in. The first, a smiling black bearded man with white streaks in his hair, motioned Alex to rise with an impatient hand wave.

"Get up, young man." Black Beard brushed the notepad to the floor and put a green cloth roll, lumpy with tools, down on the table.

He tilted his head left then right, staring into Alex's eyes, and then mumbled something about being normal.

Alex sniffed. "Yup. Just another day for you an me."

Black Beard nodded to the other two, who moved into position on either side of Alex. On his right was a man with spiky bleached hair in a white smock that was way too small for his bulging shoulders and arms. The other was tall and bony with greasy brown hair, dull blue eyes and thickly-sweet bad breath, like he'd just hammered down a PB&J.

Alex's own breath caught fearfully in his throat. His skin went prickly. His head swiveled side to side, wondering what was about to happen. It didn't look good. The two thugs on either side of him looked like a couple characters out of a mobster graphic.

Black Beard pulled up Alex's left hand and examined his fingers. And this guy...Alex didn't get the mobster vibe from him, but something cold and unnatural, that made him immediately wonder what had happened in his childhood or as a grown man to make him turn out like this?

"Index on the left hand. That's the one. Fine."

Alex glared at him, making tight fists with both his hands.
"What's fine?"

They acted like no one had spoken. Black Beard nodded to his accomplice on Alex's left, and then unrolled the toolpack over the table. He pulled out what looked like a pair of pruning shears for a rather virulent garden, except these were highly polished stainless steel.

Alex took a step backward and hit the edge of the bed. He felt two hands on his back, fingers digging into his spine, steadying his posture.

"Ready?" Black Beard said in a cheery tone, as if they were all piling into the car to go to the movies. He held up the shears and snapped them open and closed a few times.

Alex jerked forward. "Hey!"

Everything went dark. Alex pulled away from them. The man to his

left slammed a black bag over his head, jerked the ends tight around his throat, choking off his air. The other grabbed him like a bear, big arms circling his chest and shoulders and squeezing him. He swung Alex around, dragged his feet into the air, and tackled him, mashing him into the concrete floor. Black Beard bent down and seized Alex's arm as it swung violently, his fist hammering into the blond spiky-haired thug, trying to get him off. Black Beard pounded Alex's fist against the floor till his fingers sagged open.

"Nooooo!" Alex shrieked, twisting his neck side to side, straining every muscle.

Black Beard slid Alex's index finger on his left hand between the blade and the thick metal hook.

"Please," said Alex in a hoarse pleading whisper.

Black Beard squeezed the handles with both hands. A sickening crunch jarred Alex's teeth and made his toes cramp up. The blade cut through his finger, through bone, tendons, muscle and blood vessels. Burning pain shot through his body. It threatened to tear him from scalp to crotch and turn his skin inside out.

Two knuckles, a fingernail, a short bloody stub on the end, rolled away from his trembling hand. Raw fiery pain jolted up his arm, like someone had drilled a red hot wire from his fingers to his shoulder. A warm thick fluid flowed over his skin. He screamed hoarsely, gulped for air and sobbed. His body went numb. His eyes rolled up and he lay still.

The spiky blond-haired guy got up, slapping his hands together as if to rub off the dirt of some unwelcome job. Black Beard wiped the shears carefully, and then bent down and slid the severed finger against Alex's bloody hand.

"What about the finger?" Asked the one with the bag, as he tugged it off Alex's head.

"Leave it. Dr. Greenleigh said cut it off and stick it back on with med tape. No tourniquets, no stitching. Let it bleed."

"It'll die. Could be sewn back on if we hurry."

Black Beard slid the shears into the green toolkit, shrugged, and tore off a foot long strip of white papery tape from a roll. He fixed the finger to Alex's hand like a three-year-old sticking bits of construction paper and popsicle sticks to each other.

20

Wesley

WESLEY MOVED LIKE A GHOST among the trees, alone, seven feet tall, floating and semi-transparent. He wondered if, to an outside observer, he looked much like the monster in Mary Wollstonecraft Shelley's, Frankenstein. He didn't pursue an answer, except to point out that he was not as whiny as the monster or his creator, a pair of moaning, milksoppy old hens, yapping about injustice and driven by any passing whim, any immediate urge. Wesley frowned in distaste. Poor impulse control, both of them. He spent just short of three seconds on another thread, trying to trace down any significance to the name, Wollstonecraft. A good solid name, was how he concluded it in his thoughts, and stored the actual trace of Mary Wollstonecraft Godwin away for some other time.

He tracked a pair of headlights coming at him as he flew over I-90 south of Southampton, jumped the guardrail and continued west.

He'd left the girl by herself. Well...she'd sent him away. She could take care of herself. He'd hardly done anything for her anyway, except for the books and data, which weren't really for her, but for Ernest Straff.

She cooked her own breakfast and dinner. She rarely ate lunch.

He felt...sadness. He didn't like feeling it and cursed himself. I'm just as bitchy as that damned monster Victor Frankenstein created.

He hadn't liked Straff's plan to kill Kaffia Lang. That was not right. This whole plan sounded wrong.

He'd built the killing machines and injected them into Kaffia, a bloodborne network of heart stoppers. When they went active she'd be dead.

And he was on his way to give the evil men at Rost Institute a key to all of Ernest Straff's research, everything they'd need to work effectively at the molecular level.

What he didn't understand was Kaffia's behavior, knowing about her imminent death, and telling him to deliver the keys to the data. He'd protested, but she'd told him to go--"and don't return until you've delivered it to Alex."

That was after he'd dismantled every book--text books, lab books, engineering notebooks, every book on Straff's shelves. And then he'd...eaten them all. Kaffia'd called it "scanning." She'd explained everything, the file formats, the protocol for feeding the storage array. Straff had many books, and Wesley'd used this abysmally wasteful process defined by the girl. He understood the concept "eternity," and this process had approached it. He'd spent every nanosecond of a two-hour period "scanning" books and papers.

And now he was going to hand it all over to Greenleigh at Rost.

He took some satisfaction in the fact that Rost would not be able

to reproduce another Wesley or Walter. Straff's methods and research only accounted for the structure, the netting, the physical side of them. John Andreden's Personifex was the soul.

But a being with a soul wasn't disloyal to his friends. Who was he being loyal to now? Straff? Alex and Kaffia? He hadn't been created to betray someone. I helped lure in the young man and young lady, to be used by Ernest Straff. It's wrong to use the affection Alex feels for Kaffia against him. Alex is in love with her. And what is love but the valuing of another's values?

This wouldn't work if he hated her, or cared nothing for her, or didn't even know who she was. If he hated his own life this wouldn't work. Since he does not hate in either case, he is vulnerable, open to threats and manipulation, open to another's hate or mad drive to reach some goal. Open to someone like Straff.

Wesley was bound to Straff the creator, but he liked Kaffia--and she wasn't easy to like. He respected her abilities to control hardware and navigate networks secured against her. She reminded him...of Ernest Straff in some ways, the drive, the intensity. In most others she reminded him of June Trimony.

Trimony remembered burning, a red-glowing coil of metal with an insulated handle, the glow against her skin, pressing into the soft flesh behind her knees, scorching the skin off her toes. The pain drove her inward, shut her body off from the outside world. She remembered burning and screaming. Better than experiencing it again, she thought. Not much, but it was better. Her thoughts roamed over the horizon like an explorer's ship, wind with you, full-rigged, the whole world to investigate. Only her hands weren't on the wheel. Someone else's were. She shuddered and stared at a warmly-lit scene approaching in her imagination, steered into it by Dr. Greenleigh's capable hands.

Clinking glasses. It was party held in D.C., before Zoerner seized control of the government. Ten years ago...at least. She'd taken a job in the wait staff to spy on...

Eric Sabanin, Commissioner of the Subversive Activities Control Board stood in one corner of the Washington ballroom eyeing the prey like a wolf. Not unsteady and malnourished after a lean winter, but a wolf that's well fed and simply curious. The vast herd of political animals and their spouses moved in grazing clusters around the open space, sipping from champagne flutes and picking here and there at the fertile and informative droppings of others. There were tighter groups gathered around the protection of the more powerful individuals of the herd, Senator Stevens of Montana, Russel from Texas, Georgia Governor Fausset. These three had somehow befriended the wolves. In the course of their movements around the room, pockets of open dance floor appeared and separated some of the collections of politicians, and the one's on the edge kept glancing over at the corner of the ballroom nervously. Open space gave the predators room to pick up speed and the edge of the herd was the last place you wanted to be when one of them came down from the hills to look for a meal.

Sabanin's military haircut set him apart from the others in the room. So did his deep chest, rigid posture, and his eyes, cold squints of blue. Others in the room had mastered the icy glare, but Sabanin's eyes made you feel like you were treading water in the North Atlantic.

The SAC Board Commissioner pulled in a mouthful of the ice-cold brown flammable liquid from the glass in his big hand, sucked it down his throat, swallowed hard against the smooth burning along the walls of his esophagus, and watched the herd with casual interest. Like the instincts of a predator, he had memorized his script and merely had to carry it out at the right time. It wasn't something that could be changed once set in motion. It was always the same. The predator sprang forward. The animals fled in terror. The predator caught one of them by the throat or by the tail or, if a male, by the testicles. The animal went down in a whirl of dust and squealing. And the herd stopped running, sighed collectively, satisfied that it was someone else who got it and not them. The predators couldn't get them all, right? Sabanin took another drink.

He had already completed his primary task for the night, to spread uncertainty, to hint about a Purist Party coalition with other parties. Then he had laughed in the eager faces of some and sullen faces of others. James Zoerner had been right--exactly right about the responses of the political players, and Sabanin nodded slightly to himself, a little reconfirmation that he had long ago chosen the right path, to blindly follow that young rebellious lawyer, crazed with the idea that he could amass power, more power than any man on earth had ever held.

