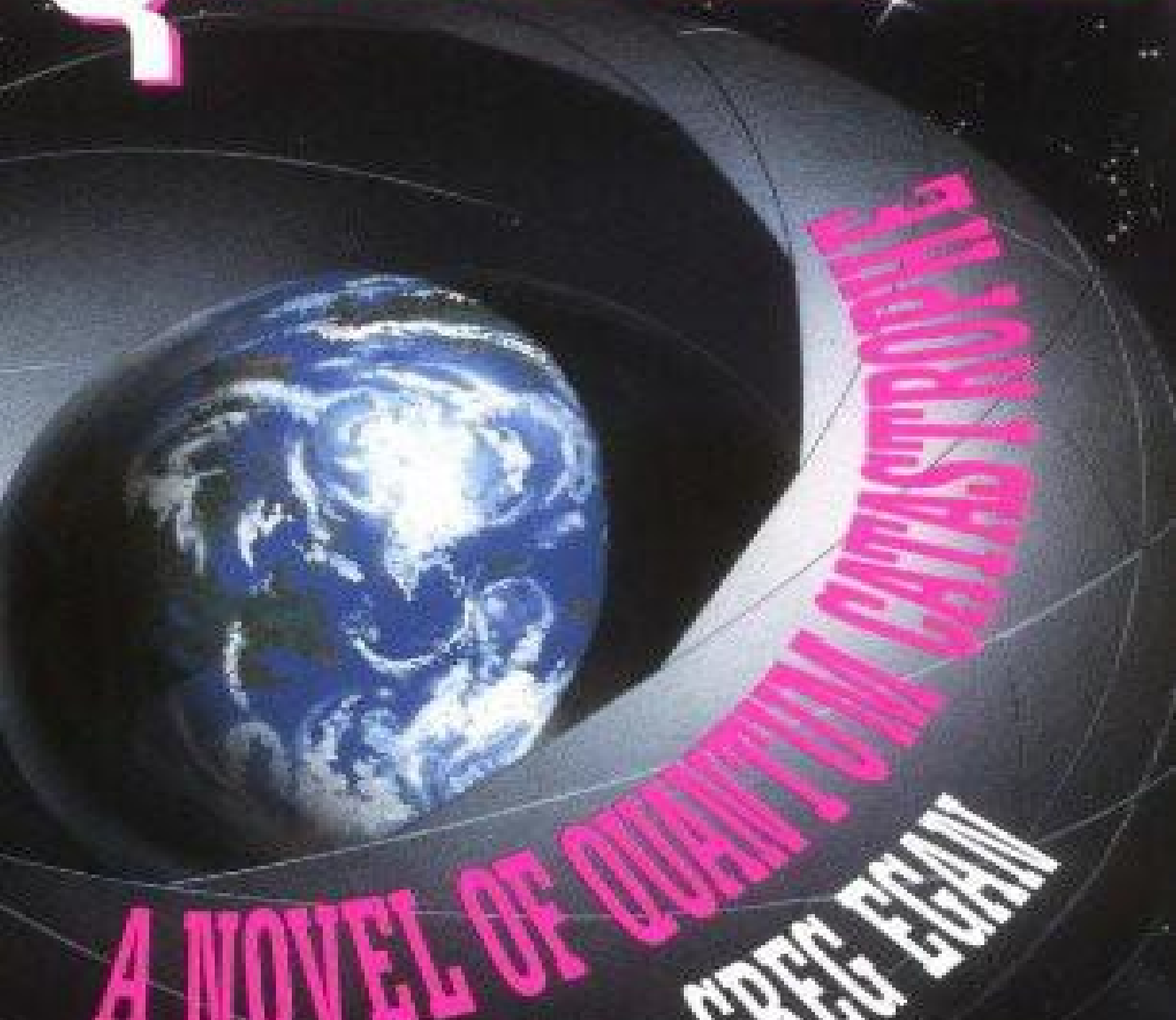


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It All Started the Night the Stars Went Out

QUARANTINE



A NOVEL OF QUANTUM CATASTROPHES
BY
CRAIG SCHEFF

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PART ONE

1

Only the most paranoid clients phone me in my sleep.

Of course, nobody wants a sensitive call electronically decoded and flashed up on the screen of an ordinary videophone; even if the room isn't bugged, radio-frequency spillage from the unscrambled signal can be picked up a block away. Most people, though, are content with the usual solution: a neural modification enabling the brain to perform the decoding itself, passing the results directly to the visual and auditory centres. The mod I use, **CypherClerk** (NeuroComm, \$5,999), also provides a virtual larynx option, for complete two-way security.

However. Even the brain leaks faint electric and magnetic fields. A superconducting detector planted on the scalp, no bigger than a flake of dandruff, can eavesdrop on the neural data flow involved in an act of ersatz perception, and translate it almost instantaneously into the corresponding images and sounds.

Hence **The Night Switchboard** (Axon, \$17,999). The nano-machines which carry out this modification can take up to six weeks to map the user's idiosyncratic schemata—the rules by which meanings are encoded in neural connections—but once that's done, the intermediary language of the senses can be bypassed completely. What the caller wants you to know, you *know*, without any need to hallucinate a talking head spelling it out, and the electromagnetic signature at skull level is, for all practical purposes, inscrutable. The only catch is, in the conscious state, most people find it disorienting—and at worst traumatic—to have information crystallizing in their heads without the conventional preliminaries. So, you have to be asleep to take the call.

No dreams; I simply wake, *knowing*:

Laura Andrews is thirty-two years old, one hundred and fifty-six centimetres tall, and weighs forty-five kilograms. Short, straight brown hair; pale blue eyes; a long, thin nose. Anglo-Irish features and deep black skin; like most Australians, born with insufficient UV protection, she's been retrofitted with genes for boosted melanin production and a thicker epidermis.

Laura Andrews has severe congenital brain damage; she can walk and eat, clumsily, but she can't communicate in any fashion, and the experts say that she understands the world little better than a six-month-old child. Since the age of five, she's been an in-patient at the local Hilgemann Institute.

Four weeks ago, when an orderly unlocked her room to serve breakfast, she was gone. After a search of the building and grounds, the police were called in. They repeated and extended the search, and conducted a doorknock of the surrounding area, to no avail. Laura's room bore no signs of forced entry, and recordings from security cameras proved unenlightening. The police interviewed the staff

at length, but nobody broke down and owned up to spiriting the woman away.

Four weeks later, nothing. No sightings. No corpse. No ransom demands. The police have not officially abandoned the case—merely *deprioritized* it, pending further developments.

Further developments are not anticipated.

My task is to find Laura Andrews and return her safely to the Hilgemann—or locate her remains, if she's dead—and to gather sufficient evidence to ensure that those responsible for her abduction can be prosecuted.

My anonymous client presumes that Laura was kidnapped, but declines to suggest a motive. Right now, my judgement is suspended. I'm in no state to hold an opinion on the matter; I have a head full of received knowledge, coloured by my client's perspective, possibly even tainted with lies.

I open my eyes, then drag myself out of bed and over to the terminal in the corner of the room; I make it a policy never to deal with financial matters in my head. A few keystrokes confirm that my account has been provisionally credited with a satisfactory down payment; accepting the deposit will signal to the client that I've taken the case. I pause for a moment to think back over the details of the assignment, trying to reassure myself that I really do understand it—there's always a hint of dream-logic to these calls, a faint but implacable suspicion that by morning none of what I've learnt will even make sense—then I authorize the transaction.

It's a hot night. I step out on to the balcony and look down towards the river. Even at three in the morning, the water is crowded with pleasure craft of every size, from luminescent sailboards, softly glowing orange or lime green, to twelve-metre yachts, crisscrossed with spotlight beams brighter than daylight. The three main bridges are thick with cyclists and pedestrians. To the east, giant holograms of cards, dice and champagne glasses strobe and pirouette above the casino. *Doesn't anyone sleep any more?*

I glance up at the empty black sky, and find myself, inexplicably, entranced. There's no moon tonight, no clouds, no planets, and the featureless darkness refuses to sustain any comforting illusion of scale; I might be staring at infinity, or the backs of my own eyelids. A wave of nausea passes through me, a contradictory mixture of claustrophobia and a dizzying sense of The Bubble's inhuman dimensions. I shudder—a single, violent twitch—then the feeling is gone.

A mod-generated hallucination of my dead wife Karen, standing on the balcony beside me, slips an arm around my waist and says, 'Nick? What is it?' Her touch is cool, and she spreads her fingers wide across my abdomen, like antennae. I'm on the verge of asking her, by way of explanation, if she ever misses the stars, when I realize how ludicrously sentimental that would sound, and I stop myself in time.

I shake my head. 'Nothing.'

* * * *

The grounds of the Hilgemann Institute are as lushly green as genetic engineering—and brute-force reticulation—can make them, in the middle of a summer when they ought to be dead and brown. The lawn glistens in the midmorning heat as if fresh with dew, no doubt constantly irrigated from just beneath the surface, and I trudge down the main access road in the shade of what looks like a kind of maple. An expensive image to maintain; the rates for frivolous water use, already punitive, are tipped to double in the next few months. The third Kimberley pipeline, bringing water from dams twenty-five hundred kilometres to the north, is four hundred per cent over budget so far, and plans for a desalination plant have been shelved, yet again—apparently, a glut on the ocean minerals market has undermined the project’s viability.

The road ends in a circular driveway, enclosing a lavish flower bed in spectacular polychromatic bloom. The trademark IS gene-tailored hummingbirds hover and dart above the flowers; I pause for a moment to watch them, hoping—in vain—to witness just one contravene its programming by straying from the circle.

The building itself is all mock-timber; the layout suggests a motel. There are Hilgemann Institutes around the world, through no fault of anyone called Hilgemann; it’s widely known that International Services paid their marketing consultants a small fortune to come up with the ‘optimal’ name for their psychiatric hospital division. (Whether public knowledge of the name’s origin spoils the optimization, or is in fact the strongest basis for it, I’m not sure.) IS also runs medical hospitals, child-care centres, schools, universities, prisons and, recently, several monasteries and convents. They all look like motels to me.

I head for the reception desk, but there’s no need.

‘Mr Stavrianos?’

Dr Cheng—the Deputy Medical Director, whom I spoke with briefly on the phone—is already waiting in the lobby, an unusual courtesy, which, politely, deprives me of any chance to poke my unsupervised head around corners. No white coats here; her dress bears an intricate, Escher-like design of interlocking flowers and birds. She guides me through a STAFF ONLY door and a tight maze of corridors to her office. We sit in padded armchairs, away from her spartan desk.

‘Thank you for seeing me at such short notice.’

‘Not at all. We’re more than happy to cooperate; we’re as anxious to find Laura as anyone. But I must say I have no idea what her sister is hoping to achieve by suing us. It’s not going to help Laura, is it?’

I make a sympathetic but non-committal noise. Perhaps the sister, or her law firm, is my client—but if so, why all the pointless secrecy? Even if I hadn’t barged in here and announced myself to the opposition—and I received no instructions not to—the Hilgemann’s lawyers would have taken it for granted that she’d hire an investigator, sooner or later. They would have hired their own, long ago.

‘Tell me what you think happened to Laura.’

Dr Cheng frowns. ‘I’m sure of one thing: she can’t have escaped by herself. Laura couldn’t even turn a door handle. Someone took her. Now, we don’t run a prison here, but we do take security very seriously. Only a highly skilled, highly resourced professional could have removed her—but on whose behalf, and to what end, I can’t imagine. It’s getting a bit late for ransom demands, and in any case, her sister isn’t well off.’

‘Could they have taken the wrong person? Maybe they intended to kidnap another patient—someone whose relatives could raise a worthwhile ransom—and only realized their mistake when it was too late to do anything about it.’

‘I suppose that’s possible.’

‘Any obvious targets? Any patients with particularly wealthy —’

‘I really can’t —’

‘No, of course not. Forgive me.’ From the look on her face, I’d say she has several candidates in mind—and the last thing in the world she wants is for me to approach their families. ‘I take it you’ve stepped up security?’

‘I’m afraid I can’t discuss that either.’

‘No. Tell me about Laura, then. Why was she born brain-damaged? What was the cause?’

‘We can’t be sure.’

‘No, but you must have some idea. What are the possibilities? Rubella? Syphilis? AIDS? Maternal drug abuse? Side-effects from a pharmaceutical, or a pesticide, or a food additive...?’

She shakes her head dismissively. ‘Almost certainly none of those. Her mother went through standard prenatal health care; she had no major illness, and she wasn’t using drugs. And a chemical teratogen or mutagen doesn’t really fit in with Laura’s condition. Laura has no malformation, no biochemical imbalance, no defective proteins, no histological abnormalities —’

‘Then why is she massively retarded?’

‘It looks as if certain crucial pathways in the brain, certain systems of neural connections which should have formed at a very early age, failed to appear in Laura’s case—and their absence made subsequent normal development impossible. The question is *why* those early pathways didn’t form. As I’ve said, we can’t be sure—but I suspect it was a complex genetic effect, something quite subtle involving the interaction of a number of separate genes, *in utero*.’

‘Couldn’t you tell, though, if it was genetic? Couldn’t you test her DNA?’

‘She has no recognized, catalogued genetic defects, if that’s what you mean—which only proves that there are genes crucial to brain development yet to be located.’

‘Any family history of the same thing?’

‘No, but if several genes are involved, that’s not necessarily surprising—the chance of a relative sharing the condition could be quite small.’ She frowns. ‘I’m sorry, but how is any of this going to help you find her?’

‘Well, if a pharmaceutical or a consumer product *were* the cause, the manufacturers might be safeguarding their interests. It’s a long time after the event, I know, but maybe some obscure birth-defects research team is on the verge of publishing the claim that wonder drug X, the miracle antidepressant of the thirties, makes one foetus per hundred thousand turn out like Laura. You must have heard about Holistic Health Products, in the States; six hundred people suffered kidney failure from taking their “energy supplement”, so they hired a dozen hit men to start wiping out the victims, faking accidental deaths. Corpses attract much smaller damages verdicts. Okay, kidnapping doesn’t seem to make much sense, but who knows? Maybe they needed to study Laura, to extract some kind of information that might eventually help them in court.’

‘It all sounds rather paranoid to me.’

I shrug. ‘Occupational hazard.’

She laughs. ‘Yours, or mine? Anyway, I’ve told you, I think the cause was inherited.’

‘But you can’t be positive.’

‘No.’

I ask the usual questions about the staff: anyone hired or fired in the last few months, anyone known to have debts or problems, anyone with a grudge? The cops would have been through all of this, but after four weeks of brooding on the disappearance, some trivial matter, not worth mentioning at first, may have come to assume greater significance.

No such luck.

‘Can I see her room?’

‘Certainly.’

The corridors we pass through have cameras mounted on the ceiling, at ten-metre intervals; I’d guess that any approach to Laura’s room is covered by at least seven. Seven data chameleons, though, would not have been beyond the budget of a serious kidnapper; each pinhead-sized robot would have tapped into one camera’s signal, memorized the sequence of bits for a single frame while

the corridor was empty, then spat it out repeatedly, replacing the real image. There may have been faint patches of high-frequency noise when the fake data was switched in and out—but not enough to leave tell-tale imperfections on a noise-tolerant digital recording. Short of subjecting every last metre of optical fibre to electron microscopy, hunting for the tiny scars where the chameleons intervened, it's impossible to know whether or not such tampering ever took place.

The door—remotely locked and unlocked—would have been just as easy to interfere with.

The room itself is small and sparsely furnished. One wall is painted with a cheerful, glossy mural of flowers and birds; not something I'd care to wake up to, personally, but I can hardly judge how Laura would have felt. There's a single large window by the bed, set solidly into the wall, with no pretence that it was ever designed to be opened. The pane is high-impact plastic; even a bullet wouldn't shatter it, but with the right equipment it could be cut and resealed, leaving no visible seam. I draw my pocket camera and take a snapshot of the window in the polarized light of a laser flash, then I process the image into a false-colour stress map, but the contours are smooth and orderly, betraying no flaws.

The truth is, there's nothing I can do here that the police forensic team would not have done first, and better. The carpet would have been holographed for footprint impressions, then vacuumed for fibres and biological detritus; the bed sheets taken away for analysis; the ground outside the window scoured for microscopic clues. But at least I have the room itself fixed in my mind now; a solid backdrop for any speculations about the night's events.

Dr Cheng escorts me back to the lobby.

'Can I ask you something that has nothing to do with Laura?'

'What?'

'Do you have many patients here with Bubble Fever?'

She laughs and snakes her head. 'Not one. Bubble Fever has gone right out of fashion.'

* * * *

Because I am in business, and because I might—in theory—give credit, there's a certain amount I can find out about anyone, with no effort at all.

Martha Andrews is thirty-nine years old, and works as a systems analyst for WestRail. She is divorced, with custody of her two sons. She has an average income and average debts, and forty-two per cent equity in a cheap two-bedroom flat. She's been paying the Hilgemann out of a trust fund left by her parents; her father died three years ago, her mother the year after. She is not worth extorting.

At this stage, the most plausible hypothesis seems to be one of mistaken identity; it doesn't fit well with the professionalism of the kidnapping, but nobody's perfect. What I need, to take the idea

any further, is a list of the Hilgemann's patients. Details of the staff might also come in handy.

I call my usual hacking service.

The ringing tone seems to reverberate deep within my skull. There's no doubt that NeuroComm's product psychologists chose these bizarre acoustics to give a strong impression of privacy, but I'm not impressed; it just makes me feel claustrophobic. At the same time, my external vision fades to black-and-white—supposedly to lessen the distraction, but in fact it's just one more tedious gimmick.

Bella answers on the fourth ring, as always. Her face seems to hover about a metre away, vivid against reality's greys, vanishing at the neck as if revealed by some magical spotlight. She smiles coolly. 'Andrew, it's good to see you. What can I do for you?' 'Andrew' is the name I use for one of my **CypherClerk** masks. Her own synthetic human visage might also be nothing but a mask, repeating word for word the speech intentions of an actual person—or it might be a pure artifact, the interface to anything from a glorified answering machine to a system that actually does ninety-nine per cent of the hacking itself. I really don't care who or what Bella is; she/he/it/they get results, and that's all that matters to me.

'The Hilgemann Institute, Perth branch. I want all their patient records, and all their staff records.'

'Back how far?'

'Well... thirty years, if it's on line. If the old stuff is archived, and it's going to cost a fortune to get your hands on it, forget it.'

She nods. 'Two thousand dollars.'

I know better than to try to haggle. 'Fine.'

'Call back in four hours. Your password is "paradigm".'

As the room regains its normal hues, it strikes me that two thousand dollars would be a lot of money to Martha Andrews—not to mention the fifteen thousand I've already received in advance. Of course, if her lawyers were confident of a large settlement and a fat contingency fee, fifteen thousand would be nothing to them. Their wish to be anonymous might be no more sinister than my own use of a pseudonym with Bella; when laws are being broken, it's nice to have bulkheads against the risk of a conspiracy charge.

Do I talk to Martha? I can't see how it could upset her lawyers, and even if she hired me herself (which can't yet be ruled out completely; her finances may have hidden depths) then she chose anonymity over the alternative of explicitly instructing me to keep my distance.

I have no real choice but to act as if I hadn't given a moment's thought to the question of my

client's identity—even if the truth is that, so far, nothing about the case fascinates me more.

* * * *

Martha looks very much like her sister, with a little more flesh and a lot more worries. On the phone she asked, 'Who are you working for? The hospital?' When I told her that I wasn't free to disclose my client's name, she seemed to take that to mean yes. (In fact, it's inconceivable; IS owns a great slab of shares in Pinkerton's Investigations, so the Hilgemann would never hire a freelance.) Now, face to face, I'm almost certain that she wasn't dissembling.