Sabanin's eyes slipped over the prey. "Almost done here." There was one more last insignificant item he had to take care of before he was on a plane to California to oversee that Jon Andreden thing.

Sabanin placed the glass on the tray of a passing waiter and moved toward one of the largest clusters of political players. There were many small movements in the crowd--of eyes sliding to one side of their sockets and necks swiveling around in fear to see where the Commissioner headed.

Sabanin walked right into the middle of the group and it parted sharply to expose the man at its center, Governor Fausset.

Sabanin held out his hand and Fausset had no choice but to accept it.

"Governor," said Sabanin calmly and bowed slightly to the woman on Fausset's arm, his wife no doubt. "James asked me to convey his gratitude for the way you handled the punishment of the two subversives you rooted out of your organization. His exact words were, 'The Governor has killed two birds with one stone. He has given me the gift of an idea and sent a message to our enemies with a single action.'"

This new information radiated out from Sabanin and the Governor in waves of whispers and nods. There were little hisses of "Fausset's on a first name basis with Senator Zoerner" and "James Zoerner approves of the hangings," and some of them had the presence of mind to speculate that they too could get Zoerner's attention and favor by lynching a few people.

The herd heaved a collective sigh and went back to sipping their drinks and chatting nervously.

Trimony's inner vision, under Greenleigh's control, swerved away from the ballroom and the SAC Board Commissioner. No reason to hang around. Sabanin was in his grave, put there by the restored government.

Scenes of offices, desktops, video panels blurred past, and Greenleigh found himself thinking: damn this women spends a lot time staring at that screen.

Greenleigh passed by a scene centered on a dark-haired woman, Amelia Valera's serious face. He doubled back. Trimony heard her own voice, and saw herself as if the two of them had met in a room full of mirrors. Valera sat at a workstation beside her. Trimony was going gray and a little plump. (Not anymore. Damn Rost diet has me below half my old weight). Her round smiling face gave her a soft kindly appearance. Her voice was dry as beached driftwood, and bit like a rasp. She looked like somebody's grandmother with the voice of an aging diner waitress.

"Hon, wait till you see what I have for you."

Valera turned to her expectantly and asked, "Kerckhoff?"

"Kerckhoff's principle. It's that the security of your system must never rely on the secrecy of the algorithm but only on the secrecy of the key. The key is the one piece of data that must be protected, and you should go in with the expectation that everything else, your encrypted data, your algorithm, your tools for producing the data are known to your enemies. I've seen it a hundred times, a company produces some allegedly secure system only to have it completely dismantled, exposed and compromised by a diligent hacker because they didn't heed Mr. K--they didn't understand Kerckhoff's principle. People are fallible, and even great geniuses make a mistake now and then--probably more than that. Systems that rely on the secrecy of the algorithm are typically not created by great geniuses. Systems that rely on the secrecy of the algorithm may contain a simple, easily overlooked mistake, and rendered weak by it, to the point where recovering the key doesn't matter anymore because there'll be easier ways to decipher the data...Security is a chain and it's the weakest link that will get most of the attention. Much of security analysis methodology is centered on looking for weak links in the system--not brute-forcing a pile of ciphertext...You have to keep this simple, Amelia." Trimony said her name with an almost unendurable amount of compassion, like a mother to her child. "Complexity will kill you. You won't be able to go back and fix anything if I understand half of what you're trying to accomplish here."

Trimony's good eye went blurry with tears.

"What's Amelia trying to hide, Trimony?" Greenleigh's voice broke through the dream. "You helped her. She found a way to reverse the cipher procedure. Was that it?"

June screamed at the pain erupting in her head. A jagged piece of tooth punctured her tongue, flooding her mouth with blood. She answered him by seizing the ship's controls, her will, and steering the dream into open water.

Wesley drifted along the edge of the empty parking lot. The security lights were on at the Rost Institute, which meant the streetlights were dimmed and the pin-point red lights of the operational door locks stared out from shadowy entrances and stairwells. The buildings were giant concrete blocks arranged in a semi-circle on the institute property. He looked up at the surrounding buildings, and couldn't find one office lit. The windows were black rectangles, a mosaic that pictured nothing. The artist had abandoned his work--or they'd all gone down into the underground floors for the night.

A window in the building to Wesley's right flashed on. He stopped and turned. Just a security guard. One per building. Wesley made a note: the institute's security's not completely automated.

He flowed quietly to the central structure in the complex, Building Blue, rounded the east corner and vanished into the building's shadow. The thin moon and parking lot lights all faced the building from the south and west. The institute grounds glowed dimly, but no lights had been wired in on the east side of Blue. It discouraged scrutiny. It hid hidden things. The east side had no curving concrete paths lined with gardenias like the rest of the institute. A narrow gravel trail twisted through the low well-groomed hedges. It led to a ramp that ended with a blue door one level below the ground floor.

Wesley stared at it a moment. That looked promising.

He floated over the gravel and then hard grooved concrete. At the bottom of the ramp Wesley moved into the level doorway, activating the prox sensor. The bright light clicked on, exposing...nothing. It lit the level area at the bottom of the ramp. Wesley went completely invisible and whirled around, trying to peer out into the dark. A man standing there would be exposed to the institute security guards, and wouldn't be able to see beyond the ring of light. Like being locked in a cage blindfolded, exposed to your enemies, but with the inability to see them. Wesley waited, listening for approaching footsteps. He couldn't see the emptiness of the grounds. He felt the emptiness, like switching on a light in the space between stars.

The light snapped off.

He looked around the concrete rampway for the sensor that had detected his presence. He saw it up on the wall, a little disc type detector, probably IR.

Wesley spent a few seconds examining the air-tight door into the facility, weighed the possibility of a gap in the seals through which he could squeeze, and then decided to open it the normal way.

He bent down and looked into an open set of goggles, fixed to the top of a machine that stuck out from the wall. It was cross-referencing the pattern of his retinas.

Straff had taught him how to work the system, using the ret data from Dr. Greenleigh to back into the patterns expected by the validation process.

The sharp click of the door lock signaled success. Wesley pulled open the heavy blue door and drifted in like he owned the place.

Like the grounds, the hall was only half lit, a gray twilight, never quite closing into darkness, like a man who's pushed into to the edge of death each night, only to be revived every morning.

Wesley drifted down the half-lit hall, past offices. His eyes jerked involuntarily to the floors. The black shadow along the door bottoms reassured him. He moved on quickly.

Wesley stopped in front of the last door on the south side of the hall. The only one with a retina scanner. It looked a little

tougher than the plain office doors secured by ID card only. He bent into the machine.

The latch snapped and the door swung ajar. The loud crack was like a hard slap on the back.

He entered the control room. Video panels showed several angles of dark human-like shapes sleeping in cages, all in the similar positions, legs tucked up, arms curled in, backs to the wall. In seconds, he'd discovered where Greenleigh kept Ernest Straff and Alex Shoaler. He stopped, staring at a third prisoner, someone who'd allegedly died a hero in the overthrow: June Trimony.

21

An Unexpected Party

"NO! I CAN'T!" Alex gasped, and clawed at the air. They were pawing at him, annoying him.

He opened one eye blearily and stared up at the fluorescents. He was on his back in the middle of the prison cell floor. Still three floors below ground at Rost.

He'd been dreaming he was an old man, a grandfather actually, and his grandchildren, six or seven of them had gathered around him, chattering delightedly and repeating the same demands, "Please! Tell us, tell us again! Tell us of nine-fingered Alex and the pruning shears of doom!"

He stopped breathing and yanked his hands up in front of his face. Ten fingers. His left hand was sticky with some kind of medical tape...but his finger was there. No scars, no blood, no sign at all that his finger had been cut off. He looked around the room. The floor was clean.

Walter? Alex frowned a little. I knew he was a capable binder, but

sewing a finger back on...

He hadn't expected it.

He sat up with a little grunt of pain. He had a nasty stabbing headache. His back hurt where one of Black Beard's men had thrown him against the floor. He scooted over to the bed and hoisted himself up next to the table. He felt dizzy bending over to pick up his notebook. The pen was on the mattress.

His eyes skipped over the poetry he'd written. Flipping to the next page, Alex glanced around once, before hunching over and writing:

Are you there?

He felt the familiar smooth covering slide over his skin, around his wrist and fingers.

I am here.

Did you find Straff?

He is one floor above you at the opposite corner. A similar cell. I could not contact or communicate with him because he has armed guards watching him day and night. Dr. Greenleigh is behind this.

"I know," whispered Alex, and wrote:

Thanks for getting my finger back on right. I was just trying to figure out why they did that. Maybe there wasn't a reason. But maybe they wanted to see if you would heal me?

You are welcome, Alex. Yes. I think that is so. Not that they know about me, but this proves that you are linked to Straff. Dr. Greenleigh now knows something about you that you probably did not want to reveal. He doesn't know about me or Wesley, but he can see with his own eyes that the index finger on your left hand is no longer separated from the rest of you.

Alex tapped the pen on the pad after Walter's text faded away. He bent down to chew on the end, but Walter flipped his hand up and started writing.

What are we going to do?

Alex started chewing on his lip instead, and wrote:

We don't have to play by the rules with evil. We are going to cheat. Nothing wrong with lying, cheating, deceiving when there are guys with guns ready to take my life. You fixed my finger. What else can you give me? We have five hours to save Kaffia, and get my backpack back.

He felt Walter's hand tighten over his. Alex got his point.

Okay. Straff too. I need him to free Kaffia. Straff too then. This

is a very big operation for Rost. A last ditch effort. Andreden's after them. The restored gov is closing in. This is an all or nothing shot. Rost is supposed to be closed down. They risked a lot to send soldiers to capture Straff and me. I already assumed this has to all come from the top.

Dr. Greenleigh himself came down to talk to Dr. Straff this morning.

Alex felt his grip on the pen tense up. The tip remained poised over the paper as if Walter was on the verge of writing out something important. But all he wrote was:

There is someone else here.

Alex scowled and looked beyond the bars into the empty hallway, then bent over the pad.

Who?

Wesley.

"What?" Alex said aloud before he caught himself. He pulled up the pen. He scratched the words out as fast as they came into his head.

What is he doing here? Is Kaffia okay? Can he help?

He felt Walter's hand slide off and Wesley's slide on. He froze. I'm assuming it's Wesley, he thought, and started writing before he felt the bot take over the control of his hand.

How do I know you are Wesley?

Kaffia foresaw this and told me to tell you these three numbers:
18. 7. 38.

"What the--?"

Alex clamped his mouth shut. He lifted his head with sudden understanding. My old locker combo. What's the chance that some stickler at Rost has created something like Wesley--good enough to trick Walter--who has also hacked into NHL admin records? He shook his head. Not bloody likely. He nodded and whispered, "Okay."

Kaffia has gathered all of Straff's labnotes and has performed a chained randomcast of them across the Net.

"Okay," he said aloud, wondering what that meant. It sounded good. She's put the data somewhere, the bag of gold with which to bargain. He rubbed his eyes. He had so many questions. How did Wesley find him? Is Joe still breathing? He bent down over the paper and wrote:

Tell her that I...

Alex's subconscious shoved something new into focus. That I love her? He shook his head. Not yet.

...don't want to give Greenleigh the data. We have the chance to stop him now. It'll be too late after he's dumped everything out of Straff's head and analyzed the labnotes.

Alex stared at the words for a second and then his fingers, wrapped in Wesley's, slid across the sheet and wiped them away.

A second passed, the bot's invisible hand drifted off his, and he felt a single tap on his shoulder. Alex pinched one side of his mouth and thought, I'll take that as a cold, "I'll pass along your concern."

Wesley returned five hours later, shadowing two engineers into Building Blue when one of them opened the basement entrance. He boarded an elevator, got off, followed a dark stairway down one more floor into the dungeons three floors below the institute. Wesley turned right at the bottom and roamed the length of the broad concrete room, passing two guard booths. It looked like an old bunker of smooth, sealed cement-floor, walls, ceiling. He tossed a thread of thought into mapping mode. It was a giant below-ground concrete box with a thick epoxy resin that coated every surface and made the floor slippery. (Not that he had to bother with that. He merely noted it as not overly-bright.) Ventilation boxes stuck out high up on the walls. Buzzing white lights hung from the ceiling of the wide corridor, but the three hall extensions, two at each end, and one in the center, were unlit. Pipes and electrical conduit ran the length of the corridor, with offshoots that turned forty-five degrees and shot up over the ceiling twelve feet up. Looking back, Wesley understood the purpose of the three dark hallways off the main corridor. He grasped the dungeon's layout. The halls separated two long cellblocks. Glancing over his shoulder at an approaching team of soldiers, he turned

into the last hall.

Wesley passed through the bars of Alex's cage to find him bent over his pad, plotting something with Walter. Alex pulled his arm against Walter's sudden control. Their penned notes vanished and Walter wrote,

A warning from Wesley. Three soldiers are coming down the hall in this direction, possibly to take you somewhere.

Alex looked around as if he'd be able to see something, but snapped down over the notepad when he felt Wesley's hand swap with Walter's.

I will be quick. Then I must return for another task.

Alex glanced at the bars and nodded back at the paper.

Bargain for your life and Straff's. Both must go free or no data.
2.9 TBs of

"TBs?" Tuberculosis...plural?

Wesley's writing stopped and bold letters in a derisively slanted script appeared below them for three seconds:

2.9 terabytes (1 TB = 1 trillion bytes)

Alex snorted softly. Of course. It must be the approaching guards and impending torture throwing him off his train of thought, but he felt something, as if he sensed Kaffia's sarcasm in Wesley's written words. Wesley continued writing.

2.9 TBs of data, a complete compilation of Straff's lab books and library. All of it in one chained randomcasted archive file. They can verify the archive length and file integrity against the hash in the accompanying .SUM file. They can have it if you and Straff walk free. That's the deal. No other. If either you or Straff has a hangnail then they don't get the data. Data is here:

04e0:b2a7:9e34:c113:4fe2:ff02:0008:a384

Alex stared at the grid address, a pointer to a server on the Net, that would give the Rost bastards access to Straff's data, everything, the ability to develop real nanotech. It was like turning the world over to them.

Two funny things happened then. Wesley went through the page of writing, erasing statements that didn't apply, and replacing every instance of the word "you" with "me" to make it look like Alex had written the notes. And it was only then that he noticed that Wesley's writing was much sloppier than Walters'. Nice handwriting for a human, but not spectacular for a self-organizing billion node net.

Alex jumped as the door of steel bars slid back and a squad of troopers stepped in. They looked like the one's who'd brought him in a day or two before, but who could tell?

Two of them hauled Alex to his feet, and half dragged, half pulled him along the corridor, back the way he'd come on the way in. He lost the pen somewhere after the big metal door, but managed to keep his grip on the notepad.

Up the elevator to the ground floor and then two floors above that. The troopers hauled him through a double-doored entrance, into a conference room. They shoved him into the seat at the end of a long white table, and then slammed the door behind them. The whole room was shiny white, just like his prison cell. Alex smirked, looking around. Could be part of some weird obsessive color coding scheme. Blue door at the bottom of the ramp. White painted cell. White conference room.

He froze. He remembered Kaffia once talking about different groups at the Rost Institute. She'd come across them when she'd hacked into their network. She said something about the red and orange segments of the network. He nodded at the memory of her telling him that the "blue cluster or group" was the highest, most secure, and belonged to those who controlled Rost.

He sat alone in the room for over an hour. He wasn't sure. He looked around for a clock but couldn't find one. Making him wait. Just one more of their tactics. They have no idea how precious my time is, he thought bitterly. He didn't have time, but he couldn't let them see that. He forced himself to remain in his seat, even when his knees starting aching. He pushed the notepad up and back over the table's smooth surface. He shifted around a little but he couldn't get comfortable. He tried to keep the same curious, thoughtful look on his face but it kept slipping off. He listened to the low rumble of his blood rushing through his veins.

Greenleigh needs me... Alex didn't want to think about the rest, but he made himself. ...or I'd be dead already. His shoulders flinched when the thought shot out of its hiding place, like some ugly shadowy monster. He tried to pin that monster down, but he couldn't make it out clearly. It was like some hideous tentacled Lovecraftian thing that ate human brains and drank blood--only you never really got a good look at it. You only saw what happened to those who did. It's never pretty.

Then his brain seized the thought like a bear trap and plunged into analytics mode. Alex loved the dark fantasy of H.P. Lovecraft. The terror Lovecraft could compress into a thirteen page story was beyond belief. It oozed out at the seams, reeking of death and ancient hatreds and light-swallowing abysses. You'd swear the little black books whispered and cast weird shadows, but it was all in your imagination.

Lovecraft sunk his hooks right into the reader. The words were just bridges to the reader's imagination. Most of the time Lovecraft managed to get the terror across to you by reaction alone. You never saw the creature, the hideous monster or whatever it was that had its suction cups all over the guy's face. All you saw was the reaction of the victim when that poor fellow saw it coming at him, skin rippling in panic, mind dissolving into a chilled sour soup, never to return to a normal consistency. It was the last coherent words of the victim when they trailed into gibbering and drooling that scared the shit out of you. Instead of just putting down a horribly detailed description of the soul-sucking eyes and teeth like knives, Lovecraft worked the reader's imagination with hints and indirect responses and the fear of

irrecoverable madness.

Alex stared at the shiny white walls, the white curtains, the closed white door, and thought about fear.

Fear...Fear is a terrible thing, but there's a treacherous element that makes its use as a weapon difficult, like opening canisters of poison gas on World War One battlefields. Everything's going great, your enemies are running in terror...until the wind shifts and throws the lung-biting, eye-burning cloud of death back at you. (On the designer's blackboard the wind always blew toward the enemy, a thick chalky line with an arrow pointing away from their side).

Weaponized fear. That's what they have here at Rost. They've managed to package it up into bite-sized doses, control its use and delivery...and maybe they think they're immune to it?

Alex lived in reality. In reality, no one is immune to its treachery. Fear can be used against them...especially them. They're cowards, like an arsonist with fire. He wants to see rippling sheets of flame high enough to touch the clouds. Thick black smoke. He wants to hear the horns and sirens of fire engines. He might even want to feel the heat.

You want to see all the color drain from an arsonist's face? You want to hear his words trail off into gibbering and drooling? You want to let loose on him one of Lovecraft's faceless, unspeakable deformities? Try dousing him with gasoline and lighting a match.

Greenleigh needs something from me...and he's a coward at heart. It's the getting to his heart part that'll be tough.

22

A Little Symmetry

"TRIMONY, IF I HAD KNOWN what I could get out of you with a few

thousand implants I would have wired up your skull a year ago." Greenleigh gave her a friendly smile.

"You didn't have the tech a year ago," she whispered weakly. "You stole it from the Air Force, and it originally came out of the cognitive development lab at Cambriani where researchers were trying to tap into the conscious flow as a treatment for blindness and deafness."

"I'm not going to deny it." He shrugged. "We've put it to use. I can get a good look around the inside of your brain with it."

She managed a weak smirk. "Good luck deciphering it."

"Not a problem. You've already managed to impress me. And Ernest Straff's next. One more step to get through and my surgeons will jack him in. Can't wait to see what we get out of him."

Trimony threw him a hate-filled glare. Why bother me with that? I don't like Straff anymore than I like you.

Greenleigh waved over the behavior engineer who was in the middle of suiting up in the corner, and the Rost chairman tugged on the headphones and goggles. He toggled deeper into the blur of an old video panel. He grinned at a flash of Amelia Valera's face.