'Really, I'm the last person to help you find Laura. She was in their care, not mine. I can't imagine how they could have let something like this happen.'

'No—but forget their incompetence, just for a moment. Do you have any idea *why* someone might want to kidnap Laura?'

She shakes her head. 'What use would she be to anyone?' The kitchen, where we're sitting, is tiny and spotless. In the room next door, her boys are playing this summer's craze, *Tibetan Zen Demons on Acid vs Haitian Voodoo Gods on Ice*—and not in their heads like the rich kids; she winces at the sound of a theatrically bloodcurdling scream, followed by a loud, wet explosion, and live cheers. 'I've told you, I'm in no better position to answer that than anyone else. Maybe she wasn't kidnapped. Maybe the Hilgemann harmed her somehow -mistreated her, or tried out a new kind of drug that went wrong—and their whole story about her disappearance is a cover-up. I'm only guessing, of course, but you ought to keep the possibility in mind. Assuming that you *are* interested in finding out the truth.'

'Were you close to Laura?'

She frowns. 'Close? Haven't they told you? What she's like?'

'Attached to her, then? Did you visit her often?'

'No. Never. There was no point *visiting* her—she wouldn't have known what it meant. She wouldn't have known it was happening.'

'Did your parents feel the same way?'

She shrugs. 'My mother used to see her, about once a month. She wasn't fooling herself—she knew it made no difference to Laura—but she thought it was the right thing to do, regardless. I mean, she knew she'd feel guilty if she stayed away, and by the time they had mods that could fix that, she was too set in her ways to want to change. But I've never had any problem, myself; Laura's not a person, so far as I'm concerned, and I'd only feel like a hypocrite if I tried pretending otherwise.'

'I take it you're planning to be a bit more sentimental in court?'

She laughs, unoffended. ‘No. We’re suing for punitive damages, not compensation for “emotional suffering”. The issue will be the hospital’s negligence, not my feelings. I may be an opportunist, but I’m not going to perjure myself.’

* * * *

On the train back into the city, I wonder: would Martha have arranged her sister’s abduction, for the sake of punitive damages? Her unwillingness to milk the suit for all it’s worth might be a calculated ploy, a way to ensure a jury’s sympathy by seeming to forgo exploitation. There’s at least one flaw in this theory, though: why not demand a ransom—which could be recovered, through the courts, from the Hilgemann? Why leave the motive for the kidnapping a mystery crying out for an explanation, inviting suspicions of fraud?

I emerge from the airless crush of the underground to find the streets almost as crowded, with evening shoppers lugging post-Christmas bargains, and buskers so devoid of talent—natural or otherwise—that I feel like stooping down and switching their credit machines into refund mode.

‘You’re a mean-spirited bastard,’ says **Karen**. I nod agreement.

As I approach the sandwich-board man, I tell myself I’m going to walk by as if I hadn’t even noticed him, but a few steps later, I stop and turn to stare. His meekly downturned face is as pale as a slug—God doesn’t want us messing with our pigmentation!—and he wears a black suit that must be purgatory in this heat. Amongst the brightly clad, bare-limbed crowd, he looks like a nineteenth-century missionary stranded in an African marketplace. I’ve seen the same man before, wearing the same imaginative message, repeated front and back:

SINNERS
REPENT!
JUDGEMENT
IS NIGH!

Nigh! After thirty-three years, *nigh!* No wonder he stares at the ground. What the fuck has been going on in his brain for the last three decades? Does he wake every morning, thinking—for the ten-thousandth time – ‘Today’s the day’? That’s not faith, it’s paralysis.

I stand awhile, just watching him. He paces slowly back and forth along a fixed path, halting when the flow of shoppers is too heavily against him. Most people are ignoring him, but I notice a teenage boy collide with him intentionally and roughly shoulder him aside, and I feel a shameful surge of delight.

I have no good reason to hate this man. There are millenarians of every kind, from docile idiots to cunning profiteers, from blissed-out Aquarians to genocidal terrorists. Members of the Children of the Abyss don’t wander the streets with sandwich boards; blaming this pathetic wind-up toy for Karen’s death makes no sense at all.

As I walk on, though, I can't help indulging a sweet vision of his face as a bloody red pulp.

* * * *

I was eight years old when the stars went out.

November 15th, 2034, 8:11:05 to 8:27:42 GMT.

I didn't witness the circle of darkness, growing from the antisolar point like the mouth of a coal-black cosmic worm, gaping to swallow the world. On TV, yes, a hundred times, from a dozen locations—but on TV it looked like nothing but the cheapest of special effects (the satellite views all the more so; in glare-filtered shots, the 'mouth' could be seen closing precisely behind the sun, an implausible symmetry, smacking of human contrivance).

I couldn't have seen it live; it was late afternoon in Perth—but the news reached us before sunset, and I stood on the balcony with my parents, in the dusk, waiting. When Venus appeared, and I pointed it out, my father lost his temper and sent me inside. I don't recall exactly what I said; I'm sure I knew the difference between stars and planets, but perhaps I made some childish joke. When I looked through my bedroom window—with a choice of smeared glass or dusty flyscreen—and saw, well, *nothing*, it was hard to be impressed. Later, when I finally caught an unimpeded view of the empty sky, I dutifully tried to feel awestruck, but failed. The sight was as unspectacular as an overcast night. It was only years later that I understood how terrified my parents must have been.

There were riots on Bubble Day across the planet, but the worst of the violence took place where people had seen the event with their own eyes—and that depended on a combination of longitude and weather. Night stretched from the western Pacific to Brazil, but cloud covered much of the Americas. There were clear skies over Peru, Colombia, Mexico and southern California—so Lima, Bogota, Mexico City and Los Angeles suffered accordingly. In New York, at eleven past three in the morning, it was bitterly cold and overcast—and the city was all but spared. Brasilia and Sao Paulo were saved by the light of dawn.

Disturbances in this country were minor; even on the east coast, sunset came too late, and apparently most Australians sat glued to their TVs all night, watching other people do the looting and burning. The End of the World was far too important to be happening anywhere but overseas. There were fewer deaths in Sydney than on the previous New Year's Eve.

In my memory, there is no gap at all between the event itself and the announcement of an explanation (of sorts). Analysis of the timing of the occultations had revealed, almost at once, the *geometry* of what had happened; perhaps I considered that enough of an answer. It was nearly six months later that the first probes encountered The Bubble, but the name had been in use, from the start, for whatever it was they would find.

The Bubble is a perfect sphere, twelve billion kilometres in radius (about twice as wide as the orbit of Pluto), and centred on the sun. It came into being as a whole, in an instant—but because the Earth was eight light-minutes from its centre, the time-lag before the last starlight reached us

varied across the sky, giving rise to the growing circle of darkness. Stars vanished first from the direction in which The Bubble was closest, and last where it was furthest away—precisely behind the sun.

The Bubble presents an immaterial surface which behaves, in many ways, like a concave version of a black hole's event horizon. It absorbs sunlight perfectly, and emits nothing but a featureless trickle of thermal radiation (far colder than the cosmic microwave background, which no longer reaches us). Probes which approach the surface undergo red shift and time dilation—but experience no measurable gravitational force to explain these effects. Those on orbits which intersect the sphere appear to crawl to an asymptotic halt and fade to black; most physicists believe that in the probe's local time, it swiftly passes through The Bubble, unimpeded—but they're equally sure that it does so in our infinitely distant future. Whether or not there are further barriers beyond is unknown—and even if there are not, whether an astronaut who took the one-way voyage would find the universe outside unaged, or would emerge just in time to witness the moment of its extinction, remains an open question.

Upon hearing reports containing only a single familiar phrase, the media (who'd been fobbed off for six months with theories even wilder than the truth) promptly declared that the solar system had 'fallen into' a large black hole, triggering a resurgence of global panic before the story could be set straight. The event horizon surrounded us, therefore we had to be *inside* it—a perfectly reasonable mistake. The truth, though, is the exact opposite: the event horizon *does not* enclose us; it 'encloses' everything else.

Although a handful of theoreticians valiantly struggled to concoct a model for The Bubble as a spontaneous natural phenomenon, there was always really only one plausible explanation: a vastly superior alien race had constructed a barrier to isolate the solar system from the rest of the universe.

The question was: why?

If the aim was to discourage us from charging out and conquering the galaxy, they needn't have bothered. In 2034, no human had travelled further than Mars. The US base on the moon had been shut down six years before, after eighteen months' occupation. The only spacecraft to have left the solar system were probes sent to the outer planets in the late twentieth century, crawling away from the sun along their now purposeless trajectories. Plans to launch an unmanned mission to Alpha Centauri in 2050 had just been rescheduled to 2069, in the hope that the Apollo XI centenary would make fundraising easier.

Of course, a space-faring alien civilization might have taken a long-term view. The thousand years or so before humans were likely to embark on anything remotely like interstellar conquest might have seemed no more to them than a judicious safety margin. Nevertheless, the idea that a culture able to engineer space-time in ways we could scarcely comprehend could *fear* us was ludicrous.

Maybe the Bubble Makers were our benefactors, saving us from a fate infinitely worse than being confined to a region of space where we could—with care—prosper for hundreds of millions of years. Maybe the galactic core was exploding, and The Bubble was the only possible shield against

the radiation. Maybe other, hostile aliens were running amok in the region, and The Bubble was the only way to keep them at bay. Less dramatic variations on this theme abounded. Maybe The Bubble was there to protect our fragile, primitive culture from the harsh realities of interstellar commerce. Maybe the solar system had been declared a Galactic Heritage Zone.

A few intellectually rigorous killjoys argued that any explanation to which humans could relate was probably anthropomorphic nonsense, but nobody invited them onto talk shows.

At the other extreme, most religious sects had no trouble plucking glib answers from their own ludicrous mythology. Fundamentalists of several faiths refused to acknowledge that The Bubble even existed; all proclaimed that the vanished stars were a sign of divine disfavour, foretold—with varying degrees of prophetic licence—in their own sacred writings.

My parents were resolute atheists, my education was secular, my childhood friends were either irreligious, or the marginally Buddhist grandchildren of Indochinese refugees—but the English-language media, worldwide, was swamped with the views of Christian fundamentalists, so theirs was the lunacy I grew up knowing the best, and despising the most. *The stars had gone out!* If that didn't spell Apocalypse, what did? (In fact, *Revelations* has stars falling to the earth—but one musn't be *too* literal-minded.) Even those fanatics with small-M millennial fetishes could take heart; the years 2000 and 2001 might have been frustratingly devoid of cosmic portents, but, given the uncertainties of the historical record, 2034 (it was claimed) could easily be exactly the two-thousandth anniversary, not of Christ's birth, but of his death and resurrection. (November 15th as Easter? Obscure explanations were concocted for this—including something called 'Passover Drift'—but I was never quite masochistic enough to try to follow them.)

It was Judgement Day rewritten by some Bible Belt Chamber of Commerce. TV still worked, and nobody needed the mark of the beast to buy and sell, let alone to give and receive tax-deductible donations. Mainstream churches issued cautious statements which said, in so many words, that the scientists were probably right, but their pews emptied, and the salvation-for-money trade boomed.

Apart from post-Bubble splinter groups of established religions, thousands of brand-new cults appeared—most of them organized on the sound commercial lines pioneered by twentieth-century religious entrepreneurs. But while the opportunists prospered, the real psychotics were festering. It took twenty years for the Children of the Abyss to make themselves known, but then, being born *of the Abyss*—on or after Bubble Day—was a prerequisite of membership. They started out, in 2054, by poisoning the water supply of a small town in Maine, killing more than three thousand people. Today, they're active in forty-seven countries, and they've claimed almost a hundred thousand lives. Marcus Duprey, their founder and chief self-fulfilling prophet, spews out an incoherent stream of half-digested cabbalistic gibberish and comic-book eschatology, but there are, apparently, thousands of people brain-fucked in just the right way to find his every word resonant with truth.

It was bad enough when they blew up buildings at random, because 'this is the Age of Mayhem', but since Duprey and seventeen other Children have been in prison, many of his followers have come to see his release as their ultimate purpose – and with a tangible (if unattainable) goal to focus their efforts, everything has escalated. It makes no difference what I think, but some nights the

question spins in my head for hours. I don't wish they'd set him free. I do wish they'd never caught him.

Mental illness wasn't confined to the millenarians; for the secular, there was Bubble Fever, an hysterical, disabling, 'claustrophobic' reaction to the thought of being 'trapped' in a volume eight trillion times that of the Earth. These days, it seems almost laughable—as quaint as some spurious nineteenth-century upper-class affliction—but millions of people succumbed in the first year. It struck in almost every country, and health officials predicted it would cost the world economy more than AIDS. Within five years, though, the number of cases had plummeted.

Wars and revolutions around the globe have been blamed on The Bubble—although I wonder how anyone can claim to be able to untangle its destabilizing effects from those of poverty, debt, climate change, famine and pollution—and the religious fanaticism that would have been present, regardless. I've read that in the early days, people spoke seriously of civilization 'crumbling', of the coming of a new Dark Age. Such talk soon died away—but even now, I can never quite decide whether I find it miraculous, or inevitable, that the cultural shock waves have been so mild. *The Bubble changes everything*: it proves the existence of aliens with God-like powers, aliens who have imprisoned us without warning or explanation—and cheated us of our destiny in the universe. *The Bubble changes nothing*: the aliens are aloof and inconsequential, the stars are irrelevant to human needs; the sun still shines, crops still grow, the life of this planet goes on as ever—and there are worlds within our reach to be explored for millennia.

In the early fifties, it was 'common knowledge'—for no obvious reason—that the Bubble Makers were about to introduce themselves and justify everything; alien-contact cults flourished, UFO hoaxes reached absurd levels, but as the years wore on in silence, hopes of so much as a curt explanation for our state of quarantine faded away.

I no longer even wonder, *why?* After thirty-three years of listening to people rant their unlikely hypotheses, nothing could matter to me less. (Granted, the thing killed my wife, indirectly—but then, indirectly, so did I.)

As for the stars, they were never ours to lose; the truth is, we've lost nothing but the illusion of their proximity.

* * * *

Bella, as always, delivers on time. I download the records into **CypherClerk's** generous intracranial buffers, and I'm on the verge of transferring them to my desktop terminal when, in a moment of caution, or paranoia, I change my mind and decide to keep the data in my skull, for now.

I'm tired, but it's barely after nine. I don't want to sleep, but the prospect of ploughing through the Hilgemann's records strikes me as unbearably tedious.

I invoke **Backroom Worker** (Axon, \$499) and guide it through what I want done with each name: first, check my own natural memory for any associations (after all, the chances are that the next

of kin of anyone worth kidnapping will be a public figure to some degree); then contact the Credit Reference System, obtain current financial details, and append them to the record. I think of triggering notification if the assets cross a threshold value, but I can't be bothered deciding on a figure, and in any case, when the whole thing is done, I can rank everyone by net worth. I instruct the mod to interrupt me only if it comes across a name I know.

I flop onto my bed, and switch on the room's audio system. The controlling ROM I've been playing lately, 'Paradise' by Angela Renfield, is one of hundreds of thousands of identical copies, but each piece it creates is guaranteed unique. Renfield has set certain parameters for the music, but others are provided by pseudorandom functions, seeded with the date, the time and the audio system's serial number.

Tonight, I seem to have chanced upon an excessive weighting for minimalist influence. After several minutes of nothing but the same (admittedly, impressively resonant) chord, repeated at five-second intervals, I hit the recompose button. The music stops, there's a brief pause, then a new variation begins, a distinct improvement.

I've run 'Paradise' about a hundred times. At first, I could hardly believe that the separate performances had anything in common, but over the months I've begun to apprehend the underlying structure. I see it as resembling a family tree, or a phylogenetic classification of species. The metaphor is imprecise, though; one piece can be judged to be a near or a distant cousin of another, but the concept of ancestry doesn't really translate. I think of the simplest pieces as being primordial, as 'giving rise to' more complex variations, but beyond a certain point it's an arbitrary decision as to who begat, or evolved into, whom.

I've heard some reviewers assert that, after a dozen playings, anyone who is musically literate should fully understand the rules that Renfield has chosen, making further actual performances unbearably redundant. If that's the case, I'm glad of my ignorance. Tonight's second piece is like a brilliant scalpel blade, prising away layer after layer of dead skin. I close my eyes as a trumpet line builds, rising in pitch, then mutates, impossibly, effortlessly, into the liquid sound of metaharps. Flutes join in, with an ornate, mannered theme—but already I think I can discern in it, hidden beneath the fussiness and decoration, hints of a perfect silver needle which will recur in a hundred guises; which will be honed, muted, then honed again; which will be held up for my admiration, one last time, then plunged into my heart.

Suddenly, four lines of glowing text appear at the bottom of my visual field:

[Backroom Worker:

Natural memory association.
Casey, Joseph Patrick.
Head of Security as of 12th June, 2066.]

I'd forgotten that I'd asked for staff records, too—or I would have excluded them. I think about waiting for the music to finish, but there's no point; I know full well that I'd be unable to enjoy

it. I hit the stop button, and one more unique incarnation of ‘Paradise’ disappears forever.

* * * *

Casey is five years older than me, so his retirement, shortly after mine, was not so premature. He’s sitting in a corner of the crowded bar, drinking beer, and I join him in the ritual. I suppose it’s a strange way to pass the time, when not a microgram of ethanol will make it into either of our bloodstreams—while mods compute our consumption and deliver a purely neural buzz in lieu of the (insanely toxic) real thing—but then, if this cultural fossil lasted a thousand years and endured beyond all memory of its origins, it would hardly be unique in doing so.

‘We never see you, Nick. Where have you been hiding?’

We? It takes me a moment to register that he means, not himself and his absent wife, but the bar full of cops and ex-cops; the ‘law-enforcement community’, as the politicians would say—the way they used to talk about the Chinese or Italian or Greek community—as if the neural and physical modifications we share made us into some kind of homogeneous demographic target. I glance around the room and find, mercifully, that I recognize almost nobody.

‘You know how it is.’

‘Business is good?’

‘I’m making a living. You were with RehabCorp, last I heard. What happened?’

‘IS bought them out.’

‘Yeah, I remember that. Lots of retrenchments.’

‘I was lucky. I had connections, I got myself moved sideways. There were people who’d been with RehabCorp for thirty years who got dumped.’

‘So what’s it like at the Hilgemann?’

He laughs. ‘What do you think? Anyone who ends up in a place like that—anyone they can’t fix with a mod, these days—has to be a complete fucking zombie. Security is not a problem.’

‘No? What about Laura Andrews?’

‘You’re in on that?’ He’s no more surprised than politeness requires; Cheng would have had him clear me, before she even returned my call.

‘Yeah.’

‘Who for?’

‘Who do you think?’

‘Fucked if I know. Not for the sister; Winters is working for the sister. Mind you, Winters’ job isn’t finding Laura Andrews; her job is to make *me* look like shit. That bitch is probably spending all her time sitting at a computer somewhere, fabricating evidence.’

‘Probably.’ *Not for the sister.* Who, then? A relative of another patient? Someone who believes they’d be shelling out ransom money right now, if the kidnapping hadn’t been botched—and who wants to make sure that there isn’t a second, successful attempt?

‘The case is a joke, you know. We weren’t negligent. Remember that guy who sued the owners of the Sydney Hilton when his daughter got kidnapped from one of their rooms? He was *pulverized*. The same thing will happen here.’

‘Maybe.’

He laughs sourly. ‘You don’t give a shit either way, do you?’

‘No. And neither should you. IS won’t sack you, even if they lose the case. They’re not idiots; they allocate a certain budget for security, enough to keep the patients *in*. If they wanted some kind of fortress, they know they’d have to pay for it. They’ve been running prisons long enough to understand the costs.’

He hesitates, then says, “‘Enough to keep the patients in?’” Yeah? Laura Andrews got out twice before.’ He glares at me. ‘And if *that* ever reaches the sister, I’ll break your fucking neck.’

I stare at him, grinning sceptically, waiting for the joke to be made clear. He just stares back glumly. I say, ‘What do you mean, she “got out”? How?’

‘*How?* Shit! I don’t know *how*. If I knew *how*, then she wouldn’t have been allowed to do it again, would she?’

‘But... I thought she couldn’t even turn a door handle.’

‘That’s what the doctors say. Well, nobody’s seen her turn a fucking door handle. Nobody’s *seen her* do anything smart enough to shame a cockroach. But anyone who can get past locked doors, and cameras, and movement sensors, *three times*, isn’t what she appears to be, is she?’

I snort. ‘What are you getting at? You think she’s been shamming total imbecility for more than thirty years? She never even learnt to speak! You think she started faking brain damage when she was twelve months old?’

He shrugs. ‘Who knows about thirty years ago? The records say one thing, but I wasn’t there. All I know is what she’s done in the last eighteen months. How would *you* explain it?’

‘Maybe she’s an *idiote savante*. Or an idiot escapologist.’ Casey rolls his eyes. ‘Okay. I have no idea. But... what happened? The first two times? How far did she get?’

‘Into the grounds, the first time. A couple of kilometres away, the second. We found her in the morning, just wandering about, with the same bland dumb innocent expression on her face as always. I wanted to put a camera inside her room, but the Hilgemann wasn’t having that—some UN convention on the Rights of the Mentally Ill. IS got enough flak over that Texan prison thing that they’re ultra-careful now.’ He laughs. ‘And how could I argue that I needed more hardware? The patients are vegetables. The rooms have one door and one window; both are monitored twenty-four hours—how could I justify anything more? I mean, I couldn’t say to the fucking Director, “If you’re such a genius, *you* tell me how she does it. *You* tell me how to stop her.”’

I shake my head. ‘She didn’t *do* any of this. She can’t have. Somebody took her. All three times.’

‘Yeah? Who? *Why*? What do you call the first two times—dry runs?’

I hesitate. ‘Disinformation? Someone trying to convince you that she could break out on her own, so that when they finally took her, you’d think—’ Casey is miming severe incredulity, verging on physical pain. I say, ‘Okay. It sounds like a load of crap to me, too. But I can’t believe she just walked out of there, alone.’

* * * *

It takes me forever to get to sleep. **Boss** (Human Dignity, \$999) may have rendered it a matter of conscious choice, but somehow I still manage to be an insomniac; I always have some reason to delay the decision, I always have some problem I want to think through—as if every last nagging question which once might have kept me awake had to be dealt with in the old way, regardless.

Or maybe I’m just developing what they call Zeno’s Lethargy. Now that so many aspects of life are subject to nothing but choice, people’s brains are seizing up. Now that there’s so much to be had, literally merely by wanting it, people are building new layers into their thought processes, to protect them from all this power and freedom; near-endless regressions of wanting to decide to want to decide to want to decide what the fuck it is they really do *want*.

What I want, right now, is to understand the Andrews case, but there’s no mod in my head which can grant me that.

Karen says, ‘Okay. So you have no idea why Laura was kidnapped. Fine. Stick to the facts. Wherever she’s been taken, *someone* must have seen her along the way. Forget about motives for now—just find out where she is.’

I nod. ‘You’re right. As always. I’ll put an ad in the news systems —’

‘In the morning.’

I laugh. ‘Yes, okay, in the morning.’

With her familiar warmth beside me, I close my eyes.

‘Nick?’

‘Yes?’

She kisses me lightly. ‘Dream about me.’

I do.

* * * *

‘Hallelujah! I can see them! I can see the stars!’

I turn, startled, to see a young woman on her knees in the middle of the crowded street, arms outstretched, gazing ecstatically into the dazzling blue sky. For a moment, she seems to be frozen—transfixed, enraptured—then she screams again, ‘I can see them! I can see them!’ and starts pounding her ribs, rocking back and forth on her knees, gasping and sobbing.

But that cult died out twenty years ago.

The woman shrieks and twitches. Two embarrassed friends stand beside her, while the traffic smoothly detours around the scene. I watch with mounting dismay, as childhood memories of ranting, convulsing street mystics start flooding back.

‘All the beautiful stars! All the glorious constellations! Scorpius! Libra! Centaurus!’ Tears stream down her face.

I fight down a sense of panic and revulsion that’s growing out of all proportion. This is just one woman, just one freak. The very fact that she’s such a spectacle only proves what a rarity this is, proves that most people have adapted, have accepted The Bubble and moved on. What am I afraid of? That every last form of Bubble hysteria, every last obscure religious sect, every last bizarre mass psychosis, is destined to be revived?

As I turn away, the woman’s companions suddenly burst out laughing. A moment later, she joins them—and belatedly, I think I understand. Astral Sphere is back in fashion, that’s all. A planetarium in the skull. A gimmick, not an epiphany. I’ve read the reviews; the mod offers a variety of settings, ranging from a realistic view of the stars ‘exactly as they would be’—complete with accurate diurnal and seasonal motions, masking by clouds and buildings, and convincing fade-ins at dusk and fade-outs at

dawn—through to the dissolution of all obstacles (the sunlit atmosphere and the Earth beneath your feet included), and the option of moving the point of view millennia into the past or the future, or half-way across the galaxy.

The trio are falling in and out of each other's arms now, laughing. The cult is being mocked, not revived; these teenagers must have seen it portrayed in some old documentary. I walk on, feeling slightly foolish—and greatly relieved.

When I reach my building, I take the stairs slowly, reluctant to face an empty calls log, again. I've had ads in all the news systems for four days running, and they've yet to attract even a hoax call. The New Year should have helped; news-system readership increases on public holidays, when people have nothing better to do. Maybe ten thousand dollars isn't a large enough reward, but I doubt that my client would appreciate me doubling it. Not that I'm any closer to knowing who my client is. The Hilgemann's patient records listed no one with family ties to spectacular wealth or fame—and in retrospect, I'm not surprised. The very rich would, at the very least, take care that the records were meticulously falsified, and the obscenely wealthy would keep their demented relatives right out of harm's way, in soundproof wings of their own impenetrable mansions. I'm tempted to dig deeper, but I won't. I may suffer the (purely aesthetic) urge to incorporate my client into the Big Picture, but as yet I have no good reason to believe that it would help me find Laura.

No calls.

I resist punching the sofa; the upholstery has already split to the point where further damage yields diminishing satisfaction. It's getting close to the deadline for lodging the ad for one more day; I display the copy on my terminal and stare at it glumly, wondering if there's anything I could change that would make a difference, short of adding a zero or two to the reward. I've used a picture of Laura straight from the Hilgemann's patient records; it closely matches my own received mental image, suggesting that my client's knowledge of Laura's appearance was based on the very same shot. Her face is distinctive, but who knows what she looks like by now? No need for plastic surgery; a good synthetic-skin mask is all that's required.

I lodge the ad again, for what it's worth. If Laura was taken by accident, she'd be long dead by now—and I doubt that I'd ever find the body, let alone the people responsible. My only real hope is that, not only did her kidnapers have some obscure reason for deliberately abducting her, but whatever it was, it required them to do something riskier than merely locking her up, or slaughtering her.

Like smuggling her out of the country.

Getting Laura onto a plane would not be difficult. Her imbecility would be almost as easy to conceal as her face; there are dozens of illegal mods which could transform her into the walking puppet of a travelling companion, or even a semi-autonomous ‘robot’, capable of such rudimentary tasks as laughing and crying at all the right moments during the in-flight movie.

Faking an exit-visa record in the Foreign Affairs database is no big deal. It would vanish an hour or two later, and the airline’s files would also be appropriately amended. Foreign Affairs, Customs and the airlines are all being screwed blind, twenty-four hours a day, by a hundred different hackers—and, ironically, that’s what makes it possible, if you’re lucky, to trace an illegal traveller. Hackers may run rings around the target systems’ own archaic security, but they can’t avoid making their presence known to each other. In the process of capturing data essential for their own work, they can’t help capturing details of other violations in progress. Like all information, this is for sale.

Bella is acting as a broker for me, as well as providing some data of her own. I call her and download another batch. The relevance of any one heap of raw data is a matter of luck; the more you buy, the better the odds, but there’s no guarantee of success when the event you’re trying to trace took place (if at all) at an unknown airport, at an unknown time in the last five weeks.

Finding the fake exit visas is easy; the very fact that they have to be wiped to avoid (sluggish) official scrutiny betrays their existence in any time series of illicit snapshots of the database. The problem is finding Laura in the crowd; there are over one hundred illegal exits per week, nationwide. From the Hilgemann, I have her DNA signature, fingerprints, retinal patterns and skeletal measurements. DNA isn’t used by Customs (there are too many complications, legal and cultural, in sampling international travellers en masse), but the other three are always checked, and must match for pre-departure clearance. After that, though, the common practice is to change these details in the fake visa record, precisely to make things harder for people like me. Although the record itself must persist for the duration of the flight, with the name and photo unchanged (to avoid triggering various anti-terrorist checks carried out by the airlines), the biological ID data isn’t accessed again until the passenger goes through Customs at their destination. So, there are only two brief periods when the visa record needs to contain anything truthful; in theory, these times could be measured in milliseconds, but in practice things can’t be tuned that finely, and the windows have to be several minutes long. However, fingerprints and retinal patterns are relatively easy to alter by nanosurgery, leaving only the bone lengths to be trusted. They can be modified too, if you’re desperate, but nobody walks onto a plane straight after that kind of reconstruction, puppet or not—and travelling as an obvious invalid would

be like carrying a sign around your neck.

I analyse the latest series of snapshots; in no time at all they prove as worthless as the rest.

I flip idly through the gigabytes of junk that I've accumulated, flight after flight from the country's ten international airports, everything from menus to seating plans to... cargo manifests. Of course, Laura could have been sent as cargo, but it wouldn't have been a very smart choice. All cargo is either X-rayed or manually inspected, so there's only one kind of cargo that a human being can mimic: a human corpse. Achieving the resemblance would be no problem; drugs which shut down the metabolism for a couple of hours, without damage to the brain or any other organ, have been available for decades. What makes the method unattractive is the signal-to-noise ratio; the sheer number of illegal live passengers is itself a kind of camouflage, but only one or two corpses are flown out of the country each week.

Still, I have nothing better to do, so I search through the cargo records in the data I've collected so far, and come up with seven corpses.

The routine security X-rays taken of every passenger also provide the basis for computing the set of skeletal measurements used as an ID check. Corpses, though, aren't checked for ID; as with any other cargo, the X-ray images (a stereoscopic pair) are simply inspected by eye, then stored in the manifest. It takes me half an hour to track down a copy of the algorithm used by the airports to compute bone lengths; it's part of the X-ray machines' firmware, separate from the main passenger systems, so it isn't present in any of my stolen memory dumps. I wouldn't have wanted to cobble together a version of my own; the mathematics for converting data from stereo pairs to three-dimensional coordinates may be trivial, but automating the identification of the various bones is not.

I run the program on my seven corpses, checking for a match to Laura's data... and get seven consecutive negatives—perversely, just as I'm struck by a reason why the kidnappers might have chosen this path, after all. It's conceivable that Laura's brain damage prevented them from using a puppet mod; many off-the-shelf mods rely explicitly on the existence of certain neural structures which 'everyone' supposedly has in common, but which Laura might be lacking. No doubt any such problems could be circumvented, given time—but mapping Laura's non-standard brain, and reprogramming the nano-machines accordingly, would be no trivial matter. Other solutions would have looked tempting.

The lack of a positive result rules out nothing; the X-rays in the cargo record could have been fudged, a few minutes after they were taken. Computerized information is as evanescent as the quantum vacuum, with virtual truths and falsehoods endlessly popping in and out of existence. Deceptions of any magnitude are possible, on a short enough time scale; laws only apply to data that sits still long enough to be caught out.

I skim through the X-ray analysis program, curious to see how it works, but the code for anatomical-feature recognition is pretty dull stuff, an interminable list of rules and exceptions, and the rest is a few lines of formulae. I had a faint, nagging doubt that differences in geometry between the cargo and passenger X-ray systems might have been giving me garbage results, but in fact all the relevant dimensions are stored along with the image pairs themselves, neatly tagged with standard descriptors, and the program takes nothing for granted.

Once the bone lengths have been computed, a match is declared if any discrepancies fall within an age-dependent tolerance limit, which makes allowance for the possibility of small changes since the visa was issued. This tolerance is highest, of course, for children and adolescents, and not much leeway is granted at Laura's age—perhaps I should increase it? Customs may prefer to err on the side of false negatives, but I'd rather make the opposite mistake.

I realize my stupidity with a jolt: I'm still thinking in terms of passengers. A fake corpse doesn't need to be ambulatory. No skeletal reconstruction, however crippling, can be ruled out—which leaves me without a single piece of data I can trust.

That's not quite true. Most bones can be altered—if a period of convalescence is acceptable—but it's next to impossible to mess with certain parts of the skull, without the tampering being both dangerous and obvious.

I modify the match criteria, stripping away all the other comparisons. When I run this new version, a matching record appears at once:

CARGO ID: 184309547

Flight: QANTAS

Departure: Perth, 13:06, December 23rd, 2067

Arrival: New Hong Kong, 14:22, December 23rd, 2067

Contents: Human remains [Han, Hsiu-lien]

Sender: New Hong Kong Consulate General

16 St George's Terrace

Perth 6000-0030016

Australia

Addressee: Wan Chei Funerals

132 Lee Tung Street

Wan Chei 1135-0940132

New Hong Kong

A match on the basis of five skull measurements could be a coincidence. It could be deliberate misinformation. Why wouldn't the kidnappers have altered the X-rays, wiping out even this hint of the truth?

I check the time the snapshot was taken. Twelve fifty-three. The cargo would have been X-rayed just two or three minutes before; you don't risk changing data when a Customs officer might be staring right at it. Ten minutes later, though, and every trace of Laura Andrews would have been gone.

I shake my head, still suspicious. I don't often get this lucky.

Karen leans over my shoulder and says, ‘That’s the definition of luck, you moron. Hurry up and pack.’

* * * *

New Hong Kong was founded on January 1st, 2029. Eighteen months before—on the thirtieth anniversary of Hong Kong’s absorption into the People’s Republic of China—demonstrations against the suspension of the Basic Law had ended in violent repression, a crackdown on dissent, and a massive increase in the rate of illegal emigration. While everyone else in the region offered the emigrants squalid refugee camps ringed with barbed wire, and the prospect of spending half their lives in a stateless limbo, the Tribal Confederation of Arnhem Land offered two thousand square kilometres on a mangrove-infested peninsula in northern Australia. No ninety-nine-year lease this time; sovereignty in perpetuity, in exchange for a piece of the action.

Arnhem Land, where the remnants of half a dozen Aboriginal tribes were trying to re-establish their near-obliterated culture, had been independent itself only since 2026, and there was talk in Australia of cutting off the aid that kept it afloat—partly in response to Chinese threats of trade sanctions, but also out of sheer childish resentment that the fledgling nation had dared to take its autonomy seriously. (The Australian government’s own stunningly creative proposal had been to house sixty thousand refugees in a disused leper colony on the northwest coast, for however many decades it took to farm them out around the world at a politically acceptable rate.) The aid survived, but the project was widely ridiculed by the Australian media and their pet economists, who referred to it as ‘subletting the nation’, and predicted a social and financial disaster.

International investors thought otherwise; money flooded in. There was nothing humanitarian about this; it simply reflected the global economic situation at the time. The Koreans, especially, had been going crazy trying to find projects to soak up all their excess wealth. Creating the infrastructure from scratch must have been daunting, but the site was reasonably close to the booming industrial centres of south-east Asia, where there was engineering expertise and manufacturing capacity to spare. Making full use of new construction techniques, the core of the city was functional, and occupied, within seven years. Not a moment too soon: in 2036, the PRC invaded Taiwan, giving rise to a new wave of refugees.

In the decades that followed, cycles of political and economic reform came and went in Beijing, each one ending in an outflux of disillusioned members of the skilled middle class, with only one place to

go. While China grew more impoverished and insular, New Hong Kong prospered. By 2056, its GDP had outstripped Australia's.

* * * *

At Mach 2 plus, three thousand kilometres takes a little more than an hour. I'm far from any window, but I switch my entertainment screen to the scenic channel and watch the desert go by. I leave the headphones off, to avoid the fatuous audio commentary, but I can't work out how to make the distracting text and graphics overlays vanish. Eventually, I give up, and tell Boss to put me out of it until we arrive.

Monsoon rain pounds the runway as the plane touches down, but five minutes later I step out of the airport into dazzling sunshine and—after an hour of artificial, twenty-degree blandness—heat and humidity as palpable as a slap in the face.

To the north, I can glimpse the cranes of the harbour between the skyscrapers; to the east, a patch of blue, the Gulf of Carpentaria. I'm right beside an entrance to the underground, but since the rain has stopped, I decide to walk to my hotel. This is my first time in NHK, but I've loaded Déjà Vu (Global Visage, \$750) with an up-to-date street map and information package.

Sleek black towers from the early days alternate with the modern style: ornamental facades in imitation jade and gold, carved with ingenious fractal reliefs that catch the eye on a dozen different scales. Every building is topped with the giant logo of some major financial or information service. It always seems absurd to me that money or data should need a flag of convenience, but laws change slowly, and the laissez-faire regulations here have apparently tempted hundreds of transnationals to shift their head offices to this jurisdiction—if only to await the day when they can incorporate incorporeally, as waves of tax-free data flowing between orbiting supercomputers.

At street level, the towers are all but hidden by the undergrowth of small traders. Daylight holograms in pai-hua and English crowd the air, each with a stream of flashing darts pointing out a narrow entrance or a tiny cubicle that might otherwise easily be missed. Processors, neural mods and entertainment ROMs are on sale within metres of junk jewellery, fast food, and nanoware cosmetics.

The crowd I move through looks prosperous: executives, traders, students, and plenty of the right kind of tourists. Twelve degrees south of the equator is about as far as most northern tourists will go; they want a winter tan, not the promise of a melanoma. Decades after the phasing out of the last ozone-depleting pollutants, the stratosphere remains contaminated—and the ‘hole’ which spreads out from Antarctica each spring is still severe enough to turn the latitude/cancer-risk equations upside down: sunlight is far more dangerous in the southern temperate zone than it is in the tropics. I’d better rapidly switch off my parochial UV-belt prejudice, and stop thinking of pale skin as marking out religious fanatics and genetic-purity freaks. Not many people born here (or in old Hong Kong) would have bothered with the melanin boost, but there’s a visible component of black-skinned ‘southerners’—Australian-born immigrants—of both Asian and European descent, so I may not be quite as conspicuously foreign as I feel.

The Renaissance Hotel was the least expensive I could find, but it’s still disconcertingly luxurious, all red and gold carpet and giant murals of da Vinci sketches. NHK has no cheap accommodation; penniless backpackers simply don’t get visas. I hate having my luggage carried, but I’d hate the fuss of refusing it even more. Several discreet signs advise against tipping; Déjà Vu advises otherwise, and lets me know the going rate.