"Not that!" Trimony pleaded.

...in her imagination, Trimony's fingers tapped quickly at the keyboard, extracting one file out of an archive that contained

thousands of files. She pulled it into a viewer, seven pages of a medical form, half filled out, darkly blocked with gruesome images of a naked but badly damaged male body with annotations about trauma, close-ups of bruises, deep gashes and burns. There were no images of the man's face."

Valera looked closer, black hair swinging over her cheek, trying to find some connection between this horror and herself.

"What's this? A coroner's report."

"It is."

Trimony scrolled to the top of the first page of the document. Last name, Andreden. First name, John.

Amelia fell back into her seat and sucked in a sudden breath. It took her a few seconds to pull her eyes away from the screen to the one in front of her. She shifted to a console, keyed in some search terms. The birth year matched. She couldn't find the day and month. She shook her head.

"Andreden's alive. I actually spoke to him yesterday. I heard a live broadcast from a business conference he hosted last night. What's the date on this?"

"Five days ago."

Trimony and Valera glanced at each other, hands ready over keyboards for something to go on. Nothing came.

"Doesn't make sense."

"I know," said June.

"Who owns this? Who created this report?"

"It gets better. It's Greenleigh, chairman of Rost Institute. And I have a couple of trails that I'm still following, one that leads back to the Commissioner of the SACB, and another that leads to Dr. Skull and Crossbones himself, Ernest Straff."

Amelia studied the document section by section. There were important blocks of data missing, as if the report hadn't been completed. On a page that didn't belong to the rest of the document there were notes about Andreden's shirt and pants size, shoe size, and a particularly horrible paragraph that Amelia found difficult to read: detailed dental information, the locations of fillings and the material used. She glanced away, a wave of nausea passed through her. The pressure started low and mounted as it climbed up her body like someone squeezing a tube of toothpaste. She clenched her teeth against the force and held her neck stiffly. She swallowed hard.

"How did you get this?" She whispered roughly.

"The usual. We have some stiff--regular people not spies--inside some of the orgs. They post info to us. We also have a few strategic net-taps that monitor traffic for us, looking for keywords, source and destination packet addresses, forensic analysis tools that dump their data to us, a bunch of different methods."

Amelia got up, folding her arms tightly. "You're good."

"Puttin' the screws to Zoerner and his lackeys is more than enough

to keep me going, hon. Besides this was easy. You don't need forensics to figure these guys out. They just aren't thinking security. Simple symmetric algorithm. Short keys. I just brute forced it. Before the Senate and the SACB decapitated the NSA there were guys who worked in the basement at Fort Meade who could do this stuff in their heads. On the other hand I guess it makes sense. Zoerner and his SAC Board may understand the difference between hollowpoint and armor piercing but these idiots wouldn't know information security or encryption if it bit'em. The National Security Agency complex is still there. It's the humans who're missing. They have machines that can rip through strong encryption like a scalpel through butter but they're collecting dust now."

"Like the barbarians after sacking ancient Rome who urinated on the walls because they didn't know what the bathrooms were for."

"Welcome to the Dark Ages."

Trimony smelled her own skin cooking. They burned three toes off her right foot. Her lungs were empty, so empty they hurt. They burned, raw as the nerves at the end of her foot. She'd scraped her throat bloody screaming. The inside of her mouth was a swollen, blistered cavern of pain. Her spine arched against the restraints. Her fingers clawed into the vinyl padding on the armrests. They hadn't touched her fingers yet. The crinkly man in the turquoise suit broke the bones in her left knee, pulverizing muscle tissue and tendons.

The torturer with the hot glowing iron arranged her fingers, his touch tender and caring, concerned with the proper arrangement of his victim. He unhooked her thumb and slid a metal plate between her hand and the armrest.

"Greenleigh!" She screamed thickly. "Please. Please. Please. Stop."

"I'd love to, Miss Trimony. But you have to do something for me."

She made an affirmative "ungh" sound, her mouth sagging open, saliva sliding along her cheek.

"Good. Wise decision." He pointed at a large video panel to Trimony's right. It lit up, a flare of white lines and glossy planes, a conference room with a long white table, curtains, floor tiles. Alex sat by himself at the far end of the table, fiddling with a notepad on the glossy surface in front of him.

"Mr. Shoaler?"

Alex looked around. "Yes?"

"I think you're ready to hand over Straff's data, everything your old colleague's been developing over the last three years."

Alex held his head still, and concentrated on looking toward the head of the conference table. "I think we can make a deal. After all, that is why you dragged me here, isn't it? Of course, it depends what you can give me."

Greenleigh frowned. "Let me see your hand."

Alex shoved it in his pocket. "Why don't you come see me, face to face? You scared, Greenleigh?"

"I like this kid," mumbled Trimony.

Greenleigh turned to her, not quite covering the edge of concern. "Good. He's going to betray Straff. You're going to betray him."

Alex clutched at his notepad as a chill swept over his body. He wrinkled up his nose, smelling something, a strange sweet smell. He sniffed the air. He shook it off, thinking it was some residual affect from the drug Walter had given him three or four nights ago.

He looked up. He hadn't heard the door open. A soldier, visored and armored, marched up to him and snatched away his notepad. Alex made a move to grab it back but he missed. His eyes up shot to the group of men entering the room from the door at the other end. He counted five not wearing jumptrooper uniforms.

The one in the group's center stared at him with big dark eyes, a withering look, eyes that had seen atrocities, children mutilated, humans turned into animals. That man looked away as the trooper handed him Alex's notebook, then his eyes turned back to Alex, drilling into him for a few more seconds before he took his seat at the other end of the table.

Alex hardly noticed Dr. Straff, led in after the Rost officials, by two hulking troopers. He was wearing what looked like blue pajamas. Even the straps that bound his wrists together were blue. He looked thinner than Alex remembered him from the Personifex of him. His face looked more lined. All his hair was gone, either yanked out or loosened by stress.

Straff stared back at Alex with a haunted, helpless look. There was also something else, maybe a slight curiosity, but it was all wrapped up in a bold and obvious incredulity. It was clear that Straff had no idea who Alex was, even if he could guess why he was there.

"Nice bit of poetry, Mr. Shoaler," said a cold thin voice from the man at the opposite end of the table. "Tyrannicide? Thinking of killing tyrants, Mr. Shoaler? Clever combination of the words universe and unanimous in this first sample."

Alex glared back. "I thought so."

The man studied him a moment more, then rose to his feet and walked the length of the table. He held out his hand to the five who'd followed him into the room. One was the black-bearded man who'd cut off his finger. Alex didn't even look at the others. His eyes swung to the man who approached.

He was tall and slender with black hair. His eyes were bright blue and seemed to be sunk deep into their sockets because his eyebrows were so thick. When you looked at his face you only noticed his eyes and his smile. His eyes told you everything in the world was serious and was his concern. His smile told you that nothing existed that could not be reduced to garbage and thrown away. His eyes could make you stumble and fall into the darkest pit, but his smile told you not to worry because you would never hit the bottom.

"Alexander Shoaler," said the man, slow and disappointed, starting high and ending with a deep tone. "We haven't been introduced. I am Dr. Greenleigh, chairman of the Rost Institute."

Alex felt a chill. Okay. I really don't like this guy.

Quicker than Alex would have guessed, Greenleigh's hand shot out and grabbed his wrist in a cold dry grip. He tugged at Alex's left hand, bending his fingers, inspecting them. His eyes swung to Alex's and pinned him to his seat.

His smile broadened. "Very good. I just wanted to be certain that you had the authority to make the arrangements for any kind of agreement we might come to."

"What agreement?" Straff shouted, starting to stand up. He pulled his bound fists up in front of him angrily. "Nothing for you, Greenleigh!" He roared, but his eyes burned into Alex. "I don't know who you are, but...but...Wah--" He stammered something that may

have been pleading for Walter.

Greenleigh gave Straff a meaningful glare. "You had your chance, Ernest."

He held an inviting hand toward Alex. "I'm now dealing with Mr. Shoaler, who, I am convinced, has the authority to make me a deal."

Alex swung his eyes back and forth between the two men.

"Auth--! He is only--!" Straff was so agitated he couldn't complete anything he started, so Greenleigh nodded to the nearest trooper who forced Straff back into his seat and held a gun to his head.

He turned to the men still seated at the other end of the table, one bent forward to copy out the data address. He pointed at two and then toward his seat where he'd left Alex's notepad.

"Urlings. Hinze. Let her see the data our friend, Mr. Shoaler has kindly provided. Tell me what she thinks of it."

Alex glared at Greenleigh. Her? Kaffia?

Each of the men jumped from their seats in turn, so Alex could tell which name belonged to which Rost official. Urlings was short and stocky and nearly bald. He had a wide mouth set with a permanent grin. Hinze wasn't much taller, with a thin dry line for a mouth, and enough curly black hair on his head, arms, fingers and chin for both of them. The man could comb his arms, Alex thought curiously.

He looked down at the table. He couldn't look at Straff. His lips pulled tight. I'm counting on you Kaffia. Otherwise we're no different than Dr. Death here, thinking short term, letting them have the means to kill us all in the long run.

He pulled in a deep breath, trying to slow his thumping heart. Confidence now. He repeated the phrase a few more times. He released everything in his lungs.

He knotted up his brows and looked at Greenleigh. "I want my backpack, board...and Dr. Death comes with me."

Greenleigh wasn't the least offended, or at least that's what he showed on the outside. He waved off the trooper threatening Straff.

"Fine. Fine, Mr. Shoaler. You can have Straff." He frowned thoughtfully. "We don't have your pack or board." He pointed to another trooper who nodded curtly back and left the room. "We can get through this without resorting to violence. We just want the data." He added with an innocent shrug, "I don't really want to hurt anyone...unless I'm pressed into it."