My room itself is small enough to make me feel slightly less profligate, and the view consists of nothing but a portion of the Axon building—the facade of which is tastefully adorned with the names of all their best-selling neural mods, spelt out in a dozen languages and repeated in all directions, like some abstract geometric tiling pattern. Letters cut into imitation black marble don’t exactly catch the eye, but perhaps that’s intentional; after all, Axon grew out of a company which peddled ‘subliminal learning tools’—audio and video tapes bearing inaudible or invisible messages, supposedly perceived ‘directly’ by the subconscious. Like all the other self-improvement snake oil of the time, this did more than provide placebo effects for the gullible and megabucks for the rip-off merchants; it also helped create the market for a technology that did work, once such a thing was actually invented.

I unpack, shower, belatedly put all the clocks in my head forward one-and-a-half hours, then sit on the bed and try to decide exactly how I’m going to find Laura in a city of twelve million people.

The funeral notices say that Han Hsiu-lien was cremated on December 24th, and no doubt the body that went into the furnace looked just like her—although presumably the real Han Hsiu-lien never left Perth. All this corpse shuffling is fascinating, but it doesn’t get me very far. If I talk to anyone at the funeral company, I risk tipping off the kidnappers. Ditto for the airline’s cargo handlers. All the people most likely to have seen something useful are also the most likely to have been involved in the swap themselves.

So where does that leave me? I still know nothing about the kidnappers, nothing about their motives, nothing about their plans. Apart from having narrowed the search geographically, I'm back to square one. All I have to go on is Laura herself, brain-damaged and immobile. I might as well be hunting for an inanimate object.

But she's not an inanimate object, she's a human being convalescing from skeletal reconstruction. Convalescing—what does that entail? Highly skilled nursing and physiotherapy—assuming that her kidnappers care whether or not she ends up permanently crippled. Medication, certainly—if she's worth keeping alive at all, they can't be disregarding her health entirely. But what medication, what particular drugs? I have no idea. So I'd better find out.

Doctor Pangloss is my favourite knowledge miner. Unlike Bella, who steals data which is supposed to be secure, Pangloss legally digs up facts which are -laughably—supposed to be easily accessible to anyone, for a few dollars, at the touch of a few keys. His mask, with powdered wig and beauty spot, always makes me think of Molière rather than Voltaire, and his accent is pure RSC, but there's no quibbling about his mining skills; he answers my question in thirty seconds flat. I could have consulted the same expert systems, databases and libraries myself, but it would have taken me hours.

A patient in Laura's condition would have several pharmacological requirements, each of which could be met by a variety of substances, each in turn marketed under several different trade names, and each available from a choice of local suppliers. Pangloss arranges all of this for me in a neat tree diagram in midair, then sends a copy down the data channel.

I call Bella, pass her the list of pharmaceutical suppliers, and ask for their delivery records for the last three months.

'Five hours,' she says. 'Your password is "nocturne".'

Five hours. I spend ten minutes staring out the window, trying to think of something useful to do in the meantime. Nothing comes to mind, so I decide to eat.

The hotel's ground-floor restaurant looks stuffy and expensive, so I wander out in search of fast food. NHK has its own distinctive cuisine, mainly Cantonese in ancestry, but full of local quirks—like crocodile meat from Arnhem Land; delicious, according to Déjà Vu, so long as you're not put off by the possibility of secondary cannibalism. I settle for fried rice.

I still have hours to kill, so I walk on, aimlessly. I tell myself I'm going to think about the case, but the truth is I'm sick of chasing the same details in the same endless circles, and I let my mind go blank. The rush-hour crowd presses around me, full of tense and anxious faces—which usually makes me tense and anxious myself, but right now I seem to be immune, as if I haven't yet tuned in to this city and can't yet be touched by its moods.

I step into a false dusk, the shadow of the PanPacific Bank tower, a hundred-storey cylinder sheathed in corroded gold. Déjà Vu gives me the tourist spiel: Hsu Chao-chung's most famous and controversial work, completed in 2063. The metallic-looking cladding is in fact a polymer; the fractal dimension of the surface is an unsurpassed 2.7... The commentary is more abstract than an auditory hallucination—more like vividly imagined or remembered speech; a documentary soundtrack effortlessly recalled. The catch is, the mod also pumps out a deliberate subtext: a sense of growing familiarity, a sense that you're gaining the most profound and intimate knowledge, a sense that with each piece of predigested trivia you swallow, you're fast approaching an understanding of the place to rival that of any lifelong citizen. This is precisely the delusion that every tourist wants, but personally I'd rather stay slightly less complacent.

The sky grows dark quickly once the sun truly sets. Karen walks beside me, silent at first, but I only need the sight of her in the corner of my eye, and the faint scent of her skin, to take the edge off my loneliness.

We find ourselves in an open-air market, an endless expanse of stalls and tables piled with souvenirs, trinkets and high-tech consumer junk. Clashing multicoloured light, spilling from the holograms jostling above the stalls like demon spruikers, renders everything in the strangest hues.

'Do we want an intelligent salad-maker? "Faster and more dextrous than any mere human with a chef mod".'

She shakes her head.

‘What about this? A key eliminator. “Memorizes and mimics the geometric, electrical, magnetic and optical properties of up to one thousand different keys, active or passive”.’

‘I don’t think so.’

‘Come on. My hotel bill’s under the quota; I have to buy something, or they’ll never let me in again. The Chamber of Commerce computer will veto my visa application.’

‘How about a horoscope?’ She nods towards a nearby astrologer’s booth.

My stomach tightens. ‘Since when did you believe in that shit?’ A young boy turns to stare at me addressing empty space, but his friend grabs his elbow and drags him on, whispering an explanation.

‘I don’t. Just humour me.’

I glance at the booth, and force out a laugh. ‘Astrology... without any fucking stars. That says it all.’

Her face is unreadable. ‘Humour me.’

My guts are squirming, but I say, almost calmly, ‘Okay. If you want a horoscope, I’ll buy you a horoscope. April 10th.’

She shakes her head. ‘Not mine, you idiot. Laura’s.’

I stare at her, then shrug. There's no point arguing. I still have all the Hilgemann patient records in my head. Laura was born on August 3rd, 2035.

The astrologer is a shaven-headed girl, four or five years old, dressed in fake silk and dripping glass jewellery. I give her Laura's details. She sits cross-legged on a cushion and writes with a bamboo pen on ersatz parchment. Her calligraphy is rapid, but undeniably elegant; the mod for it must have cost a fortune—manual skills never come cheap. When she's covered the sheet, she turns it over and writes an English version on the back. I hand her my credit card, and put my thumb to the scanner. When I take the parchment, she clasps her hands together and bows.

Karen has vanished. I read the prediction, which boils down to success in business and happiness in love (after many tribulations). I crumple the sheet and toss it in a bin, then head back for the hotel.

* * * *

I ring Bella, download the pharmaceutical suppliers' records, and start hunting for patterns. I don't feel much like trusting the hotel room's terminal, so I do the analysis in my head; CypherClerk has a virtual workstation, with all the usual data-shuffling facilities.

Pangloss specified five categories of drugs. One hundred and nine different businesses score five out of five. I start wading through their animated presentations in the phone directory; not surprisingly, it looks as if they're all going to turn out to be either major hospitals, where orthopaedic reconstruction is carried out, or cosmetic surgery clinics, specializing in much the kind of thing that Laura must have been through. Nose jobs, cheek jobs, rib removals, hand reshaping, vertebrae adjustments, limb reductions and extensions; I can never quite believe that anyone would undergo this kind of mutilation for the sake of fashion, but dozens of smiling customers testify to their satisfaction, right before my eyes.

Laura could be hidden in any one of these places; a big enough bribe would silence any awkward questions. But every outsider brought in on the kidnapping is one more unreliable amateur, one more potential informant. Better to be self-contained.

The ninety-third entry on the list, Biomedical Development International, displays nothing but an animated logo as unenlightening as its name—the letters BDI rendered in shiny chromed tubing, constantly rotating and endlessly sparkling with implausible-looking highlights—and a single line of text: Contract research in biotechnology, neurotechnology and pharmaceuticals.

I plough through the rest, but apart from the Osteoplasty Research Group of New Hong Kong, every other entry is some kind of hospital or clinic, seeking out customers. This proves nothing—but I'd certainly like to know what kind of contract research BDI has been doing lately.

I almost call Bella, then I change my mind. If I am getting close, I'd better start taking more care. Bella is good, but no hacker can guarantee that they won't be detected, and the last thing I want to do is panic the kidnappers into moving Laura again.

I find BDI in a business directory. Because they're not listed on the stock exchange, disclosure requirements are minimal. Founded in 2065. Wholly owned by an NHK citizen, Wei Pai-ling. I've heard of him; a moderately wealthy entrepreneur with a wide range of profitable but unspectacular technological interests.

It's half past two. I shut down CypherClerk and slump into bed. Biomedical Development International. Maybe I was right first time; maybe some pharmaceutical company whose product screwed up Laura's brain is preparing for a future lawsuit. Everything would make perfect sense. Well... almost. Why would BDI—or whoever they hired to collect Laura—break into the Hilgemann only to let her out of her room, twice, before the actual kidnapping? Why would anyone? It's bizarre. If the point was to create the impression that Laura could escape on her own, who did they think they were kidding?

As I stare at the ceiling, trying to choose sleep, the incident with the astrologer keeps running through my head. Karen is not compelled to behave in character; sometimes she's true to my memories, sometimes she's pure wish-fulfilment, sometimes her actions are as cryptic as the plot of a dream. But why should I 'dream' her asking for Laura's horoscope, of all things? Sheer perversity? Karen would never have done such a thing in a million years.

I try to relax, to forget it, but I can't. The irony doesn't escape me: nothing offends me more than the pathological assignment of meaning—religion, astrology, superstitions of every kind—and here I am,

hunting for meaning in the actions of a subconsciously controlled hallucination of my dead wife. What kind of ludicrous necromancy is that?

Horoscopes. Propitious birthdays. My skin crawls. I summon up the pilfered Hilgemann data again. Laura was born on August 3rd, 2035. The birth was slightly premature; her medical records state that the gestation period was thirty-seven to thirty-eight weeks. That puts the date of conception within a week of November 15th, 2034; perhaps even on Bubble Day itself.

Of itself, this means nothing to me. It would have meant nothing to Karen. There are probably ten billion people on the planet who wouldn't give a shit if the stars went out the very moment Laura's father came.

None of which matters, none of which counts, none of which renders the coincidence meaningless and safe.

The question is: what does it signify to the Children of the Abyss?

* * * *

Marcus Duprey was born on Bubble Day, in the small town of Hartshaw, Maine, sometime during the Earth's last sixteen minutes of starlight. At what age he began to attach significance to this fact is anybody's guess; Duprey himself isn't telling, and his parents, his grandparents, his aunts, his uncles, his cousins, most of his teachers, and most of his peers, all died together on his twentieth birthday, which he celebrated by introducing toxic bacteria into the Hartshaw water supply. His third-grade and seventh-grade teachers, lucky enough to have moved out of town, could scarcely remember him. Surviving ex-classmates described him as quiet and slightly aloof, but not studious, and not introverted enough to have attracted ridicule. Charismatic? Influential? A born leader? A prophet? No.

Computer files had little to add. His parents were not religious. His academic record was mediocre, his classroom behaviour unremarkable, or at least unremarked upon. After finishing high school, he worked for the local water utility, performing what was described as 'unskilled and semi-skilled maintenance'. No doubt he accessed online libraries extensively in his youth, but only a few months

of data is retained in most systems, and by the time anyone went looking for Duprey's formative reading, the details had been purged long ago. If he ever bought books or ROMs, he took them with him when he fled; his rented room was found empty of all possessions. (What would have explained away three thousand corpses? Books on Charles Manson and Jim Jones? A diary full of teenage alienation? A tarot pack, a zodiac chart? Pentagrams in blood on the floor?)

Duprey was captured more than six years later, hiding out in rural Quebec. By this time, he had followers worldwide, blowing up trains and buildings, poisoning canned food, gunning down crowds of shoppers. Most of the killings were random, but one group of Children had murdered six members of a European Bubble-research team, and many more such assassinations were to follow. Bubble science, to the Children, is the ultimate blasphemy; after all, any detailed understanding of The Bubble's true nature could only undermine their vision of the empty sky as a cosmic portent of the 'Age of Mayhem' which they believe they're ushering in.

Duprey was found to be sane enough to stand trial. He was no paranoid schizophrenic—he heard no voices, saw no visions, suffered no more delusions than any other religious leader. I saw the leaked transcripts of one of his psychiatric evaluations; when asked bluntly whether he thought the genocide in Hartshaw was right or wrong, he said that he understood the concepts, but believed they were no longer applicable. 'That symmetry was broken in the early universe, but now it has been restored. The two forces have become unified again—good and evil are indistinguishable.' Most of his answers were in this style: metaphors from science and religion dragged out of context and hybridized at random into eclectic non sequiturs and hollow aphorisms. Quantum mysticism, pop cosmology, radical Gaiast eco-babble, Eastern transcendentalism, Western eschatology—Duprey, omnivorous, had swallowed it all, and had managed to unify the jargon, if not the ideas. The psychiatrists never put a name to this condition, but apparently it didn't constitute a defence of criminal insanity.

Karen and I watched the live broadcasts of the trial in the early hours of the morning; we'd finally synchronized shifts. I was trying to get promoted into a counter-terrorist unit, so I wanted to learn all I could about the Children. Karen was working as a registrar in the Casualty Department of the new Northern Suburbs Hospital—a job which often sounded more like police work than my own. Both our careers were stagnating; she was ten years out of medical school, I'd spent fourteen years in uniform. We both felt our chances were slipping away.

Neither the prosecution nor the defence wanted speeches from Duprey, or anything else which might inflame his disciples, so he was never put on the stand, and the question of motive was scarcely raised. The evidence linking him to the weapons dealer (turned prosecution witness) who'd supplied the engineered bacteria he'd used was complex and tedious, but ultimately watertight; the trial

dragged on for months, but the outcome was never in doubt.

Halley's comet was no spectacle in 2061—as seen from the Earth. The geometry was unfavourable; at its closest approach it was swamped in sunlight, leaving it barely visible to the naked eye anywhere on the planet. A dozen probes pursued it, though; fusion-powered craft able to match its difficult orbit, and even a couple of vintage spaceborne telescopes, commissioned prior to The Bubble, were reactivated for the occasion. The pictures from these sources were breathtaking, and throughout June and July there were two stories on the HV news almost every night, two images almost guaranteed to be shown one after the other: the comet, streaming tails of yellow-white dust and vivid blue plasma, travelling out of the darkness, out of the Abyss, towards the sun—and Marcus Duprey, sitting impassively in a courtroom in Maine.

On August 4th, Duprey was sentenced to sixty thousand, eight hundred and forty years' imprisonment. He had been tried alone for the Hartshaw massacre, but throughout 2060 and 2061, the Children had been infiltrated successfully in many cities, and a total of seventeen other key members had been imprisoned, **THE END OF THE AGE OF MAYHEM!** proclaimed NewsLink, beneath a picture of a voodoo doll in the image of Duprey, pierced by seventeen needles and oozing blood from every wound.

On September 4th, three ex-jurors were murdered. (The rest were immediately taken into protective custody, and subsequently given lifelong police protection; to date, though, two more have been assassinated.)

On October 4th, the trial judge survived the bombing of her home. The district attorney, and his bodyguard, were fatally shot in an elevator.

On November 4th, the courtroom where Duprey had been tried was destroyed by an explosion. Sixteen people died.

Why were so many people willing to follow Duprey, to avenge his imprisonment? Of those arrested, some were congenital psychotics who would have killed anyway; the Children had merely provided a pretext—and access to weapons and explosives. Most, though, showed a different profile: they had joined the Children because they simply couldn't accept that the stars had gone out—and it meant nothing, changed nothing. Duprey had proclaimed that the Abyss marked the end of all moral order—

and you can't ask for greater human relevance than that. For the sake of making sense of the world—to preserve themselves from The Bubble's indifference—they swallowed his bleak conclusions. But you can't confirm the end of all moral order by pointing a telescope at the Abyss; you can't measure it with apparatus of any kind. If you want—if you need—to believe in it, you have to go out and make it happen. You have to make it real.

As the twenty-seventh anniversary of Bubble Day approached, not a city in the world was entirely immune from the tension. Those who had imprisoned Duprey had been singled out for punishment, but in the past—and especially on November 15th—the Children had killed at random, and nobody believed that they'd abandoned that practice. Department stores X-rayed and strip-searched their customers (and home-shopping suddenly turned fashionable again). Train schedules fell apart under the burden of endless security checks (and telecommuting underwent a revival).

On November 9th, Duprey held a media conference in prison; he answered no questions, but read out a statement denouncing all acts of violence and calling on his followers to do the same. I took it for granted that he had been bribed or coerced somehow, and I doubted that anyone was in a position to know how many of the Children were likely to obey him—but the media pushed the line that the statement amounted to some kind of miraculous reprieve, and the public hysteria certainly diminished. I just hoped that Duprey's followers were as easily manipulated as the rest of us.

Four days later, the story broke: Duprey's words had not been his own; the whole thing had been staged with a puppet mod. Illegally: the US Supreme Court had reaffirmed, only months before, that the enforced application of a neural mod was unconstitutional, whatever the circumstances—and in any case, Maine had never even tried to pass a law allowing it. The prison governor resigned. The state's most senior FBI bureaucrat blew his brains out. More to the point, it was hard to imagine anything which could have enraged the Children more.

It was just after two A.M. on November 15th, when Vincent Lo and I responded to an alarm from a dockside container warehouse. People later asked us how we could have been 'foolhardy' enough to walk 'alone' into such 'obvious' peril. What did they think? That the day's eighty thousand burglaries, worldwide, could all be treated as potential terrorist atrocities, at a cost of about one-and-a-half million dollars each? Maine was on the other side of the planet. The Children had struck in Australia only once—in a bungled attempted bombing which had killed only the bomber himself. Of course we walked right in.

We accessed the warehouse security system first, though. The surveillance cameras showed nothing

amiss, but something had tripped a motion detector. (A passing train? It wouldn't have been the first time.) The containers were laid out in rows; I moved down one aisle, Vincent another, while P2 let us see, simultaneously, through our own eyes and any (or all) of the sixteen ceiling-mounted cameras. I set off a small pyrotechnic device which sent thin streams of coloured smoke wafting at random across our entire, expanded field of view—a trick which betrays even the most sophisticated data chameleon. The cameras were clean. We were alone in the building.

A few seconds later, we both felt the floor vibrating, very slightly. We shared sensory data to get a better parallax, and P2 pinned down the source of the vibrations to one container, in the second row from the left. I was about to switch the camera above to infrared—for what little that might have revealed—when suddenly there was no need: a pale, transparent-blue plasma jet punched through the steel of one of the walls of the container, close to an upper corner, and began smoothly slicing its way down.

Vincent queried the main warehouse system, and said, 'One Hitachi MA52 mining robot, on its way to the goldfields.'

That's when I felt about as much of a frisson as P3 permitted. The container was fifteen metres high. I'd seen the MA52s on HV: they looked like a cross between a tank and a bulldozer, scaled up considerably, sprouting a dozen steel appendages, each of which terminated in an assortment of wicked-looking tools. The things carried out self-maintenance, which explained the plasma torch. Needless to say, any mining robot was supposed to be shipped unpowered—and, powered or not, should not have been able to wake spontaneously in transit and decide to cut itself free. At the very least, it had been completely reprogrammed, and it had probably been tampered with mechanically as well. All rules governing the behaviour of the standard model could safely be considered void; there was no point tracking down the documentation for emergency de-activation codes.

We were armed, of course. Our weapons could have melted through the robot's outer plate, in about a decade.

I notified the station of developments, and put in a call for reinforcements. The plasma jet reached the bottom of its path, and made a neat horizontal turn.

There were six massive cranes fitted to the warehouse ceiling, one for each row of containers. By the

time I'd given them a second glance, Vincent already had them under his control. The one we needed, though, was parked at the end of the building furthest from where we needed it, and it crawled along its track with unbelievable lassitude. I invoked P5's judgement of distances and velocities, then did the same for the plasma jet's progress; the container would be open at least fifteen seconds before we could start to raise it. But it was one row in from the edge of the grid, and the aisles were barely three metres wide—the MA52 wouldn't have room to charge right out; it would have to clear a path first. That would buy us far more than fifteen seconds.

The rectangle of steel came free—then skidded down the aisle with a deafening screech, still balanced on its edge until it hit the far wall. As the robot, propelled by banks of manoeuvrable treads, rolled out as far as it could, the container slipped a short distance in the opposite direction. Ten or twenty centimetres, no more.

Vincent cursed softly: 'Suboptimal!'

The crane lowered its grappling claw on to the container's misaligned roof. Locking pins—as thick as my arm—shot out in search of target holes, retracted in surprise, then cycled idiotically through the same action four more times, before giving up. A red light on the claw started flashing, an ear-splitting siren shrieked twice, then everything on the crane shut down.

We'd kept our distance; it took me twenty seconds to reach the action—on the robot's blind side—by which time it had started ramming the container that blocked its path. Each time it backed away, its own container slid forward slightly; each time it advanced, the opposite happened—but the net motion was backwards. The robot was going to be hemmed in for several minutes, but any prospect of aligning the grappling claw was vanishing rapidly.

Each container had a ladder welded to its side; as it happened, that was the side that had been cut away and discarded, so I climbed the container across the aisle and jumped the gap. Starting the claw swinging was much harder than I'd expected; it hung from six cables, arranged as three pairs, and the pairing complicated and damped the motion. Gradually, I built up the oscillations, until the claw was sweeping far enough to compensate for the container's displacement.

Now it was just a matter of timing.

There was no need for me to cue Vincent; the closest ceiling camera gave him a perfect view. P5 had no trouble extrapolating the motion of the swinging claw, but the lurching of the container was unpredictable. The crane's firmware didn't make things any easier—each time Vincent commanded it to try to grab the container, it went through a hard-wired cycle of five attempts, and then shut down; the only freedom he had was to choose the moment he started the sequence. Three times, the container shifted, throwing out all his calculations. The fourth time, I knew it was our last chance. I could make the claw swing further horizontally, but the arc of its motion would lift it too high for the locking pins to engage.

When it happened, it looked as miraculous, as improbable, as something from a time-reversed movie: everything magically fitting together, like the fragments of a broken vase. Everything except one locking pin, out by some ludicrous fraction of a millimetre, stuck against the side of its hole while all the others continued to slide home. I could picture them all retracting again, the instant some idiot microprocessor gave up hope on that one jammed pin.

I kicked it as hard as I could. It slipped into place. Primed or not, I felt a moment of dizzy jubilation. I ducked between the cables and jumped back across the aisle as the crane's lifting motors burst noisily into life. Then I clambered down the ladder and ran.

The container rose smoothly; the MA52, still two-thirds inside, had no choice but to rise with it. As its treads approached the height of the roof of the container which had blocked its way, I could almost imagine it making a leap for freedom—but the gap was too wide. The robot ascended helplessly to the ceiling, fifty metres above.

I could hear sirens approaching; our reinforcements were about to arrive. I met up with Vincent at the warehouse entrance.

I said, 'Now we wait for the army to come and blast the fucker into shrapnel.'

Vincent shook his head. 'No need.'

'What do you mean?'

‘The safety features of this system,’ he said, ‘leave a lot to be desired.’

He dropped it.

Later, weapons were found in the debris which could have demolished a suburb or two—and it was only the Children’s incompetence which had kept that from happening: it turned out that they’d corrupted the security system of the wrong warehouse. If there’d been no early warning, the whole thing would have ended with the army having to take on the MA52 in the streets. In three African cities, that was exactly what had happened, with heavy loss of life. Elsewhere, of course, there’d been the usual bombings: everything from incendiary devices to chemical shells spreading neurotoxins. I didn’t want to know about it; I glanced at the headlines then flipped screens, unwilling to swallow so soon the truth of how microscopic our victory had been.

Despite having been merely lucky, Vincent and I were, predictably, portrayed as heroes. I didn’t mind—it meant that I was now virtually guaranteed promotion to the counter-terrorist unit. The media attention was tiresome, but I gritted my teeth and waited for it to pass. Karen resented the whole thing, and I couldn’t blame her; none of our friends seemed to want to talk about anything else, and she must have been as sick of hearing the story as I was of telling it.

Still worse, Karen’s well-meaning brother dropped in one Sunday afternoon with recordings of every interview I’d given—primed, as the Department insisted—which we’d taken great pains to avoid when they’d been broadcast. We had to sit through them all. Karen loathed seeing me primed, almost as much as I did myself. ‘The zombie boy scout’ she called me, and I couldn’t disagree; the cop with my face on the HV was so bland, so earnest, so blinkered, so fucking sensible, it made me want to gag. (There may be people born that way, but not many, and you pity them.)

Every cop has no less than six standard ‘priming mods’, P1 to P6, but it’s P3 which imposes the mental state appropriate for active duty, it’s P3 which really makes you primed. It had always been clear to me that what P3 did was cripple the brain—efficiently, reversibly, and to great advantage, but there was no point being squeamish or euphemistic about it. The priming mods made better cops, the priming mods saved lives—and the priming mods made us, temporarily, less than human. I could live with that, so long as I didn’t have my nose rubbed in it too often. The ‘priming drugs’ of the bad old days—a crude, purely pharmaceutical attempt to suppress emotional responses, heighten sensory awareness and minimize reaction times—had caused a number of side-effects, including

unpredictable transitions between the primed and unprimed states, but the arrival of neural mods had banished all such complications. The partitioning of my life was simple, clear-cut, absolute: on duty, I was primed; off duty, I wasn't. There was no possibility of ambiguity, no question of one side contaminating the other.

Karen had no professional mods; doctors, the eternal conservatives, still frowned upon the technology—but differential malpractice insurance premiums, amongst other things, were gradually eroding their resistance.

On December 2nd, I learnt that my promotion had come through—a few hours before I read about it in the evening news. That was a Friday; on the Saturday, Karen and I, and Vincent and his wife Maria, went out to dinner together to celebrate. Vincent had also been offered a position in the unit, but he'd declined.

'Bad career move,' I said, only half teasing. We'd scarcely had a chance to discuss it before; primed, such topics were unmentionable. 'Counter-terrorism is a growth sector. Ten years in this unit, and I can quit the force and become an obscenely overpaid consultant to multinationals.'

He gave me an odd look, and said, 'I guess I'm just not that ambitious.' And then he took Maria's hand, and squeezed it. It was hardly an extravagant gesture, but I couldn't get it out of my mind.

I woke in the early hours of Sunday morning, and I couldn't get back to sleep. I climbed out of bed; Karen could always sense my wakefulness, and it always seemed to disturb her far more than my absence. I sat in the kitchen, trying to come to a decision, but only growing more angry and confused. I hated myself, because I hadn't once stopped to think that I might be putting her at risk. We should have talked it through, before I'd accepted the promotion—and yet the very idea of any such discussion seemed obscene. How could I ask her? How could I acknowledge the slightest real danger and admit in the same breath that, with her permission, yes, I'd still go ahead and take the job? And if, instead, I simply changed my mind and turned it down without consulting her, in the end she'd drag the reason out of me—and she'd never forgive me for having excluded her from the decision.

I walked over to a window and looked out at the brightly lit street; ever since The Bubble, it seemed to me, streetlights had been growing more powerful year by year. Two cyclists rode by. The window pane shattered outwards, and I followed the shards through the empty frame.

Unbidden, the priming mods snapped into life.

I curled up and rolled as I hit the ground; P4 saw to that. I lay on the grass for a second or two, bleeding and winded. I could hear the flames behind me, I could feel my heart accelerate and my skin grow cold as P1 shut down peripheral circulation—a controlled version of the natural adrenalin response—but I was insulated from my body's agitation, I had no choice but to remain calmly analytic. I got to my feet and turned around to assess the situation. Tiles from the roof were scattered on the lawn; the bomb must have been in the ceiling, close to the back of the house, probably right above the bedroom. I could see patches of a bubbling, gelatinous substance sliding down the remnants of the inside walls, carrying with it sheets of blue flame.

I knew that Karen was dead. Not injured, not in danger. With nothing to shield her from the blast, she would have died instantly.

I've thought about it a great deal since, and I always reach the same conclusion: any ordinary person in the same situation would have run back in, would have risked their life—in shock, confused, disbelieving, would have done the most dangerous and futile thing imaginable.

But the zombie boy scout knew there was nothing he could do, so he just turned and walked away.

And, knowing the dead were beyond his help, he turned his attention to the needs of the survivor.

* * * *

3

I try, and fail, to think of a single, compelling reason why the Children can't be involved. Abducting braindamaged mental patients conceived on Bubble Day may not be something they've done before, but no doubt there's a dearth of suitable candidates—and, short of an actual precedent, the whole absurd crime does have an undeniable Child-like ring to it. It's also true that the Children aren't known to have been active in New Hong Kong, but that doesn't mean that they don't have a cell here, a safe house somewhere in the city. As few as four or five people could have smuggled Laura in.

I pace the room, trying to stay calm. I feel more indignation than fear—as if my client should have known about this and warned me from the start. That's absurd, but the fact remains: I'm not being paid enough to fuck with terrorists, least of all the Children. They may not have deigned to make a second attempt on my life—a policy they seem to apply to all chance survivors, as if refusing to acknowledge failure—but I have no intention of reminding them of my existence, let alone providing them with a whole new reason to put me back on their hit list.

I call the airport; there's a flight out at six. I book a seat. I pack. It all takes a matter of minutes. Then I sit on the bed, staring at my suitcase—and gradually I start to regain a sense of perspective.

So, Laura was conceived on—or close to—Bubble Day. But is that information, or noise? Law enforcement bodies around the world have programmed computers to tirelessly pursue the Children's obsessions—dates, numerology, heavenly conjunctions, *ad nauseam*—and the results have always been the same: overflowing files full of spurious correlations and meaningless coincidences; terabytes of junk. One way or another, about twenty per cent of everything can be made to look potentially significant to the Children. The fraction of this that's genuine is infinitesimal; in practice, the method is about as useful as considering everyone with eyes the same colour as Marcus Duprey's to be a suspected terrorist.

No doubt any member of the Children, if told of Laura's date of conception, would ascribe a great significance to her abduction—but to treat that as proof of their involvement is ludicrous. The question is *not*: what does this signify to the Children? For the Children to have played a part in every single crime, worldwide, in which they would discern some cosmic portent, Duprey's following would need to have been underestimated by a factor of about a million.

Running away would be pathetic.

Still. I have nothing to lose but money. I could err on the side of caution, I could drop the case, regardless. Yeah, and I could join the ranks of people so cowed by the Children's atrocities that they hunt obsessively through the patterns of their lives in search of danger signs, and lock themselves in their homes on every anniversary of every petty stage of Duprey's lukewarm bloodless martyrdom,

observing the holy days of their own religion of fear.

I unpack.

It's almost sunrise. Lack of sleep, as it often does, has left me with a peculiar feeling of clarity, a sense of having broken free of the mind's ordinary cycle, of having reached a profound new relationship with the world. I invoke **Boss** to force my endocrine system back into phase, and the delusion soon evaporates.

Compared to lightning-bolt revelations of terrorist involvement, the information I've assembled so far looks hopelessly ambiguous. But I have to start somewhere -and Biomedical Development International is the only company on the list without a blatantly innocent reason to be buying the cluster of drugs that Laura needs. And if BDI has no shareholders to impress, and hacking is too risky, I'm going to have to use more direct means to find out exactly what it is that they're researching.

I take a small box from my suitcase, and open it gently. Nestled in tissue paper, a mosquito is sleeping.

I lack the specialist mod used to program the insect, but a second compartment of the box contains a ROM, bearing old-style sequential software which will let me do the job, albeit more slowly. I lift out the chip, and switch it on. It glows invisibly in modulated infrared, and the bioengineered IR transceiver cells, scattered throughout the skin of my hands and face, collect and demodulate the signal. **RedNet** (NeuroComm, \$1,499) receives the nerve impulses from these cells, and decodes and buffers the data.

I pass the program to **von Neumann** (Continental BioLogic, \$3,150). Simulating a general-purpose computer isn't something a neural network does with great efficiency—hence the need for specialized mods, physically optimized for their tasks, instead of a single, programmable 'computer-in-the-skull'. But nobody can afford to buy every mod on the market—and you'd probably impair normal brain function if you commandeered that many neurons. So, quaint as it may be, sometimes loading a ROM full of sequential software is the only practical solution.

Culex explorator is purely organic, but heavily modified, both genetically and post-developmentally; most of the genetic tampering is simply to give the mature insect enough neurons for the nanomachines to rewire—plus its own IR transceivers, of course. I select the behavioural parameters I want from the menus in my head, wait five minutes while the program encodes them into the language of the mosquito's neural schemata, then cup my hand over the box for maximum signal strength and ram my decisions into the insect's tiny brain. There are endless layers of error checking in the **RedNet** protocol, but I run a full read-back of the data anyway, which confirms success.

On my way to the underground, the streets are already far from empty. Food vendors stand by steaming barrows, and customers flock to them, ignoring the seductively photographed—but olfactorily barren—holographic temptations of dispensing machines. I buy a bag of noodles and eat as I walk. Sharply dressed executives, bankers and databrokers stride past me; people who could easily

work from their homes, who could operate entirely within their own skulls—and even, with the help of mods, choose to enjoy it. It's hard to admit that the sight of these umbrella-wielding infocrats hurrying by, radiating self-importance, strikes me as some kind of affirmation of the human spirit. The light suddenly dims, and I look up to see two layers of churning grey cloud racing each other across the sky. Seconds later, I'm drenched.

The R&D heart of New Hong Kong lies twenty kilometres to the west of the city centre. I emerge from the underground into an almost deserted world of sprawling concrete buildings set in lawns so perfect that if they're real, they might as well not be. The sense of space here seems almost scandalous after the city's crowds and towers; many of the labs and factories are fifteen or twenty storeys high, but the streets are wide enough, the grounds sufficiently spacious, to keep the architecture from crowding out the sky—mercurially, already blue again from horizon to horizon.

I pause to shake *Culex* out of its box onto my palm; it clings to the skin. I hold it up to my eyes; I can just make out the tiny specks of the twelve data chameleons adhering to the sides of the thorax. I curl my fingers into a loose fist before setting off again. It takes a certain effort to adopt a casual gait with twenty thousand dollars' worth of counter-security equipment in the palm of your hand.

The maze-like region to the north of the underground bears all the hallmarks of having once consisted of a number of distinct, self-consciously constructed 'science parks', which have since overflowed into the space between. Each must have had its own orderly—if bizarre—avant-garde street plan, with its own peculiar symmetries and hierarchies, and each has had some degree of success in propagating the pattern beyond its original boundaries, but where two or more incompatible designs have come into conflict, the result can only be described as pathological. BDI itself lies at the end of a cul-de-sac—which precludes a nonchalant stroll past the front entrance—but the whole area is such a capillaceous mass of tiny streets on disconnected branches that I should be able to get close enough to the rear of the building while seeming to be headed somewhere else entirely.

The streets are quiet; I can even hear birdsong. One passing cyclist gives me a puzzled second glance; there seem to be no other pedestrians about, and I feel, prematurely, like a trespasser. These may be public streets, but they all lead to a small number of private destinations. In the unlikely event that someone stops to offer me directions, I'll just have to do my best lost-idiot-tourist act.

Finally, I catch sight of what I hope is BDI, an off-white concrete shoe box a hundred metres away, visible through the gap between Transgenic Ecocontrol and Industrial Morphogenesis. I can't actually see any identifying sign or logo from this angle, but I double-check against the street map in my head, and there's no doubt that I have the right building.

I catch myself thinking: *an unlikely front for the Children of the Abyss...* and I laugh aloud at this 'reassuring' observation. The Children *are not* involved—and I don't need to look for excuses to believe that. The biggest 'risk' I face from BDI is that they'll turn out to have nothing to do with the kidnapping at all.

I paste a copy of my visual field into the image buffer of the *Culex* program. I mark the

building clearly, and then pulse this final message to the insect itself. I raise my hand and open my palm; the mosquito rises at once, circles above me a couple of times, and then vanishes.

* * * *

I spend most of the day examining the information that's publicly available about BDI's owner, Wei Pai-ling. I dutifully plough through twenty-five years of news-system coverage—he averages about six articles a year- but I find nothing remarkable. The only report that's not strictly business news is the opening of a new wing of the NHK Science Museum; Wei led the consortium which raised the funds, and the article quotes from his platitudinous speech: 'Our children's future relies on stimulating their intellects and imaginations from the earliest age...'

It strikes me that Wei has no visible interest in any company old enough to be the cause of Laura's condition; he's only in his early fifties, and he seems to have preferred founding new businesses to indulging in takeovers. Of course, that proves nothing about BDI's clients.

By late afternoon, I'm growing short of productive distractions. My irrational fears about the Children keep resurfacing; I know exactly how to banish them, but I don't want to do that. Not yet.

I flick on the HV, in the middle of an advertisement; I flip channels, to no avail. Panverts don't involve active collusion between rival broadcasters (perish the thought); all stations just happen to have introduced the practice of allowing advertisers to specify the timeslots they want to the nearest hundredth of a second. I could switch right out of real-time, and search for something to download, but it doesn't seem worth the effort when all I want to do is kill time.

A young man is saying, '— lack purpose and direction? Axon has the answer! Now, you can buy the goals you need! Family life... career success... material wealth... sexual fulfilment... artistic expression... spiritual enlightenment.' As he speaks each phrase, a cube containing an appropriate scene materializes in his right hand, and he tosses it into the air to make room for the next, until he's effortlessly juggling all six. 'For more than twenty years, Axon has been helping you to *attain* life's riches. Now, we can help you to *want* them!'

After catching the last half of an incomprehensible—but visually stunning—surrealist thriller, I switch the HV off and pace the room, growing steadily more apprehensive. My rendezvous with *Culex* is still four hours away. Why put up with four more hours of boredom and anxiety? For the masochistic thrill of enduring *real human emotions*? Fuck that; I had my dose of that this morning, and nearly walked away from the case.

I invoke **P3**.

Sometimes the feel-good subtext is more blatant than usual. *Primed is the right way to be: quick-thinking, rational, efficient, free of distractions*. It's all perfectly true, although, ironically, the analytic frame of mind that **P3** encourages makes it hard for me to gloss over the fact that this attitude is imposed arbitrarily. Just about every mod which alters the personality comes with an axiomatic assertion that *using this mod is good*. Critics of the technology call this self-serving propaganda;

proponents say that it's simply an essential measure to prevent potentially disabling conflict—a kind of safeguard against a (metaphorical) mental immune response. Unprimed, I tend to accept the cynical position. Primed, I acknowledge that I lack the data and expertise to evaluate these arguments decisively.