Greenleigh's threat didn't cut deep into Alex's thoughts. He blinked like it had, but that was his sudden realization that the angry edge to the man's voice could easily be fear. The two of them often went together.

He looked at Greenleigh. "I...um...think this can be worked out. Can I have that notebook back? And a new pen. I lost the other one on the trip up here."

Alex read the hesitation in Greenleigh's face.

"I need the first page. That's mine." Alex shook his head. "I don't need the rest. That's pretty much the deal I want. Read it over. I get Straff. You get the data. Tear that out if you want to keep it. Just want some blank paper and a pen. It'll help me get my thoughts out clearly...if I can put them down on paper first."

Greenleigh curled a finger at one of the remaining Rost officials, nodding his assent. The pad of paper skimmed down the smooth tabletop, past Straff, twirling toward the edge. Greenleigh snapped it up, flipped through it, examining the pages. He tore out the second page, tossed the pad to Alex, and then pulled out an expensive-looking silver pen from the breast pocket of his suit.

Alex looked up at Greenleigh, noticing that the man was standing a little further away, like he was afraid he'd catch something terminal. Greenleigh twisted the pen, extending the tip, and then pushed it along the table. The silver cylinder skidded over the white surface, stopping within Alex's reach.

This is what Straff's afraid of. It hit Alex like a good solid swing with a mallet. He cleared his throat to cover up his sudden understanding. An attack for which there is no defense. Alex stared a little longer at Greenleigh and then his eyes dropped to the pen. He's wishing he hadn't touched me, wishing he'd ordered one of his underlings to examine my finger for him. To see that it works like it used to, before he had it cut off, that there isn't a sign of the slightest cell damage. That's got to scare him. Maybe he knows Straff, and what to expect from him. But he doesn't know me.

It's nanotech. I could be a thirty-five year old research scientist. I could be Straff's associate. The fifteen year-old facade could be just a cover. Greenleigh doesn't know.

Alex knew the answer, but he wrote out the question anyway.

Tell me what Greenleigh really feels. I can see the front he's showing me, but what's going on inside?

Scared.

Time?

Less than three hours.

Greenleigh's hand shook when I asked about my backpack. Did I leave it at NHL? Did the troopers take it with them?

You left your pack and skateboard leaning against the locker next to yours.

This shook him more than the fear rising inside him. He stared at the paper after Walter swept away the words. Then he rammed the pen into the pad and scratched back and forth. He left half a page of scribbly black ink.

There was a constant wind noise in his ears. He noticed it earlier but it didn't bother him. It had grown steadily louder, drowning out any more questions, daring him to act. Start counting Kaffia's life in minutes, it told him. Death didn't matter anymore. Did it? It didn't feel like it did. Not without Kaffia. He just felt...numb. He glanced coldly at Straff. You are nothing but the key. Kaffia's all that matters.

He turned his glare to Greenleigh, and pointed down at the table. A flash of Kaffia choking, curled up on the kitchen floor went through his imagination.

"You want a matching crater right here instead of building blue?"

Greenleigh's eyes snapped to his. "What do you know about that?"

"I can make it happen." He waved the fingers on his left hand. The roaring in his ears grew louder. "Try me."

Alex paused, dropping his eyes to the clean white surface. "Let me show you...something."

He swept his hand over the conference room table. The miniature Rost complex materialized, brown oozing into green grassy hills, and five gray buildings. Walter was quick. He'd already updated his model to reflect the hole in the ground where building orange once stood.

Greenleigh, Straff and the others stared at it. Black Beard stood up from his seat to get a better look. Even the jumpstroopers against the far wall leaned forward.

A muffled thump shook the table followed by a flare of orange and red. A mushroom cloud rose over the tiny Rost Institute. The smell of burning plastic filled the room. The dust cleared and there were two holes in the green hills.

"I like symmetry, Dr. Greenleigh. You like symmetry?" Alex pointed at the holes. "The whole thing has a better feel, now. With orange gone, there was this gap in the order. Now, with blue and orange off the map, yellow and red on one side and purple and green on the other, it all looks...symmetrical."

Greenleigh went pale. His eyes raked over the men at the table.

"Leave us!"

23

Duct Tape

I FOLLOWED a black patrol car halfway to the Lyceum. The officers were rolling at a little over walking speed, looking for anything thrown from the van, Kaffia's bag, clothes, anything. I told them what I saw, the van, the jogger, three men and a driver. Took all three to get Kaffia into the van.

Her father was in the driveway, on his way to work, when I flew in, shouting like a maniac and waving my phone. Two police cars pulled up a few minutes later. Her mother was already at work, somewhere in toward Boston, but she showed up in 45 minutes, probably pushing 120 all the way up 95. I left Kaffia's house at 1:00 in the afternoon. They told me they had it all under control.

An officer remained behind to coordinate information as it came

in. They'd mobilized a team that investigated abduction crimes. They were already reviewing the video nets along Atlantic, and had requested high resolution satellite feed data from the Feds.

I headed up Mill Road toward school, kicking slowly, my head somewhere else. Who took her? Was this related to the Andreden papers from Rost? Halfway there, I thought the guys in the van came back for me.

Cars and trucks drove by, students on their way to NHL, coming back from lunch. A white Mustang, lowered with a mod'd exhaust, swerved in front of me, across the narrow shoulder of the road into the gravel. I turned sharp, hit the rocks. My backpack flew over my head in front of me. I pulled out every trick I knew to stop myself from eating it on the side of the road.

I glanced over to locate my pack, and then Kyle Vickery and his friends jumped on me, pushed me down and drove me into the dirt.

"Get off the fuckin' road, Shoaler. It's for cars!"

That's all I heard them say. Vickery kicked me a few times, once in the stomach. One of them stomped his foot down on my right hand, while another dumped out my pack in the grass on the side of Mill.

They took my board, laughed, and jumped back into Vickery's car, sending gravel flying at me as they roared off.

I finally made it to school, my right hand swollen and knees scraped up. Nothing much out of the ordinary. It looked like I'd taken a fall off my board, and in retaliation, decided to walk all the way to school today.

I pushed the idea of going to Copplin's class out of my mind, and

headed right for the student access computers in the library.

The guys in the white van took Kaffia and her bag, which contained my borrowed notebook, which was still running the trojan Krempansky created--modified by Kaffia to report everything back to one of her network servers.

What I found on Kaffia's server made me choke. I coughed loudly to cover it up and endured a dark glance from one of the librarians.

I grabbed the private key and a console app that Kaffia had put out there to run the encrypted log files through. I had to type with my left hand because my right ached, even when I kept it as still as possible, stabbing pain shot up my arm when I moved any of my fingers. Nothing broken, just beat up.

Wherever Kaffia was, she'd been using my notebook...to break into Rost. The bastards who took her must be forcing her to recreate her steps for getting to Greenleigh's workstation. She knew where all this data was going. She was leaving a trail.

The last log from her--checked the clock--ten minutes ago, was to a mapserver, with a request for directions to...some boat landing along Sagamore Creek, a wide channel that fed into Portsmouth Harbor from the south. It didn't say from where. They must be local.

I jumped up and ran from the library. There was this loud crashing ocean surf noise in my ears. I couldn't shake it off. I didn't really feel the pain in my hand. I marched across the quad, making fists, looking up and back for someone...Vickery.

He was leaning against one of the granite stair posts at the foot of the mathematics building, telling some funny story to a prep girl. She stroked her long blond hair teasingly and giggled. He glanced over at me, still laughing.

"How you gonna get to school now, Shoaler?"

I dropped my pack, ran up, gathered momentum, and threw my right fist as hard as I could into the side of his thick neck. I aimed for his face, but he'd started to duck. I heard the girl scream through the roaring in my ears. Ignored it. I jumped on Vickery before he hit the ground. He gagged out some kind of threat, his fingers on his throat.

He snarled and bucked with me on top of him. I grabbed the back of his head and forehead and bent up his neck till his ear was close. I whispered harshly, "You're going to drive me."

He bared his teeth until I said in a voice loud enough for others to hear, "NDIS told me to tell you that I like to be picked up around 7:15."

He froze. His mouth sagged wide open. There was a little shaking to his lips. Apparently it had gotten around that we'd been seen together.

"Before she said that, she said you'd better not be late today."

"Wha--what happens today?" He wheezed.

"She wants to be picked up near Sagamore Creek." I looked at my watch. "In seven minutes." I made that up, fast but realistic.

I jumped off him and scooped up my pack. Then I pulled on his shirt till he got to his feet, and he followed me through the gap between admins and physical sciences, toward the student parking

lot.

He drove like a madman, following my directions. We hit a dirt road, skidded off it for a terrifying second and then went on. I couldn't tell if he was regaining his composure and trying to scare me.

We came around a bend in the road and nearly collided with the white van, parked right at the entrance to a crumbling concrete boat pier. Vickery jerked the wheel left and went into the weeds. I had my door ajar. Vickery threw it into reverse and was just about to back out when a huge ugly man put both his hands on the door on my side and leaned into the window. I yanked myself away from him, backing up against Vickery.

His face looked like it was carved of wood, and someone had taken a knife to every crease and line that defined his features, working them wider, deepening his dimples, gouging out the cleft he already had in his chin. He had a straight nose with large drafty nostrils, yellow teeth, and even though he'd obviously shaved, he'd made a mess of it and left little random clumps of hair, one on his left cheek, another under the jawline, and one right under his bottom lip.

He looked around the inside of Vickery's car.

"You boys go fish somewhere else." His voice was like sandpaper against my ears. "We've...uh...got this kind of tied up for a while."

Mr. Ugly didn't wait for an answer. He stood up and walked back to the van.

Vickery nodded vigorously. I pointed back up the road.

"Let me out just around the bend, and then get out of here."