I spend ten minutes reviewing all that I know about the case so far. I'm struck with no new insights, which is no great surprise; **P3** eliminates distractions and makes it easier to focus the attention—and thus to reason more swiftly—but it doesn't grant any magical increase in intelligence. The other priming mods all provide various facilities: **P1** can manipulate the user's biochemistry, **P2** augments sensory processing, **P4** is a collection of physical reflexes, **P5** enhances temporal and spatial judgement, **P6** is responsible for coding and communications... but **P3**'s role is largely that of a filter, selecting out the optimal mental state from all of the brain's natural possibilities, and inhibiting the intrusion of modes of thought which it judges inappropriate.

There's nothing to do now but wait—so, incapable of boredom, untroubled by pointless fears, I wait.

* * * *

I return as near as I can to the point of release, but there's no need for precision; the mosquito finds me by scent, and would have shunned a stranger standing on the very same spot. It lands on my palm for an infrared debriefing.

The mission has been successful. For a start, *Culex* found its own route in and out of the building—no need to ride in on a human back, and no problem returning now. Inside, it located the security station, traced a bundle of cables to the ceiling, then found a way into the conduit and planted the twelve chameleons. Then, it went exploring more widely; the software is grinding away in the background right now, converting the data it gathered into a detailed layout of the building. Finally, it checked back with the chameleons, who'd cracked the security system's signal validation protocol, and reported that, after sampling all thirty-five cables, they'd identified twelve by means of which a useful set of contiguous blind spots could be created.

I view eidetic snapshots extracted from the mosquito's brain, processed into a form which betrays no hint of their origin in compound eyes. No big surprises. Technicians. Computers. Assorted equipment for biochemical analysis and synthesis. No sign of any bedridden patients—though by now, Laura might be on her feet, and I have no idea what she'd look like; the late Han Hsiu-lien, possibly, but I wouldn't count on it.

Close-ups of workstation screens show flow diagrams of laboratory processes, schematics of protein molecules, DNA and amino acid sequence data... and several neural maps. But the maps aren't labelled with anything enlightening—like ANDREWS, L. or CONGENITAL BRAIN DAMAGE STUDY #1. Just meaningless serial numbers.

The layout of the building is completed; I wander through it in my mind's eye. Five storeys, two basements; offices, labs, storerooms; two elevators, two stairwells. There are several regions

coded pale blue for no data, where *Culex* couldn't penetrate unaided, and had no opportunity to hitch a ride; the largest by far, twenty metres square, lies in the middle of the second basement.

This could be some kind of special facility—a clean room, a cryogenic store, a radioisotopes lab, a biohazard area; people would enter such places rarely, with most of the work being done via remotes. But the snapshots show only a drab white wall and an unmarked door; no biohazard or radiation warnings, no signs of any kind.

The chameleons are pre-programmed for two A.M.—just in case the place turned out to be mosquito-proof after hours—but now there's no need to stick to that schedule; I send *Culex* back in, to tell them to activate in seven minutes' time, at eleven fifty-five. Chameleons are too small to receive radio signals—which is probably just as well; radio is bad security.

As I approach the building, I pass the layout to **P2**, which superimposes it over my real vision. Fields of view of surveillance cameras, and regions monitored by motion detectors, glow with faint red auras; it's tempting to think of this as *danger rendered visible*—as if some mod in my head could magically 'sense' the action of each security device—but in truth it's nothing but a theoretical map, which may or may not be complete and correct.

At 11:55:00, I switch twelve patches of red to black—purely as a matter of faith. I have no proof that these blind spots have actually come into existence. If not, though, I'll soon find out.

The perimeter fence is barbed, and my field meter says that the top strands are electrified at sixty thousand volts—well within the threshold of the insulators in my gloves and shoes. The barbs look wickedly sharp, but they'd have to be studded with industrial diamonds—and spinning at a few thousand rpm—to make much impression on the composite fibres in my gloves. I swing myself over and clamber down, hitting the ground as softly as I can; there are adjacent motion detectors still active, and I don't know their sensitivity.

I slice open a ground-floor window, and slip into an unlit room, a lab of some kind. **P2** adapts my vision rapidly to maximum sensitivity, for what that's worth, but it's *Culex's* map that helps me navigate past obstacles at a reasonable speed. Fixed obstacles, that is; whenever I 'see' a chair or a stool outlined in my ghost vision, I slow down and reach out to ascertain its current position.

The corridor, too, is in darkness, but I see red not far to my left as I leave the lab, and a second region still under surveillance comes within a centimetre of the doorway to the stairs. I'm about to turn the handle, when I realize that the elbow-shaped door-closing mechanism is on the verge of poking into the danger zone; **P5** makes it clear that I don't stand a chance of squeezing through the permissible crack. I reach up and snap the device at the joint, then fold the two limp halves flush against the door.

I descend to the lower basement. The chameleons have done their best to give me the widest possible access to every floor, but this place seems to have been sparsely protected to start with. With no live cameras nearby to catch the spill, I risk using a flashlight, bringing detail to my ghost vision's wireframe sketch. There are bulk containers of solvents and reagents; a row of horizontal

freezers; a centrifuge sitting against the wall, opened up and spilling circuit boards, as if in mid-repair, or mid-cannibalization.

I reach the no data region. It's a large, square room, oddly adrift in the middle of an area that's otherwise undivided, and it looks—and smells—like a recent construction. But if Laura is in there, why would they have gone to so much trouble to house her? Not to keep her discreetly hidden, that's for sure; this ad hoc prison, if that's what it is, could hardly be more conspicuous.

I circle the room; there's only one door in. The lock is no great challenge; a little probing, then one carefully directed magnetic pulse is all it takes, inducing a current in the circuit that operates the release mechanism. I draw my gun, pull the door open—and find myself staring at another wall, just two or three metres away.

I step through cautiously. The space between the walls is empty, but the second wall fails to join up with the first, on either side. Before going any further, I close the door behind me and plant a small alarm at the top of the frame.

When I reach the corner on my right, it's clear that the two walls are concentric; I keep going, and round the next corner there's a door in the inner wall. The lock is of the same cheap design as the first. I wish I knew the point of this bizarre setup, but I can worry about that later; what matters right now is whether or not Laura is buried in here, somewhere.

I open the second door, and the answer is no, but –

There's a bed, unmade since it was last slept in, the bedclothes drawn back on one side where the occupant presumably slipped out. A toilet, a sink, a small table and chairs. On the far wall, there's a mural of flowers and birds, just like the one in Laura's room in the Hilgemann.

The bed is still faintly warm. So where have they taken her, in the middle of the night? Perhaps she's suffered complications, and they've had to move her to a hospital. I spend thirty seconds exploring the room, but there's nothing much to examine; the mural, though, says it all. Laura *was* here, just minutes ago, I'm sure of that; it's pure bad timing that I've missed her.

And she may still be in the building. Upstairs, undergoing a midnight brain scan? BDI may be so eager to complete their contract—whatever that entails—that they're working round the clock.

Leaving the inner room, I almost turn right, retracing my steps, taking the shortest route out—but then I change my mind and decide to complete my circumnavigation of the gap.

The woman standing just round the corner, leaning wearily on a walking frame, looks exactly like Han Hsiu-lien. She glances up at me, and bursts into tears. I step forward quickly, and administer a tranquillizing nasal spray. She goes limp; I catch her under the arms and put her over my shoulder. Not the smoothest ride, but I'm going to need my hands free. The walking frame is a good sign; she may not be entirely recovered, but no doubt she can be moved without too much harm. Once I've got her out of the building, I can call for an ambulance—while I'm cutting a hole in the fence.

I'm three paces out of the second doorway when a male voice behind me says calmly, 'Don't turn round. Drop the gun and the flashlight, and kick them away.' As he speaks, I feel a small, sharply defined patch of warmth alight on the back of my skull—an infrared laser on minimum strength. This is more than a palpable warning that I'm targeted; if the weapon is on auto, the beam's scatter is being monitored, and any sudden movement on my part would trigger a high-intensity pulse in a matter of microseconds.

I comply.

'Now put her down, carefully, then put your hands on top of your head.'

I do it. The laser tracks me smoothly all the way.

The man says something in Cantonese; I invoke **Déjà Vu** for a translation: 'What do you want to do with him?'

A woman replies, 'I'll put him out of it.'

The man says, in English, 'Please keep very still.'

The woman moves in front of me, holstering a gun. From a pouch on her belt beside the holster, she produces a small hypodermic capsule. Stepping over Laura, she takes hold of my jaw in one hand—*I lower my heart rate*—slides the needle into a vein in the side of my neck—*I constrict blood flow to the area*—then squeezes the capsule.

Reduced circulation will buy me a few seconds, at best, but that should be long enough for **PI** to make an assessment. If this is a substance that the mod can neutralize, then now is the time to move; unless the plan is to incinerate me when I slump under the drug's effects, the laser must be off auto. If I feign loss of consciousness, stumble, swing the woman around as a shield, take her gun...

But **PI** gives no report. I try to twitch a finger, and fail. A moment later, I black out.

* * * *

4

I wake, lying on my side on a concrete floor, naked. My arms are aching, but when I try to move them, cool metal presses against my wrists. I look around; I'm in a small, narrow storeroom lit by a single high window. My hands are cuffed behind me to a shelving rack, packed with laboratory glassware, which runs the length of the wall

P5 has lost track of my location; it relies on a mixture of perceptual cues, balance sense and proprioception, which is accurate to the millimetre when you're conscious and moving on foot, but totally useless when you've been knocked out and lugged somewhere. It does claim to have kept the time, though: 15:21, January 5th. The clocks in several other mods agree, and I doubt that a drug would have screwed them all up identically. In fifteen hours, I could have been moved anywhere on the planet... anywhere, that is, judging from the light, where's it's mid-afternoon or mid-morning at 15:21 Central Australian time. Belatedly, it occurs to me to scan the layout of the building in my head for any rooms with matching dimensions, and I find one on every floor. *Culex* saw nothing worth photographic snapshots in any of them, but the wireframe outlines it recorded indiscriminately are detailed enough to place me on the fourth floor.

I'm wearing two pairs of handcuffs; one pair has been threaded through a slot in one of the shelving rack's vertical supports. The shelves aren't anchored to the wall and just shifting my weight slightly sets the glassware rattling. I could try working the chain of the cuffs against the edge of the slot, but even if I'm not under surveillance, all that's likely to achieve is an avalanche of glass.

Okay, I'm stuck here. So who am I dealing with?

It's still possible that BDI are exactly what they claim to be: contract biomedical researchers. Who happen to have no qualms about kidnapping. Hired by the drug company whose product damaged Laura, *in utero*, thirty-three years ago. Company X would be taking a risk by involving outsiders, but maybe less of a risk than trying to deal with Laura in-house. Company X may have plenty of loyal staff, but presumably only a few of them are criminals—whereas BDI might specialize in just this kind of thing.

It all sounds as plausible as ever, even if the list of facts it fails to explain is growing longer. Casey's testimony. The architecture of the basement room. Laura roaming the gap between the walls of her custom-made prison. All of which suggest an alternative which might explain everything—and which doesn't sound plausible at all:

Laura really did escape from the Hilgemann. Unaided. Twice. That was why she was abducted; somebody found out, somebody who believed they could make good use of her talents. That was what the double-walled room was all about; a test for an idiot escapologist. And when I ran into her, she was half-way through passing that test.

What brought the guards down on us last night? Obviously, I triggered some kind of alarm—but unless the chameleons screwed up, the room wasn't under surveillance by any device linked to the building's security station. If Laura was being treated, not as a routine security problem, but as the subject of an experiment, it wouldn't be surprising if she was being monitored by a different system entirely.

Why are BDI making neural maps? It has nothing to do with disputing liability for congenital brain damage; they're trying to identify the pathways that make Laura the greatest thing since Houdini, in the hope of encoding her talents in a mod. Why did they smuggle her out as a corpse, not a passenger with a puppet mod? Because they didn't want to screw around with her brain, and risk destroying the very thing that made her worth abducting.

It all fits together perfectly.

The only trouble is, I just can't swallow it.

What hypothetical talent could Laura possess that would enable her to break out of locked rooms, *without tools of any kind*? Postulating an intuitive grasp of security devices is dubious enough—but what could anyone, however gifted, do to a lock, or a surveillance camera, with their bare hands? Two hundred years of research says telekinesis does not exist. The human body's minute electromagnetic fields—even if they were controllable—are about a million times too weak to be of the slightest use in picking an electronic lock. No amount of fortuitous brain damage could change that—any more than reprogramming a computer in some novel way could give it the power to levitate.

So how did she get out?

I'm still pondering this when the door opens. A young man tosses a bundle of clothes onto the floor beside me, then draws a gun and a remote control, and aims the latter at the handcuffs. I quickly activate **RedNet**, in the hope of capturing the exchange. The cuffs fall open, but I pick up nothing; the frequency used must be outside the range of my transceiver cells.

The man stands in the doorway with the gun trained on me. 'Please get dressed.' I recognize the voice from last night. The expression on his face is matter-of-fact, with no trace of smugness or belligerence; no doubt he has behavioural optimization mods of his own.

The clothes are brand new, and fit perfectly. **P3** vetoes anything but stoicism at the loss of all the equipment I had stashed in hidden pockets; even so, for a moment after I'm dressed, some part of my brain flashes redundant warnings at the absence of the usual inventory of reassuring lumps.

'Put on one pair of handcuffs. Behind your back.'

When I've done this, he blindfolds me. Then he guides me out of the room, walking beside me, gripping the chain of the cuffs with one hand, holding the gun to the side of my chest with the other.

I hear little along the way; snatches of conversation in Cantonese and English, passing footsteps on the carpet, equipment humming softly in the distance. I catch a faint scent of organic solvents. **P5** tracks my location precisely, for what that's worth. When we come to a halt, I'm pushed down into an armchair, and the gun is shifted to my temple.

Without any preliminaries, a woman says, 'Who hired you?' She's a couple of metres away, facing me directly.

'I don't know.'

She sighs. 'What exactly are you hoping for? Do you think we're going to jump through all the technological hoops for you? Truth drugs, truth mods, neural maps—all in pursuit of memories that may or may not have been falsified, or erased? If you think you're buying time, you're wrong. I have no interest in spending hundreds of thousands of dollars, pissing around with your brain. If you tell us the truth, and your story checks out, we'll be lenient. But if you don't cooperate, here and now, we'll kill you, here and now.'

She's calm, but not mod calm; her tone of pained condescension sounds like a failed attempt to be coolly intimidating. Which doesn't necessarily mean that she's bluffing.

'I'm telling you the truth. I don't know who my client is; I was hired anonymously.'

'And you couldn't penetrate that anonymity?'

'It wasn't my job to try.'

'All right. But you must have formed some kind of working hypothesis. Who do you suspect?'

'Someone who believed that Laura was taken by mistake. Someone who was afraid that their own relative in the Hilgemann was the real target.'

'Who, specifically?'

'I never came up with a likely candidate. Whoever it was, they would have done their best to hide the family connection. The whole idea that the kidnappers might have taken the wrong person would only make sense to someone who'd gone to great lengths to conceal their relative's identity. I didn't pursue it; I had better things to do.'

She hesitates, then lets that pass. 'How did you trace Laura to us?'

I explain at length about the cargo X-rays, and the drug suppliers' records.

'And who else knows all this?'

Any invented confidant would easily be revealed as fictitious. I could claim to have software,

running on a public network, camouflaged and invulnerable, ready to tell all to the NHK police in the event of my disappearance—but that wouldn't be much of a threat. If I'd had enough evidence to convince the cops, I would have taken it to them in the first place, instead of breaking in.

‘Nobody.’

‘How did you get into the building?’

Again, I have nothing to gain by lying. They must have pieced together most of the details by now; confirming what they already know can only make me seem more credible.

‘What do you know about the work we do here?’

‘Only what’s advertised. Contract biological research.’

‘So why do you think we’re interested in Laura Andrews?’

‘I haven’t been able to work that out.’

‘You must have a theory,’

‘Not any more.’ There are specialist mods for lying convincingly—for responding like a normal human being confidently telling the truth, in terms of voice-stress patterns, skin temperature, heart rate, etcetera—but I have no need of one; **P3** alone makes all such variables utterly opaque. ‘Nothing that stands up to the facts.’

‘No?’

I have no shortage of unlikely explanations to offer in support of my ignorance; I recount every hypothesis that’s passed through my head in the last eight days, however lame—save Company X and its birth-defects suit, and Laura the escapologist. I almost go so far as to mention my fear of the Children’s involvement, but I stop myself; it seems so ridiculous now that I’m sure it would sound like an obvious lie.

When I finally shut up, the woman says, ‘Okay’—but not to me. My guard takes the gun away from my head, but doesn’t move me from the chair, and I suddenly realize what’s about to happen. I suffer a brief moment of pure frustration—*unconscious most of the time, blindfolded the rest; how am I ever going to find out anything?*—before **P3** smothers this unproductive sentiment. The needle goes into the vein, the drug flows into my bloodstream. I don’t fight it; there’s no point.

* * * *

I wake on a bed, not even handcuffed. I glance around; I’m in a small, almost empty flat. A man I haven’t seen before is sitting on a chair in a corner of the room, watching me expressionlessly, resting a gun on his knee. I can hear street sounds from below, maybe fifteen or twenty storeys down. It’s

seven forty-seven, January 6th.

I rise, and head for the bathroom; the guard makes no move to stop me. There's a toilet, a shower, a sink; a non-opening window about thirty centimetres square, the pane dimpled so that it passes no clear image; a ventilation grille in the ceiling, half the size of the window. I urinate, then wash my hands and face. With the water still running, I quickly search the room, but there's nothing that could be remotely useful as a weapon.

The rest of the flat is a single room, with a kitchen in one corner; a small refrigerator, unplugged, with the door ajar; a microwave and hotplates built into the counter top. There's a window above the sink, covered by closed Venetian blinds. I start towards this area, but the guard says, 'There's nothing there you need. Breakfast is on its way.' I nod and turn back. I pace beside the bed, stretching cramped muscles.

Shortly afterwards, another man brings in a carton packed with assorted fast food, and coffee. I eat sitting on the bed. The guard doesn't join in, and ignores my attempts at conversation. His eyes move only to follow me, so at times he appears almost as if he's in a kind of stupor, but I know precisely how alert he really is; I've spent enough twelve-hour stake-outs in a similar condition. When a mod grants you *vigilance*, you're literally incapable of anything less; boredom, distraction and impatience have simply become inaccessible modes of thought. Unprimed, I may joke about zombies—but primed, I have no doubt that this is where the real strength of neurotechnology lies: not in the creation of exotic new mental states, but in the conscious, deliberate restriction of possibilities, in focusing, and empowering, the act of choice.

I half expect to be drugged yet again, as soon as I've finished eating, but this doesn't happen. I don't push my luck; I lie on the bed and gaze at the ceiling like a model prisoner, obviating any need for restraint. I have no intention of causing my captors the slightest difficulty, until the odds are a great deal better that it would do me some good.

And if no such opportunity arises?

What happens if I can't escape?

Killing me would be the simplest choice in most respects. But what are the alternatives? What could my interrogator's promise of leniency entail—assuming, for the sake of speculation, that it meant anything at all?

A memory wipe, perhaps. A crude one. If BDI aren't willing to spend a fortune mapping my brain to extract information for their own benefit, they're hardly going to do so out of concern for the integrity of my personality. Natural human memory didn't evolve with any reason to be easily reversible; eliminating a given piece of knowledge, while leaving everything else intact, is a massive computational task. The only way to be cheap *and* thorough is to cut a wide swath.

Dead, brain-wiped, or free. In order of decreasing probability. So how do I change the odds? How can I hope to discover—or invent—a reason for my captors to keep me alive and intact, when I

still don't know who they are and what they're doing? And how can I hope to find that out, when I have no means of gathering data?

I still have *Culex's* snapshots in my head. I go through them again, one by one, on the chance that I might have missed something crucial. All the shots of workstation screens are packed with information—but DNA sequences, protein models and neural maps don't mean a lot to me. I can 'read' them—in the sense that a child can spell out the individual letters of even the most difficult piece of text—but I don't stand a chance of recognizing any of the structures portrayed, let alone deducing anything about their function or context.

I'm fed again. The guard is changed. I shuffle the facts for hours, but nothing new crystallizes out of the contradictions. Escape remains as unlikely as ever. Rushing the guard would be suicide; crashing through the window and falling to the street would be marginally less likely to kill me—except that I'd probably be shot half-way across the room.

As the possibilities thin out, **P3** seems to be dragging me further and further into a state of detachment. It wants me to gather more data—but it knows that I can't. It wants me to concentrate on plausible strategies for survival—but acknowledges that there are none. What's it going to do when all of its goals have been ruled out, when all of its elaborate optimization criteria have been rendered meaningless? Shut down? Bow out? Leave me to make my own choice between equally futile options?

Towards evening, the man who led me to the interrogation yesterday comes into the room. He tosses a pair of handcuffs onto the bed.

'Put them on. Behind your back.'

What now? More questioning? I stand, pick up the cuffs. The other guard aims his weapon at my forehead, and flicks it onto auto.

'Where are you taking me?'

Nobody replies. I hesitate, then snap on the cuffs. The first man approaches me, producing a hypodermic capsule. It all seems almost familiar by now.

Yeah. The same old routine. Nothing to fear. *What better way to do it?* The capsule is the same pale blue as before, but his grip conceals the markings.

'Can't you tell me where I'm going?'

He ignores me, unsheathes the capsule. He looks right at me—but his mods have pared him down until there's nothing left for his eyes to betray.

'I just —'

He places two fingers on my neck and stretches the skin. I say evenly, 'I want to speak to your boss again. There's something I didn't tell her. Something important I have to explain.'

No reaction. The gun is still on auto; if I struggle, I'm dead for sure. The needle goes in. There's nothing to do but wait.

* * * *

I open my eyes and blink at the bright ceiling, then look around. I haven't even been moved. I am deprimed, though. It's 16:03, January 7th. The guard's chair, still in place, is empty.

I lie perfectly still for a while, feeling numb and disoriented. When I try to get to my feet, I find that I'm weaker than I realized; I sit on the edge of the bed, with my head on my knees, trying to clear my thoughts.

A wave of pure, suffocating claustrophobia passes through me. *I would have died like a good little robot.* That's the worst of it: the way I calmly accepted the loss of hope, the narrowing of the possibilities, every step of the way. *I would have dug my own fucking grave, if they'd asked me.*

But they didn't. So why am I still alive? What was I sedated for? If my memory has been tampered with, they've done a seamless job—an unlikely feat in a day. (Then again, maybe they've spent a year on it, and everything that persuades me otherwise is a fabrication.)

I look up as the door opens. The guard who injected me yesterday comes in; he's armed, but his weapon is holstered, as if he knows what state I'm in. *Maybe they've dissolved my priming mods.* I query **P3**; it still exists. I stop short of invoking it.

He tosses something at me. I don't even try to catch it; it lands at my feet. A magnetic key.

'That's for the front door,' he says. I stare at him. He seems almost embarrassed; whatever behavioural mods I've seen him with before, I'd say they're shut down now. He grabs the chair from the corner of the room and puts it beside the bed, then sits facing me.

'Take it easy, okay. My name's Huang Qing. I've got something to tell you.'

'What?' I'm beginning to think I know the answer. And I think again about priming—to cushion the blow, to keep myself from going into shock—but then it occurs to me that there's probably no need.

He says, warily, 'You've been recruited. By the Ensemble.'

'The Ensemble.' The phrase dances through my head, pushing buttons and tripping switches. For an instant, all this sparkling new machinery is clearly visible to me: perfectly delineated, separate and comprehensible—although maybe this is just a delusion, a side-effect, a glitch. In any case, a moment later the insight (or mirage) is gone, and I could no more describe the minutiae of

what's been done to me than I could determine, by introspection, which neurons make my bowels move or my heart beat.

'You okay?'

'I'm fine.' And it's true, I am. I feel a kind of abstract horror, and a remote, almost dutiful, outrage—but the sheer relief of finally knowing my fate, and understanding the sense of it, outweighs both.

This is what they meant by *leniency*. I'm alive. My memory is intact. Nothing has been taken away from me—but something has been added.

I have no idea what the Ensemble is—except that it's the most important thing in my life.

* * * *

PART TWO

5

When Huang leaves, I spend a few minutes wandering about the flat, making a mental list of the things I'll need to buy. The clothes I was wearing when I broke into BDI have been destroyed, but my wallet has been returned to me, intact. Then I recall that I still have clothes in my room at the Renaissance—and that I'm still running up a bill there. I pocket the front-door key and take the stairs down, then I find a street sign and get my bearings. I'm only a few kilometres south of the hotel, so I walk.

I can't help imagining what I'd be doing right now, if my old priorities still held sway—and the new mod does nothing to censor these speculations. Scenarios run through my head, unbidden; absurd fantasies of 'subduing' the mod by some heroic effort of will, long enough to put myself in the hands of a neurotechnician who could set me free. I have no doubt that this is what I 'would have' wanted—but I'm equally certain that it's not what I want, now. The disparity is irritating, but not unfamiliar; my superseded goals nag at me like insistent, but insincere, pangs of conscience.

The humidity is stifling, and the streets are jammed with people; I weave my way through the Saturday-night crowds with a kind of mechanical persistence. I pass right through a youth gang, sixty or more teenagers of both sexes, all with identical sneering faces modelled on the same cult video star, all with the same shimmering, luminescent tattoos, cycling through the same psychedelic patterns in perfect synch. Not looking for trouble, says **Déjà Vu**. Just looking to be seen.

When I reach the hotel, there's no reason to linger. I quickly pack and check out. I detour past the airport on the way back; I'm not entirely sure why. In part, I'm just curious to know if I'm being tracked or followed, curious to know exactly how much faith BDI now have in me. I think about marching into the passenger terminal and buying a ticket, just to see if anyone stops me, but then that seems like a childish thing to do, and I walk on.

I keep half expecting to start hearing voices or seeing visions, although I know full well that such crude techniques are obsolete. Loyalty mods don't whisper propaganda in your skull. They don't bombard you with images of the object of devotion while stimulating the pleasure centres of your brain, or cripple you with pain and nausea if you stray from correct thought. They don't cloud your mind with blissful euphoria, or feverish zealotry; nor do they trick you into accepting some flawed but elegant piece of casuistry. No brainwashing, no conditioning, no persuasion. A loyalty mod isn't an agent of change; it's the end product, *a fait accompli*. Not a cause for belief, but belief itself, belief made flesh—or rather, flesh made into belief.

What's more, the neurons involved are 'hardwired'—rendered physically incapable of further change. The belief is unassailable.

I can't decide if knowing all this makes my condition more bizarre, or less. The mod takes no

action to stop me thinking about its effects; presumably, the advantages of allowing me to understand what's happened are seen to outweigh any conflict between the sincerity of my feelings and my awareness of their origins. After all, if I had no idea *why* I felt this way about the Ensemble, I'd probably go insane trying to work it out. No doubt the mod could have been designed to conceal itself, and to take steps to keep me from even wondering what had hit me—but censorship like that can be difficult to make seamless, without whittling the user down to a state approaching idiocy. Instead, I've been left with my reason and memory intact (so far as I can tell), free to find my own way to come to terms with the situation.

The Ensemble, Huang explained, is an international alliance of research groups. BDI is a leading member of this alliance. The work they're doing is ground-breaking—and I'm going to play a small part in ensuring that it continues. I'm still suffering the numbness of mild shock, but as that fades, I begin to realize how excited I am at the prospect. The Ensemble is important to me, and the fact that this is due to nanomachines having rewired part of my brain, rather than more traditional reasons, doesn't make it any less true.

Sure, fucking with people's brains against their will is abhorrent—generally speaking—but for the sake of something as vital as the Ensemble's security, it was entirely justified. And sure, I may have seen BDI as my adversaries, twenty-four hours ago—but that wasn't exactly the cornerstone of my identity. I'm the same person I've always been—with a new career, and new allegiances, that's all.

I stop off for a meal in a small, crowded food hall, for the sake of the distraction as much as anything else. I find that the longer I refrain from pointlessly dissecting my situation, the better I feel about it. *I'm going to work for the Ensemble! What more could I want?* And perhaps this is conditioning, after all—the mod rewarding me for taking the right attitude—but I don't think so. Surely it's the most natural human response, to grow weary of analysing the reasons for happiness.

It's just after midnight when I get back to the flat. **Karen** says, 'Tell me: are you in love? Or have you got religion?'

I send her away.

Lying in the dark, though, I can't help trying to think it all through one more time:

Loyalty mods are obscene—but the Ensemble is doing important work, they had to protect themselves, and I wouldn't have wanted it any other way.

Why do I think that their work is important, when I don't even know what it is? Because of the loyalty mod, of course.

Knowing that my feelings have been physically imposed makes them no less powerful. Part of me finds this paradoxical, part of me finds it obvious. I can contemplate this contradiction until it drives me mad—or begins to seem utterly mundane—but there's nothing I can do to change it.

And I don't believe I'll go mad. I've lived with **P3**. I've lived with **Karen**. I've never had a mod forced on me, but the principle is the same. Deep down, I must have swallowed the fact, long ago, that my emotions, my desires, my values, are the most anatomical of things. On that level, there are no paradoxes, no contradictions, no problems at all. The meat in my skull has been rearranged; that explains everything.

And in the world of desires and values? I want to serve the Ensemble, more than I've ever wanted anything before. All I have to do is find a way to reconcile this with my sense of who I am.

* * * *

Huang returns in the morning, to help me get organized. With BDI as my sponsors, immigration is a mere formality. I arrange for removalists to pack and ship the contents of my flat in Perth. It takes only seconds to alter the nationality of my bank accounts, and the primary physical address of my communications number.

My client is due to call me on the twelfth, for a fortnightly status report. I load **The Night Switchboard** with a message—to be triggered by the password which was allocated at our first contact (and which the mod knows, but I don't)—stating that I've dropped the case for reasons of ill health, and requesting an account number to which I can refund my fee.

As I tidy up each loose end from my old life, it grows clear how much more sense it makes to have recruited me, rather than killing me. This way, there is no corpse to be disposed of, no data trail to be erased, no police investigation to be led astray. The only deception required consists of a few white lies—and what more could anyone hope for in the perfect crime than the victim's sincere collaboration?

In the afternoon, Huang shows me around BDI.

There are about a hundred employees, mostly scientists and technicians, but only a small part of the organization's structure is explained to me. Chen Ya-ping (the woman who interrogated me) is in charge of security, but she also has administrative and scientific duties; her official title is Support Services Manager. She questions me again—with no gun at my head, this time—and seems disappointed that my story is virtually unchanged. All I can confess to having lied about is my speculation on the reasons behind the kidnapping—and when I describe the two theories I previously kept to myself, she gives no indication of how close I might be to the truth. I swallow my disappointment; the Ensemble is everything to me, and I want to know everything about them—but I understand that I'm going to have to earn their trust, loyalty mod notwithstanding.

Later, she shows me some glossy promotional material for state-of-the-art upgrades which will supposedly chameleon-proof their security system. I break the news, as tactfully as I can, that the latest model chameleons, due for release at the end of the month, will render any such expensive improvements obsolete. And although I can't offer to put her directly on the chameleon makers' advertising list—they vet applicants very thoroughly—I promise to pass on all further information as it reaches me.

Security itself is just four people, all of whom I've met before. Besides Huang Qing, there's Lee Soh Lung (who drugged me in the basement), and Yang Wenli and Liu Hua (who guarded me in my flat). Lee, the most senior, is responsible for the details of day-to-day operations; she formally explains the job to me. There are always two guards on duty, twenty-four hours a day, seven days a week; with five of us now, each shift is to be nine hours and thirty-six minutes. I'm rostered from 19:12 to 04:48, starting tonight.

In the early evening, I call my parents, who are travelling in Europe; I catch them in Potsdam. They seem relieved that I've finally taken up stable employment. As for moving north, well, why not? 'NHK is full of opportunities, isn't it?' says my mother, vaguely. Germany, they tell me, is becoming unpleasant—the Saxony Independence Front is blowing up trains again.

Huang is on duty with me until midnight. I spend the shift primed; my four colleagues all have **Sentinel**, which is basically a commercial equivalent of **P3**. (I pry no further; curious as I am, I assume it would be indelicate to ask if anyone else has loyalty mods.) Apart from random patrols through the building and grounds—stepped up, says Huang, since my incursion—there's little for us to do; even the images from the surveillance cameras are monitored by software. Our presence is far from redundant—no computer alone could have kept me from fleeing the building with Laura that night—but being potentially indispensable does nothing to keep you busy. We pass the time when we're not patrolling by playing cards or chess; there's no need for this, since our mods preclude boredom, but Huang—fifteen years younger than me—has some old-fashioned ideas. 'You're more alert if you're doing something. Besides, spending half your life in a stake-out trance is like living half as long.'

Other staff work at night, but we don't have much contact with them. I was right about one thing: Laura's room is monitored separately, and members of the team studying her are on duty round the clock. They have half a floor to themselves, packed with computing equipment. A few people greet Huang as we walk through, but most ignore us. I glance at the workstation screens; some show neural maps, some are densely covered with formulae; one shows a schematic of the basement room—briefly, before the user flicks to another task. I start wondering how things would have turned out, if *Culex* had caught *that* image—but there's no point thinking about it.

At midnight, Lee takes Huang's place. She's taciturn by comparison, and **P3** responds by pushing me further into stake-out mode. I don't lose track of the passage of time; it just doesn't touch me. When Yang arrives to take over from me, I'm not surprised, or relieved; I don't feel anything at all.

I deprime on my way to the station. As **P3**'s constraints dissolve, I'm momentarily disoriented, and I pause to take in my surroundings: the empty, twisted street; the squat, concrete labs and factories; the grey pre-dawn sky. The air is cool and sweet. I find myself trembling with joy.

* * * *

My client calls on the twelfth, as expected, but leaves no message in reply; perhaps he or she is too

paranoid to want the money returned, for fear of the transaction being traced—even if the risk is only marginally greater than that involved in paying me in the first place.

My furniture arrives. My residency status is confirmed. In my free time, I begin to explore the city—with **Déjà Vu**'s map to guide me, but the tourist spiel disabled. I'm not interested in seeking out temples or museums; I pick a direction at random, and wander past apartment blocks and office towers, department stores and flea markets. The heat and the crowds remain oppressive, and the monsoon rain always seems to catch me unprepared—but I start to feel like I'm cursing the weather out of familiarity, rather than a mere failure to acclimatize.

Huang Qing lives a couple of kilometres to the west of me, sharing a flat with his girlfriend, Teo Chu, a sound engineer and musician. They invite me over one morning, and we listen to Chu's latest ROM—hypnotically beautiful, full of strange, broken rhythms, sudden sweeping ascents of pitch, measured silences. She tells me the work was inspired by traditional Cambodian music.

Both came here as refugees, but neither are from old Hong Kong. Huang was born in Taiwan. Nearly all of his family had been in the Nationalist government's civil service; eleven years after the invasion, they were still barred from most jobs. Huang was five when they came south. Pirates boarded the ship; several people were killed. 'We were lucky,' he says. 'They stole the navigation equipment, and wrecked the engines, but they didn't find all the fresh water. A few days later, we ran into a patrol boat off Mindanao, and they towed us in for repairs. The Philippines were anti-PRC back then; we were treated like heroes.'

Chu was born in Singapore. Her mother, a journalist, has been in prison there for the past eight years; nobody's ever told her precisely why. Chu was at university in Seoul when the arrest took place. She hasn't been allowed back into Singapore since. She has no father; she was conceived parthenogenetically. She sends money to her grandparents for her mother's legal battle, but so far, every eighteen months like clockwork, the courts have renewed the detention order.

I doubt that Chu knows that BDI is involved in kidnapping, so I discuss my own route to NHK circumspectly. Huang stares at the carpet while I spin out a mundane lie about my six years as a prison officer, before being retrenched in the RehabCorp takeover. Without **Sentinel**, he often seems ill at ease in my presence, which is understandable: I'm quite sure, now, that he doesn't have the loyalty mod, and he wouldn't be human if he didn't find my devotion to the Ensemble a little unsettling—knowing its cause, but not knowing, as I do, just how *right* it is. I'm fairly certain, too, that he's been instructed to befriend me, which must make things even harder for him.

In the weeks that follow, my new life begins to seem less and less extraordinary. My curiosity about Laura—and the Ensemble's work in general—doesn't fade, but I have to accept that my ignorance is in the Ensemble's best interest. Even so, I wish I could contribute more than spending nine-and-a-half hours a day as a zombie night-watchman. I don't even know who we're supposed to be guarding BDI against—surely I was the only person on the planet seriously looking for Laura? Even if my ex-client has hired someone new, it's unlikely that my successor would have as much luck as I did; the pharmaceutical-purchases trail has been erased. So, *who is the enemy?*

I soon learn not to invoke **Karen**; her sarcastic comments only make me angry and confused. I try to take control, to fantasize her happily sharing this life with me, but it seems that my memories can only be twisted so far; I literally can't imagine her approving of what I've become. Even without using the mod, though, I find myself dreaming of her; I wake from nightmares of heresy, with the force—if not the sense—of her diatribe pounding in my skull. I instruct **Boss** to keep her from my dreams. It hurts to be without her, but the Ensemble gives me strength.

Every now and then—as I try to psych myself into choosing sleep in the noise and heat of the morning—I unwrap the contradiction that lies at the heart of who I am, and I stare at it one more time. It never fades, it never changes. I understand, as clearly as ever, that I 'should' be horrified by my fate—and I know that, in all honesty, I'm not. I don't feel *trapped*. I don't feel *violated*. I understand that my contentment is bizarre, irrational, inconsistent—but then, my reasons for happiness in the past were never exactly founded on an elaborate logical position, a carefully formulated philosophy.

There are times when I'm dispirited, lonely, perplexed; the loyalty mod doesn't bliss me out—it doesn't intervene, directly, in my moods at all. I listen to music, I watch HV—there's no shortage of anaesthetic.

In the end, though, when the sweetest music fades, when the most diverting image disintegrates, there's nothing left to do but look inside myself and ask what it is that I'm living for. And I have an answer, like never before.

I'm serving the Ensemble.

* * * *

6

When Chen Ya-ping summons me to her office for the first time in six months, I can't help being nervous. My daily routine has become so ingrained that merely riding the familiar underground line at an unfamiliar time leaves me ill at ease. I scour my conscience for failures in my duty to the Ensemble, and find so many that I can hardly believe that I've been allowed to go unpunished for so long. So what will it be? A reprimand? Demotion? *Dismissal*?

Chen is curt. 'You're being moved to a new job. On other premises. You'll be helping to guard one of the volunteers.'

Volunteers? For a moment, I wonder if this is a euphemism—if there are more brain-damaged abductees like Laura on their way—but then Chen shows me a picture of Chung Po-kwai, taken at a university graduation ceremony, and it's clear that the word means something else entirely.