He jumped when I apparently yelled the directions. When's this roaring in my ears going to stop?

I ran through the woods along the road, dropped my pack at the edge and watched for a minute. That's all it took. I pulled out my phone and called the police.

Mr. Ugly flung open the van doors and walked Kaffia to the end of the concrete pier. I dropped the phone in the leaves, ignoring the voice on the other end.

Kaffia wobbled all over the place. They'd drugged her or something. Her head lolled around, sagging against her right shoulder. Her hands were bound behind her back with gray duct tape. Another long strip wound around her head, covering her mouth. Ugly held her upright by the shoulders and pushed her along the pier.

They'd tied a yellow nylon rope around her throat that sagged down her back and dragged along the concrete behind her. She was soaking wet, like they'd been dunking her in the creek, letting her struggle to the edge of drowning and then pulling her out by the noose to get answers from her. She shivered continuously, but looked too weak or drugged to fight what was about to happen.

At the end, Ugly dug his fingers under her shoulders and lifted her into the air. Kaffia kicked backward weakly, barefoot. There was more tape around her ankles, and large lumps of rock to weigh her down.

Then Ugly heaved her into the water. A little splash, and the yellow rope slipped off the end of the pier after her.

Ugly pointed up the road as he lurched back along the concrete. The driver of the van started it up, Ugly climbed in the side door and they drove off.

I bolted from the woods, down the pier, screaming "Kaffia!"

No sign of her, no bubbles, no ripples of her path through the dark green water. I dove off the end and pulled my body to the bottom.

I squeezed my eyes open, snarling, and released a short breath.

I saw her through the dark water, her eyes wide, staring up at me, pleading. I released another bit of air and grabbed her shirt at her shoulder. She'd hit the bottom. I kicked along her back, and tore off the tape at her wrists. Her hands free, she clutched madly at me, tearing at my shirt desperately.

I let out the rest of my air. It rippled past my cheeks to the surface twenty feet above. I pulled myself upright, hugged her and kicked up. I couldn't get very far off the muddy riverbed.

I swung my head toward the bottom and clawed at her jeans, pulling myself down. Her feet were buried in silt. I tore at the tape around her right ankle. I chewed at it with my teeth.

I peeled back the tape. She kneed me in the side, a spasm of fear. She was out of breath, too. She kicked and jumped as I unwrapped her other ankle. She heeled me in the nose. Blood thickened around my face.

Her fingers made a fist with my shirt, pulling my collar tight around my throat as I kicked off toward the surface. She floundered back and forth, angling sideways. The drugs. She didn't even know

which way was up anymore. I gathered her legs in one arm and kicked as fast as I could.

Not going to make it. The river wanted my life. It ripped at the inside of my throat like a caged animal. The green water seeped in, hammering into my lungs. My eyes bugged out. Water...is mine. It's my world. Rather be in it than out it. Not...Not like this. Mud slipped under my kicking feet. I fell forward, closed my eyes, and don't remember how I got out of the water.

I woke up vomiting over the gravel next to the pier. It seemed like an hour later. Kaffia was on her knees, bent over, coughing. Duct tape coiled on the ground in front of her. Her hair stuck out all over, spiraling around her throat, fanning in wet strands over her cheeks. She coughed over and over again.

The police were there, calling the paramedics. One officer helped me sit up, but I fell back against the rocks.

"No," I rasped. "Not the hospital. Not going. Rather die here."

After losing consciousness in the river I only had one flash of reality, waking up, vomiting bitter tasting water, the police, Kaffia with the duct tape torn off. I experienced all of it in a second.

"You found me," she sobbed. "I knew it...knew it the first time we met."

I stared back, river water dribbling off my chin.

What's she talking about?

"You were the only one who's ever asked me what NDIS meant. I mean face to face. You weren't afraid.

I tried to hide my reaction. Inside I said, you're kidding? I was scared shit--!

Kaffia threw her arms around me and held me for a long time. She shuddered and cried. I was soaking wet, but I felt her warm tears streaming down my neck. She tightened her grip and wouldn't let me go. Even when her mother and father showed up. So, I got hugs from her parents also.

It took me a week to ask the question. We were sitting in the grove of white birch on the granite blocks. "You weren't scared?"

We were alone, but she looked around to make sure. "Of course. Not out of my wits. I did everything I could possibly do to prepare for it. I couldn't do anything about the hollowpoints or their fists but I prepared for everything else."

She still had a dark bruise along her neck, a couple more on her arms. If they did anything else to her, she never told me.

Mr. Ugly had a name. Rost had sent in an enforcer called, "DT"-- short for duct tape. Except for the interrogation, that's all he talked about, Kaffia said. "High tensile strength, doesn't tear easy. Had vids of all the old McGiver's."

What a wacko.

They started by nearly drowning her twice, lowering her into the creek by the rope around her neck, and letting her struggle to keep her last breath. Then, soaking wet, shivering and her own death seconds away, they stuck a gun to her head, and she showed them how she'd gotten into Rost, and even into Dr. Greenleigh's computer. Then they gave her some drug, "So she won't feel nothing when the end finally gets her."

I think she told me more than she told the police and the detectives in the abduction crime unit. Or her parents.

"Aren't you afraid that DT guy's going to find out you're alive and come after you?"

She shook her head, same old fearless Kaffia. "I don't think he'd bother."

I gave her a stunned look.

She shrugged innocently. "Apparently he's a very bad dude. He used to be a SAC Board assassin. Police finally caught up with him. Breaks the law a lot. Doesn't pay his taxes."

I started to scowl. "You know that's how they finally got Al Capone?"

"The mobster? Didn't know that. Tax evasion, huh?"

I nodded.

"DT got it a little worse. When the courts are done with him, he'll be in for what's left of his life."

A long silence passed, which seemed to happen a lot lately. She seemed to have slowed down, enjoying where she was at that moment, rather than always chasing the next moment.

I didn't know how to change the subject. Not sure if I even wanted to. Everything was going so well. Finally, I shrugged like I would at some topic which hardly deserved attention.

"Is there anything weirder than a teacher--who you know hates your guts--suddenly treating you like you ought to be treated? I mean, nicely, respectfully."

Her eyes snapped to mine. She'd always be able to do that. He voice remained low, secretive. "Bad people deserve to be treated badly, of course."

"Did you do something?"

"What?" She said shortly, daring me to go further.

"Mr. Copplin's changed. He hated me. Suddenly, he's giving me the grades I deserve. He even gave me an extension for my research report."

"There's justice in this world," she said flatly, shrugged and looked away.

"But...In this case..."

She shrugged again. "People change, see the error of their ways, who knows?"

I learned then not to press her, because she may not feel it's safe to give me hints one day. That didn't mean it wasn't perfectly safe to go into the complete details of her operational plan a day later.

She found me after school the next day. She tossed me a couple books on the science of networks, mostly complex math, and told me to read them. She also had a long box under her arm.

"Successful attacks aren't always about one big blitzkrieg."

Sometimes broad, concerted, tightly synchronized attacks work far better."

I didn't answer, knowing that she'd probably explain what she was referring to. I guessed this had something to do with Mr. Copplin, my grades, the dean, Krempansky.

"How's a man with something serious to lose going to react when he's attacked on six or seven fronts all at once?"

I stopped and watched her.

"Let's say we're talking about a teacher, say he teaches history, gets a letter from his alma mater stating that his degree is invalid. It seems there was a foul up and he didn't take all the required courses for his degree. Followed by something from a credit company with some serious questions about his spending. Mortgage problems? You didn't pay your property taxes last year, Mr. history teacher?"

My mouth was sagging open wider by the second.

"Next thing he knows there are some files on his machine planted where he'd find them.

"What files?"

"Couple images, a README, enough to get...the point across."

"What'd you say?"

"Just wanted an answer to a simple question. I wanted to know how long he'd have a job after I emailed a dozen alumni parents and revealed the fact that he had porn on his computer."

"That's it?"

"Nope. He didn't believe me."

My mouth dropped all the way open.

"He had NHL's IT department update his machine, tighten security, and then it was business as usual for him. I did it again."

"And he listened?"

"It took a couple more times to convince him that I could own his box anytime I wished. Then it was enough."

Another long silence while we walked home. She jutted her chin at the large package under her arm.

"Going to ask what's in this box?"

She grinned, didn't wait for me to reply, flipped it open and pulled out a new skateboard.

"Bought you something to replace the one Vickery fed into the school's wood chipper."

"Vick--Wood chipper? How do you even know he took it?"

Her smile remained, but she narrowed her eyes a little to tell me that that was her business. She went on. "Built in LBA." When she saw my questioning look, she added, "Location-Based Awareness. It'll tell you where it is. If it's still in your locker. If someone's stolen it and taken it to the skatepark, you'll know." She tossed me a tiny cylinder with a ring on one end. Kind of looked like a very plain gray plastic earring. "Hook it on your keychain. Your board'll come back to you if you fall off it."

24

Winning the Game

ALEX, STRAFF and Greenleigh stared awkwardly at each other, frozen in place, while the others filed out of the room. As soon as the door closed, Alex pointed demandingly at Greenleigh.

"You have the grid address for the data access. 2.9 terabytes of it randomcasted. Straff goes with me. And we'll need a ride."

Greenleigh exploded. "Don't play games with me, Shoaler!"

Alex looked at him with startling clarity. The man needed fear to survive, and he was desperate to regain his position. And the roar in Alex's ears wouldn't go away.

"Games?"

Alex waved his left hand over the revised model of Rost Institute, leaned back in his chair and folded his arms. The four remaining buildings faded away, followed by the grass, trees, and then the hills. The white table shined back at them.

Greenleigh stared at it with a malevolent frown. "Your backpack!" He swung his eyes to Alex, nearly shouting the words. "You can't threaten me. You need something...or...or you wouldn't have..." His voice trailed off into an incoherent mumble. He found it again a few seconds later. "You wouldn't have waited to bargain with me. You would have taken your precious Doctor Death and gone days ago! What stopped you?"

Alex drummed his fingers on the table. He'd gone beyond fear, through rage and was into some cold, numb beyond--with his head still working.

"When you win a game, Dr. Greenleigh, that's it. You don't have to worry about losing after the game's been played out. You won. Both teams walk away. Done. I wanted to make sure you understand that we're through. This is it." He waved the fingers of his left hand, all attached, and then stopped with the index finger pointing at the ceiling. "But to do that I need some...insurance. I don't want you showing up at my front door next week." He studied his own healed finger. "When you checked on your handiwork, you took something away with you. Something small and..." His subconscious fed him a really good word that contained all kinds of nanotechnological fears. "...fertile."

Greenleigh's brows shot up. He looked at his hands, turning them over in front of his eyes as if he'd be able to see microscopic parasites.

Alex picked up the silver pen. "Here's some symmetry. I write on my arm and...look at yours."

He wrote, "OUCH!" on the inside of his left forearm.

Greenleigh's eyes shot wide. He gasped short fearful breaths as he

yanked up his suit sleeve. He ripped at the cloth, snapping buttons onto the floor. He stifled a scream. It squeaked out of his mouth like air seeping from a balloon.

He stared at the four letters and exclamation point on his own skin, but with raw red burns radiating out from the black ink.

"I can write two words, Greenleigh dies. Any distance. Any time. All I need to do is dot the i's and--well there aren't any t's to cross. Put a period on the end, and that's all I need to do to make it happen. We can't wait for your guys to download all the data. We're leaving now. Is that clear, Dr. Greenleigh?"

Alex sat stiffly. His insides were boiling. Don't give them the data, Kaffia. He kept repeating it in his head.

The Chairman of the Rost Institute swallowed, made a little choking coughing noise, and nodded.

"Who are you, Shoaler?" He gasped.

Before Alex could even form an answer to that, the door burst in. Greenleigh jumped, clenched his teeth and struggled to pull the sleeve of his suit over his arm. The jumptrooper he'd sent off to find out about Alex's backpack came around the table, oblivious to anything that might be going on in the white conference room.

He pulled up his visor and whispered something to Greenleigh, who turned toward the wall of white curtains so that Alex wouldn't see his reaction.

Alex cleared his throat. "They didn't bring my pack, Dr. Greenleigh. I left it leaning against the locker next to mine at

NHL. And the troopers you sent to fetch me didn't realize it was mine." He added as if mildly put out, "I hope someone brought it to the lost-and-found."

Greenleigh swung around with a murderous glare. Alex glared right back, pointing at the trooper.

"Have him release Straff. Clip those ties."

Greenleigh nodded to the trooper.

Alex got to his feet. He tore off the top sheet of the notepad and stuffed it in his pocket. "Now, we'll need speedy transportation back to New Hampshire. One of those gunships would be fine. Now!" He added, pointing with the silver pen, when he saw the hesitation in Greenleigh's face.

He walked up to Straff and gave him a keep quiet look. Straff nodded back, and Alex swung around to Greenleigh. "We can't wait for the download. I'm busy, Greenleigh. I need to be some place. You'll have the data, and I promise not to wipe building blue off the map."

Greenleigh kept his cold stare, but stabbed his finger vigorously at the trooper, in an obvious make-the-arrangements gesture.

"Let's get out of here," Alex said to Straff with a meaningful look. Straff nodded back, his teeth clenched tight, aching to ask a host of questions, but not wanting to ruin what looked like a winning chance to escape from Rost Institute.

Alex pointed Greenleigh through the door ahead of them, and gave the room one last sweeping scowl.

Dr. Greenleigh led the way out to the landing pad behind building blue. He looked a lot less crisp and clean than usual. There was a gunship squatting in the middle of the concrete, engines whining, ready to take off.

Alex pulled up the silver pen and wrote Greenleigh Dies without the dots over the i's or a period on the end. He pointed to Greenleigh and at the gunship with the pen.

"We better make it to New Hampshire in one piece!" He yelled over the engine noise.

Greenleigh stared back at him, then held up a finger and jutted his chin at two men approaching. Alex and Straff swung around. Alex stopped breathing.

"That will be my proof, Mr. Shoaler."

"Fine," said Alex stiffly, his lips going a little thin. Had Kaffia given them everything? Had she done something to the data?

The two men Greenleigh had sent off to verify the address ran up to them smiling, each waving a sheaf of paper over his head. Hinze gave them a thumbs up.

"Big damn file, and he cast it all over the Net. Chaining's going to be rough." panted the man, stopping in front Greenleigh. "We're downloading the whole thing now, a link at a time. Almost 3 TBs. It'll take hours. Server's are choked down with a bandwidth quota for each connection. It'll let you request offsets into the data though. We took twenty samples from various positions on the archive file. All but one check out. Standard e-lab-book text

format, one's a compressed image, one we haven't gotten into yet. Matter of time. Here's the TOC, over a hundred pages of line items."

"What did Trimony say?"

He handed the paper to Greenleigh, and he smiled at Straff contemptuously.

"She told us to tell you that you ought to be happy."

Greenleigh's eyes scanned the first few pages of the contents and then swung to Straff.

"Very good. Didn't need you after all, Ernest."

His dark eyes continued on to Alex.

"You're smart, Shoaler," The Chairman said, shaking his head in disappointment. He pulled the gunship door open himself and gestured for them to enter. "You played it smart. We've both won this game. I've been waiting for this for a long time, maybe even longer than you've been alive."

Alex turned away without another word. He pushed Straff up the little metal stairs first, and then jumped into the cabin. In seven hundred and sixteen seconds they were over the Massachusetts line and halfway to New Hampshire. Straff was counting.

"ALEX SHOALER," Straff gasped as he stumbled through the rows of tree stumps that used to be the haunted forest. The gunship set down in the middle of Atlantic Avenue, and took off right after he and Straff walked away. Neither one had said a word on the trip from Rost.

Alex looked over his shoulder, but didn't slow down.

Straff's voice was weary. "You...you gave them what they wanted."

Alex skidded to a stop. He turned a murderous glare on Straff.

Straff gave him a weak shrug. "I'm sorry. That was the deal. My life's worthless. My death will have more meaning than anything I can now do in life. The only thing that stopped me ending it myself was my work, what I did before...you know. I've worked the last four years trying to prevent what you just did. They--Rost--have the power to destroy us all."

Alex shook his head slightly. "No," he gasped. "Joe would have...she would have done something to stop it."

Straff bent over, puffing for more breath.

"Joe? She?" He waved in front of him, vaguely in the direction his house once stood, and took another long breath. "She will die without my approval." He threw a sneery laugh back at Alex's kill-you glare. "Kill me, Mr. Shoaler. I tell you it doesn't matter now. Her time's nearly up anyway."

"How long?" Alex shouted over his shoulder, looking for Walter.

"The process may take up to an hour. Wesley's the key," wheezed Straff twenty paces behind him.

"How do we get inside?"

"Walter will open the door. He'll become visible when he's secured the area."

Alex raced ahead in the direction he thought Straff's old house used to be. He looked right and left as he ran, making slight navigational corrections.

Walter went gray, the same color he'd been when he and Wesley first appeared to Alex and Kaffia. He flew past Alex and hovered over a wide flat space of dirt.

Alex sprinted toward him, Straff staggering not far behind. On the sixth step he found himself falling into blackness. He flung his arms out. The freefall feeling drifted away. Walter stood right next to him. Straff was on his other side.

Alex looked around the completely lightless space. Then he saw it, the arched doorway at the end of the cobbled road. Without a look at either Walter or Straff, he bolted off.

He ran into Straff's underground world, brightly lit and inviting. He didn't look around at the fields and trees. His eyes drilled into the little cottage beyond the white fence. He leaned forward, and ran faster.

He jumped the steps and threw open the door. Kaffia turned around, startled.

"No time, Joe!" He gasped, lunging past her in to the dining room. "Where's Wesley?"

She grabbed him and kissed him.

"Joe!" He pulled away and collapsed, stuttering, "No time. The thing...the things that reverse the timer take an hour!"

She laughed and held him tighter. "You saved me once. How many times do you think I'm going to let you do that?"

"Wesley?"

She waved airily. "I sent him off to do something."

Alex went pale. Dr. Straff stepped into the living room, bent over as if he'd run a marathon, holding his knees, watching the two of them.

Alex shook his head, panicked. "But--?"

Kaffia held out her hand. Whatever he wanted to tell her, it couldn't be that important. She sniffed, "The antidote devices? I worked it all out by Thursday night, and had them built and operating Friday morning." Through clenched teeth and a solid glare at Straff, she added, "Would've been a day earlier with some damn coffee!"

Straff's mouth dropped open. He shook his head as if not quite understanding. "Where's Wesley?"

Kaffia straightened up, still clutching Alex's arm. "He's running an errand for me, right now. He won't be around for a while."

Straff looked over his living room. His eyes traveled through the open doorway into the dining room. "What about my lab books, my research, all that data you gave to...to...to the devil himself?" Straff's voice worked up into a high-pitched hysterical scream.

Kaffia grinned at his reaction. "It's all gone. I had Wesley destroy all the books after he scanned them. Purged the digital stuff off all your machines myself. Had to write a couple special utils to clear the residuals."

Straff looked just as shocked as Alex. His mouth opened a couple times, closed, then opened again. All he managed to say was, "But--?"

"All I needed to do, Straff, was hack Wesley. I didn't need to understand how your little killers and anti-killers worked. Wesley knew how to make the right ones."

Straff was shaking his head in disbelief.

"Then I took the self-organizing idea from your bots. I divided up all of your lab book data among each node--all from Wesley. I decoupled them all and programmed them to scatter randomly. They're running a simple script, a conditioned endless loop that will compel them to remain apart until the criteria you've spec'd out are met."

"What criteria?"

She frowned at him, rolling her eyes. "You wrote a paper on the requirements that must be met before moral people should allow molecular manipulation into the world. Dammit, Straff. If you're going to publish something, why not that one?"

"Oh."

"Yeah, oh. All the nodes that once made up Wesley will come back together--not as Wesley--but as..." She shrugged cutely. "Just to be dramatic, a giant black monolith in the middle of the Harquahala wilderness in Arizona. With a little more time I could've embedded some Wagner. It was a priority thing. Couldn't solve it all in four days." She nodded to Straff. "Your problem with audio interfering with the bonding forces, degrading over time." She glanced at Alex knowingly. "That's why they don't talk."

"What are the criteria?" Alex asked with an eyebrow raised.

"Essentially there are two paths: We can all go virtual, seal ourselves in nanotech proof cases and live in an entirely virtual world, or we can get underneath the nano world, somehow monitor and tag all atomic activity. Protect ourselves from its misuse." She looked doubtful. "Can't be done, as far as anyone knows. Every atom of hydrogen is exactly alike, otherwise it wouldn't be hydrogen but some other element, or variation of hydrogen. The properties define the molecule, atom, particle."

Alex nodded with a frown. He had some idea of what she was talking about. He wagged his finger at the empty bookshelves and then into the dining room.

"But what about the three trillion bytes I let Greenleigh have?"

She rolled her eyes and gave him an isn't-it-painfully-obvious stare. "You think I'd let those Rost scum have the real data?"

Straff's shoulders dropped to somewhere around his waist, like some unbearable weight had been lifted from his mind. He staggered forward.

Since she said it like that, Alex shook his head. "No. But then what did I give them? An address. Greenleigh saw some proof data samples."

"A few gigs of real stuff. The hook. Had to let them find some of the chain, the ones I wanted them to find. These were real, readable, decipherable, enough to make them think they'd pulled a real sampling. All the rest is garbage. It's 2.8 something TB's of the same eight byte sequence, over and over again." She couldn't hold in a laugh. "It's a newb trick, but I wish I could see their faces."

Alex shook his head again, not understanding.

"If you pulled it into a editor, looked at the hex, you'd have seen, DE. CA. FB. AD. Over and over again. DECAFBADDECAFBAD..."

Alex grinned. "Uh...right," he stammered, and then laughed hard, throwing his head back.

Even Straff smiled, and jumped a little with bursts and snorts of repressed laughing.

Walter floated in the room's center, staring at them all. It took ten minutes to get it under control. Kaffia first.

"I also had a lot of help on the inside. Heroes on the inside."

"From who?"

Kaffia's expression went cold. "You two, of course. Straff, you kept quiet at the moment when that helped us most. If you'd opened your mouth we might have lost it all." She hit Alex with a hard glare. "And you dealt with that madman, Greenleigh, face to face."

"Oh," said Alex nodding. "You made it sound like there were others."

Kaffia turned her glare on Straff, but remained silent.

Alex jerked his chin at Straff. "What happens now? We're going home. What are you going to do?"

Straff looked around the room. "Back into hiding, I think. I suppose I can trust you two. I'll plant new trees. They never did find my real home, my new world here."

Alex's eyes roamed around the room, and then stopped on the pictures by the front door. It seemed like a month had passed and so much had happened since he'd first noticed that picture. "What's the scoop with Andreden?"

Straff gave him a questioning scowl, and then followed his eyes to the narrow stretch of wall by the door.

"Oh. I know John personally. Saved his life once when the SAC Board had him locked up, helped him escape, and he in turn saved mine. It was a turning point in my...career. This was before the restoration. That's how Rost lost Building Orange. We blew it off the map. Then Andreden went on to save everyone else. I'll invite

him out sometime. I'm sure he'd like to meet both of you."

"My turn. Why us?" Kaffia asked. "I mean, why'd you pick us?"

"I...didn't. I just gave a set of rules to Walter and Wesley." He shrugged. "They picked you. But I think it's obvious. One, you're young, young enough to live to see the day when my ideas should see light and be put to use. Two, you know your way around a network like a gardener does his plot of land." He turned his eyes on Alex. "You know words. I think Walter thought that would help you deal with Rost. She knows software. You care for her, and she you. That's the key. You wouldn't let her die. Your ages didn't matter. The decision was that simple."

Walter nodded back at him, and then at Kaffia and Alex.

26

Not Dipped In Styx

KAFFIA SHOUTED GOODBYE at the top of her lungs, laughed, waved, and Alex continued on, walking down Atlantic Avenue all the way to the coast, crossed 1A and took a bench overlooking the ocean. He tried to sit and watch the Atlantic from here as often as he could, but being sixteen, he was unable to properly sit on any chair, bench or stool without being told. So he jumped up on the seat, and dropped his butt over the top of the bench's back to take in the view. He pushed his elbows into his knees and rested his chin on his folded fingers.

Life had gone back to normal in two days. His mother had attacked him with a mix of fury and love when he stepped through the door. Greenleigh had jumped off the roof of building blue at Rost Institute when the police came to arrest him. He'd left a final word--literally one word that puzzled the crime scene investigators. Greenleigh had written the word JUMP on the inside of his left arm.

Kaffia and Alex got an email from Straff--although he didn't identify himself but they knew who had sent it. Walter had apparently vanished and hadn't returned, and Straff was looking for

him. He asked if they would contact him if he turned up, and Kaffia had shrugged in her usual secret manner.

Nothing had changed at the Lyceum. For the most part. Randal and his friends went silent and eyed Alex warily.

"Kaffia," he whispered to the ocean. "I am in love."

What was going to happen now? The next steps seemed pretty obvious. He nodded. The world she'd built was partly his now, and he was in love with her. He was pretty sure she loved him, and it wasn't as if he only had his own responses to guide him in this. An artificial organism like Walter, cooked up in Straff's kitchen, and given a brain by Andreden, had already determined it.

Together we defeated Greenleigh and his Rost Institute. She's strong, perfect, brainy, he thought. Out loud he said, "The most beautiful girl in the universe. "

He leaned forward to get up, and noticed a dark haired girl standing on the other side of Ocean Boulevard, watching him. He turned all the way around. It was the prep from NHL, Kassandra, and she was holding his blue backpack and skateboard. She lifted them a little and smiled.

He grinned back, nodding appreciatively.

She looked up and down Atlantic and crossed carefully, almost as if she wasn't used to traffic. She didn't sit down, but stood next to the bench, facing east, and she didn't look at him, caught instead by the sight of the Atlantic. Her eyes were fixed on the horizon. The water was calm and flowed thickly like honey with a few breaking ripples.

"She's the most beautiful thing in the universe," she said, jutting her chin at the ocean.

Alex stared at her. That's almost exactly what he'd just said. He clamped his mouth shut to prevent himself from saying something stupid. It didn't help.

"The ocean's a woman?"

With a bit of a frown she said, "Of course she is." Kassandra waved down toward North Hampton Beach. "I see you surfing sometimes. After storms, when the waves are high. You're good in the water."

He caught himself scowling a little. He'd never seen her at the beach.

"Those soldiers aren't looking for you anymore?"

He blinked at the subject change, and shook his head. "Not anymore. A misunderstanding."

Alex's face went hot. He remembered her look, dark eyes so forceful they peered into his soul, and then she'd lied to the trooper, protecting him.

He coughed uncomfortably, and didn't know what to say, so he said something lame.

"You're really good at math. You're in my calculus class, right?"

Kassandra turned to him, nodded, and handed him his pack and board. She threw him a little wave as she crossed back over Ocean, and said, "See you in class then."

Alex stared after her a few minutes. She lived right across the street, in the big old Victorian he'd always liked.

He turned back to the Atlantic, taking a few minutes to recapture his original line of thinking.

"Kaffia."

He looked out over the warm evening waves, wishing she was sitting here with him. He pulled up an old memory, of following her over the NHL quad the first time he'd seen her, trying to figure out what the number on her shirt meant. That had been the day he'd decided to find out what NDIS stood for.

"Not dipped in Styx," he whispered.

He remembered sitting on this bench a year ago when Kaffia told him. Looking out over the Atlantic, in a very matter of fact way, she'd told him something that few others had ever heard her say.

"The key to getting caught is to not think you can. Here's my promise to keep: do you know who Achilles was?"

"Warrior?"

"His mother, Thetis, dipped Achilles in the river that flows through the land of the dead, into the River Styx. Dipping him in

the river made him invincible.

"Yeah. That's where we get Achilles' Heel from. It's a weakness. His mother held him by the heel when she dipped him in, and that was the only place he was vulnerable."

"That's where Paris shot him with a poisoned arrow. NDIS stands for Not Dipped In Styx."

Alex blinked, repeating the memory, his eyes fixed on the calm Atlantic. A couple loud Harley's passed up Ocean Boulevard behind him, and snapped him out of his daydream.

"A reminder. Not dipped in Styx."

A slow smile stretched out on Alex's face, slow and thoroughly relaxed, like a cat after a long nap. He jumped off the bench, flipped his board on the sidewalk, and rolled down the slope of Little Boars Head toward Hampton.

About the Author:

Chris Howard was born in 1963 in Indiana, but as an army brat, grew up all over: Fort Belvoir, Virginia, Presidio of San Francisco, France, Germany and Japan. He is a fiction writer, software engineer, and part time Aristotelian philosopher with two kids, a son, Christopher, and daughter, Chloe. He created and has maintained a web site devoted to Aristotle's philosophy since 1996. He blogs at <http://theophrast.us>

Contact him at Chris@LykeionBooks.com

Visit LykeionBooks.com for more information about me, Nanowhere, The Wreath, and other projects.