'You'll be working at a place called ASR—Advanced Systems Research. Not everyone there is familiar with our side of things, and there are good reasons for that; it's in the best interests of the Ensemble as a whole that the project remains... partitioned. So under no circumstances are you to discuss BDI, or anything you've learnt here, with anyone at ASR. Nor are you to discuss ASR's work with any of the staff here, other than myself. Is that clear?'

'Yes.'

And I realize, with an almost dizzying rush, that I'm not being punished, or even just shuffled sideways. This is a position of trust. I'm being promoted.

Why me? Why not Lee Soh Lung? Why not Huang Qing?

The loyalty mod, of course. I'm unworthy—but the mod redeems me.

'Do you have any questions?'

'What exactly will I be guarding Ms Chung against?'

Chen hesitates, then says drily, 'Contingencies.'

* * * *

I resign from BDI. Chen provides me with a glowing reference, and the number of an employment agency specializing in security staff. I call them; they happen to have a position on their files which would suit me perfectly. They interview me by videophone; I upload my reference and CV. Forty-

eight hours later, I'm hired.

* * * *

Advanced Systems Research occupies a jet-black tower with a facade like crumbling charcoal, wrapped in a five-metre layer of microfine silver cobwebs—all but invisible, except for the dazzling points of light where the burnished strands reflect the sun. The ostentatious architecture worries me at first, as if it somehow invites scrutiny, but that's absurd; in this part of the city, anything less would be out of place. In any case, it may be that ASR has nothing to fear from scrutiny; they have no formal links with BDI, and for all I know, they may not be directly involved in anything illegal whatsoever.

The security leaves BDI for dead. There are guards stationed on every level, and access control as tight as that of most prisons. Chung Po-kwai and the other volunteers are housed in apartments on the thirtieth floor. Personal bodyguards on top of everything else seems like overkill, but there has to be a reason—and this reminder that the Ensemble must have *enemies* fills me with a sense of rage, and a determination to carry out my responsibilities with the utmost diligence. Primed, of course, I feel no anger, but the priorities set by my outer self endure.

Tong Hoi-man, the Security Manager, briefs me on my duties, and arranges for some new mods which I'll need, to enable me to interface with ASR's elaborate security protocols. I'll be working twelve-hour shifts, six p.m. to six a.m. Ms Chung's schedule will vary; sometimes she'll be in the labs until late in the evening, sometimes she'll spend a day or two resting. She'll remain within the building at all times, though—simplifying my job immensely.

The day before I'm due to start, I'm nervous but elated. I'm moving one step closer to the mystery at the heart of the Ensemble. Perhaps it's arrogant to think that I'll ever be trusted with the whole truth—but Chen knows the whole truth, doesn't she? And Chen has no loyalty mod, I'm sure of that.

Hesitantly, I dredge up my old theories about Laura's abduction. After months of letting my image of the Ensemble grow more and more abstract, it's a little unsettling to start imagining concrete, specific, *mundane* possibilities. But what am I afraid of? That the truth will somehow devalue the ideal? I know that's impossible. Whatever it is the Ensemble is doing, however worldly it might seem, it will still be their work—and by virtue of that, the most important activity on the planet.

Most of my original ideas now seem absurd. I can't believe that an international, multidisciplinary research group was created solely to investigate the congenital brain damage caused by some obscure pharmaceutical. Even if the manufacturer's potential liability ran into the billions, it's hard to see why they'd sink a comparable amount into merely studying the problem, when there'd be cheaper, and more reliable, ways of sabotaging prospective litigation.

Only one theory still makes any sense at all: Laura the escapologist. And if I still can't imagine how her hypothetical talent might work, I might just have to swallow the fact that I'm too stupid to figure it out. *She escaped from the Hilgemann. She escaped from the inner room in the basement.* There are alternative explanations, but they're all massively contrived. What do I think

happened, the night I broke into BDI? Someone accidentally left the door unlocked, and she wandered out, locking it behind her? Given the lock's design, to do that without a key would have been as much of a feat as breaking out.

One thing's clear: if there *is* such a thing as telekinesis, then investigating and exploiting *that* could be a project worthy of an alliance on the scale of the Ensemble.

And if BDI have succeeded in capturing Laura's skills in a mod? Then that mod will need to be tested.

By volunteers.

* * * *

Up. Down. Up. Up. Down. Up. Down. Up. Down. Down. Down. Up. Down. Up. Up. Down. Up. Down. Up. Up.'

The voice that fills Room 619 is calm and even, but almost certainly human; for all the anthropomorphic embellishments added to speech systems lately, I've yet to hear a scientific instrument grow hoarse from overuse.

The room is crammed with rack-mounted modules of electronic equipment; a fibre-optic control bus snakes from box to box. Amidst all the clutter, there's an elderly woman seated at a central console, staring at a large screen covered in multicoloured histograms; two young men stand beside her, looking on. **Meta-Dossier** (Mind-vaults, \$3,950) instantly identifies all three, from its list of authorized personnel: Leung Lai-shan, Lui Kiu-chung, Tse Yeung-hon. All to be addressed as *Doctor*. Dr Lui glances my way briefly, then turns back to the screen; his colleagues ignore me completely. Chung Po-kwai is nowhere to be seen but I presume it's her voice coming over the speaker.

'Up. Down. Up. Down. Down. Down. Up. Down. Up. Up.'

Then I catch sight of her other bodyguard, Lee Hing-cheung, standing beside a connecting door, in front of which a vivid red hologram floats at eye level: keep out. We shake hands, and my copy of **Meta-Dossier**—via **RedNet**, and the infrared transceiver cells in our palms—engages in a rapid, coded dialogue with its counterpart in his skull, providing both of us with further confirmation of each other's identity.

He whispers, 'Am I glad to see you. Five more minutes of this shit and I'd be chewing the carpet.'

'Down. Down. Down. Up. Up. Down. Down. Up. Up. Down.'

'What do you mean? You've got Sentinel, haven't you?'

‘Sure. But it doesn’t help.’ I give him a quizzical look, and he seems to be about to explain further, but then he changes his mind and just shakes his head ruefully. ‘You’ll find out.’

‘Up. Down. Down. Up. Up. Up. Down. Down. Up. Up.’

Lee says, ‘You know what she’s doing in there?’

‘No.’

‘Sitting in the dark, staring at a fluorescent screen, announcing the direction that silver ions are deflected in a magnetic field.’

I can’t think of an intelligent response to this, so I just nod.

‘I’ll see you in twelve hours.’

‘Yeah.’

I take up a position by the door, but I can’t help sneaking another look at the display which the scientists apparently find so engrossing. The histograms twitch and sway—but in the long run, every one of them seems to be retaining its basic shape; on average, all the fluctuations appear to be cancelling out. Meaning, I suppose, that whatever elaborate tests for randomness these graphs represent, the deflections of the silver ions are passing them all.

If I’m right about the telekinesis mod, then presumably Chung Po-kwai is trying to disrupt this randomness, trying to bias the motion of the ions in one direction; learning to use her new skills, starting with the smallest possible targets. But I don’t understand why she’s personally calling out the data. The computers must be monitoring the experiment via their own detectors, so why impose on the volunteer to provide a running commentary?

The histograms flicker hypnotically, but I’m not here to amuse myself watching the experiments. I turn away from the screen—and soon discover that the words alone are equally distracting.

‘Down. Down. Up. Up. Up. Down. Down. Up. Up. Up. Up. Down. Up. Down. Down. Up. Down. Up. Up. Up.’

Some part of my brain seizes on every transitory pattern, every spurious rhythm—and, when each pattern unwinds, each rhythm decays, only strains harder to discern the next.

‘Up. Down. Up. Up. Down. Down. Up. Down. Up. Up. Down. Down. Up. Up. Up. Down. Up. Down. Up. Down.’

Primed, I should have no trouble shutting this out, ignoring it. But incredibly, I can’t. Lee was right—and **P3** is clearly no better than **Sentinel**. I can’t stop listening.

'Up. Down. Up. Down. Down. Down. Down. Up. Down. Down. Down. Up. Down. Up. Up. Up. Up. Down. Down. Down.'

Worst of all, I find myself—unwillingly, compulsively—trying to guess each direction the instant before it's called. No, worse: *trying to change it*. Trying to impose some order. If I can't shut out this meaningless droning, the next best thing would be to force it to make some kind of sense.

Chung Po-kwai, I imagine, feels the same.

* * * *

Each session lasts fifteen minutes, with a ten-minute break in between. Ms Chung emerges from the ion room—wearing wrap-around sunglasses to keep her eyes from losing too much dark adaptation—to sip tea, stretch her legs, and tap out snatches of odd rhythms with her fingertips on equipment casings. She speaks to me briefly, the first time, but then conserves her voice. The scientists ignore us both, busily reviewing their data and running esoteric statistical tests.

Each time the experiment restarts, I resolve to force myself to ignore the insidious random chant; after all, **P3** may have failed me, but, primed or not, I should have some vestige of native self-control. I don't succeed, but eventually I change tactics, and manage to reach a kind of equilibrium where at least I'm no longer compounding the problem by struggling, in vain, to attain the state of perfect vigilance to which I'm accustomed.

The scientists don't seem troubled at all—but then, it's data to them, not noise; they're under no obligation to try to ignore it.

So far as I can tell, the results don't improve as the experiment progresses, but I do notice one odd thing which I hadn't picked up before: the histograms are changing *after* each direction is called. It's easiest to see this when there's a run of ions all in one direction; most of the histograms grow steadily lopsided, and this trend doesn't reverse until the ion that breaks the run has actually been announced. But if the computers are collecting data straight from the equipment, this order of events is puzzling; whatever elaborate calculations are required to update the histograms, it's unlikely that they'd take more than a couple of microseconds to perform—which is certainly less than the time-lag between a human seeing a flash of light and announcing that it's 'up' or 'down'. Meaning what? The computers *aren't* plugged into the experiment? They're getting their data second-hand, by listening to Chung Po-kwai's words? That makes no sense at all. Maybe the scientists simply find the results easier to follow this way, so they've programmed in an intentional delay.

Dr Leung finally calls a halt at 20:35. While the three remain huddled about the console, debating the sensitivity of the sixth moment of the binomial distribution, Ms Chung nudges me and whispers, 'I'm starving. Let's get out of here.'

* * * *

In the elevator, she takes out a small vial and sprays her throat. She explains, ‘I’m not allowed to use this during the experiment—it’s full of analgesics and anti-inflammatory drugs, and they insist that I remain unsullied by pharmaceuticals.’ She coughs a few times, then says, no longer hoarse, ‘And who am I to argue?’

The ASR tower has its own private restaurant, on the eighteenth floor. Ms Chung informs me, gleefully, that her contract includes unlimited free food. She slips her ID card into a slot in the table, and illustrated menus appear, embedded in the table’s surface. She orders quickly, then glances up at me, puzzled.

‘Aren’t you going to eat?’

‘Not while I’m on duty.’

She laughs, disbelieving. ‘You’re going to fast for *twelve hours*? Don’t be ridiculous. Lee Hing-cheung ate on duty. Why shouldn’t you?’

I shrug. ‘I expect we have different mods. The mod that controls my metabolism is designed to cope with short periods of fasting—in fact, it does a better job keeping my blood sugar at the optimal level if I don’t complicate things by eating.’

‘What do you mean, “complicate things”?’

‘After a meal, there’s usually an insulin overshoot—you know, that slightly drowsy feeling that comes with satiety. That can be controlled, to some degree, but it’s simpler if I rely on steady glycogen conversion.’

She shakes her head, half amused, half disapproving, and looks around the crowded restaurant. Steam rises from every table, drawn up in neat columns by the silent tug of the ceiling ducts. ‘But... isn’t the smell of all this enough to make you ravenous?’

‘The connection is decoupled.’

‘You mean you have no sense of smell?’

‘No, I mean it has no effect on my appetite. All the usual sensory and biochemical cues are disabled. I *can’t* feel hungry; it’s impossible.’

‘Ah.’ A robot cart arrives and deftly unloads her first course. She takes a mouthful of what I think is squid, and chews it rapidly. ‘Isn’t that potentially dangerous?’

‘Not really. If my glycogen reserves dropped below a certain level, I’d be informed—with a simple, factual message from the relevant mod, which it would then be up to me to act on. As opposed to persistent hunger pangs, which might distract me from something more pressing.’

She nods. ‘So you’ve forced your body to stop treating you like a child. No more crude punishments and rewards to encourage correct behaviour; animals might need that shit to survive, but we humans are smart enough to set our own priorities.’ She nods again, begrudgingly. ‘I can see the attraction in that. But where do you draw the line?’

‘What line?’

‘The line between “you” and “your body”... between the drives you acknowledge as “your own”, and the ones you treat as some kind of imposition. Sure, why be inconvenienced by hunger? But then, why be distracted by sex? Or why give in to the urge to have children? Why let yourself be affected by grief? Or guilt? Or compassion? *Or logic?* If you’re going to set your own priorities, there has to be someone left to *have* priorities.’ She looks at me pointedly, as if she half expects me to leap onto the table and publicly renounce appetite suppression forever, now that I’ve been warned of the horrors to which it might lead. I don’t have the heart to tell her that she’s too late, on every count.

I say, ‘Everything you do changes who you are. *Eating* changes who you are. *Not eating* changes who you are. *Spraying your throat with analgesics* changes who you are. What’s the difference between using a mod to switch off hunger, and using a drug to switch off pain? It’s just the same.’

She shakes her head. ‘You can trivialize anything that way; everything’s “just the same as” something less extreme. But neural mods are *not* “just the same as” analgesics. There are mods that change people’s *values* —’

‘And they never changed before?’

‘Slowly. For good reasons.’

‘Or bad reasons. Or none at all. What do you think: the average person sits down one day and constructs some kind of meticulously rational moral philosophy—which they modify appropriately, if and when they discover its flaws? That’s pure fantasy. Most people are just pushed around by the things they live through, shaped by influences they can’t control. Why shouldn’t they alter themselves—if it’s what they want, if it makes them happy?’

‘But who’s happy? Not the person who used the mod; they no longer exist.’

‘That’s pretty old-fashioned. *Change equals suicide.*’

‘Well, maybe it does.’ She laughs suddenly. ‘I suppose I must sound like a total hypocrite. If a little moral nanosurgery creates a whole new person, then my one-and-only mod probably makes me a member of a whole new species —’

I cut her off quickly. ‘You mustn’t discuss that here.’

She frowns. ‘Why not? This is a company restaurant. Everyone here works for ASR.’

‘Yes—but there are twenty-three separate projects going on in this building. Different staff have clearance for different projects. You have to keep that in mind.’

‘All I said —’

‘I know what you said. I’m sorry. But it’s part of my job to make sure that security is maintained.’

She seems angry for a moment, then says, ‘I suppose I should take comfort in that.’

‘Why?’

‘Because I’d rather believe that your job is to keep me from opening my mouth in the wrong place, than believe that I’m really in need of a bodyguard.’

* * * *

The apartment is deep in the core of the building, so it has no true windows, but the real-time holograms in their place have such fine resolution and such wide angles of view that the difference is academic—except for the security advantages. I search each room quickly; it doesn’t take long to be sure that there are no human intruders, and it’s not worth looking for anything more subtle. A thorough sweep for microrobots would last a week, and cost several hundred thousand dollars. As for nanomachines and viruses, forget it.

I bid Ms Chung good night, and sit in the anteroom, watching the entrance. There’s no sound from within—I think she’s reading—and if anything’s happening in the adjoining apartments, it’s lost to the insulation. Even the airconditioning is inaudible. In fact, all I can hear is the faint mixture of insect noises—probably synthetic—that’s piped throughout the building for some fashionable pseudo-psychological reason; imitation Arnhem Land eco-ambience to keep us all attuned with Nature. Random at one level, but with enough order to keep it from becoming infuriating; in any case, **P3** has no problem blocking it out. I slip into stake-out mode. Hours pass, uneventfully. Lee arrives to take my place.

* * * *

Chung Po-kwai’s chant invades my dreams. I instruct **Boss** to filter it out, but it keeps sneaking in, disguised; a random telegraphy of dots and dashes in every sound, every rhythm, every motion... from myself as a boy, bouncing a basketball, swapping hands: right, left, right, right, left, right, left, right, left, left, left... to the mining robot in the warehouse, lurching in and out of its container—a subject itself supposedly forbidden.

Flaws in **P3**, flaws in **Boss**... what have I got, a brain tumour? I run the integrity checks in every mod in my skull, and all declare themselves perfectly intact.

The experiment continues, day after day, with no apparent progress. Po-kwai sounds as patient as ever as she calls out the data, but outside Room 619 her usual cheerfulness starts to take on a defensive edge, and I soon learn not to antagonize her by talking about her results. I can't really tell if Leung, Lui and Tse are disappointed; they argue amongst themselves, mainly in English, but use jargon that I find incomprehensible. There's no question of asking them about the project; to them, I'm basically just another component of the building's security system, no more to be kept apprised of the state of the experiment than a camera on the ceiling, or a scanner in the corridor. And rightly so; that's what my role should be.

Coming on duty one evening, though, I find myself alone with Dr Lui in the elevator. He nods at me and says, awkwardly, 'So, how are you finding the work, Nick?'

I'm astonished that he even knows my name. 'Fine.'

'That's good. I hear you were... recruited specially.'

I don't reply. If discussing BDI is out of bounds, I'm hardly free to start chatting about the loyalty mod and the circumstances which led to its imposition.

It doesn't take long to reach the sixth floor. Just before the doors open, he says quietly, 'So was I.'

He steps out ahead of me, and passes through the security check without looking back. As I follow him down the corridor—a few steps behind, in silence—I feel, absurdly, like some kind of conspirator.

* * * *

‘Up. Up. Up. Up. Up. Up. Up. Up. Up. Up. Down. Down. Up. Up. Up. Down. Up. Down. Down. Up.’

Ten in a row is rare enough to notice, but it still means nothing. Toss a coin ten times, and the odds are less than one in a thousand that you’ll get ten heads—but toss it nine hundred times, and the odds are better than one in three of at least one run of ten or more. Toss it nine *thousand* times, and the odds are almost ninety-nine in a hundred.

I glance at the histograms. Some are clearly distorted in the aftermath of the run, but already I can see them beginning to drift back towards their usual shapes.

I’ve long given up any pretence of trying to ignore the data. Fighting it only makes it more seductive—and in the unlikely event of an intruder getting past all the other layers of security and bursting into Room 619, I doubt that my reaction time would be significantly impaired just because I’ve let myself notice the latest illusory pattern in Chung Po-kwai’s chant. It feels like a kind of heresy to make this excuse; the priming mods are all about being in the *optimal* state of preparedness, nothing less. But given the apparent bug in **P3**, ‘optimal’ means something different now; I have no choice but to accept that. Lee and I have both dutifully informed Tong of the problem, but nothing will come of that; neither Axon—makers of **P3** and **Sentinel**—nor ASR (who clearly have plenty of neural mod expertise of their own) are likely to waste their time and money investigating such an obscure flaw.

‘Up. Up. Up. Up. Up. Up. Up. Up. Up. Up. Up. Up. Up. Up. Up. Up. Up. Down. Up. Up. Down.’

Sixteen! A new record. I plug numbers into the tiny program I’ve written for **von Neumann**. I’ve been present at forty-one fifteen-minute sessions, or thirty-six thousand nine hundred events... in which there’s a twenty-five per cent chance of a run of sixteen. But I have no time to ponder this –

‘Up. Up...’

My concentration falters, and I lose count. I turn to the histograms again. All the familiar ragged shapes have vanished, replaced by narrow spikes, growing steadily narrower.

‘Up. Up...’

Dr Leung laughs and says, ‘P has hit ten to the minus fourteenth. I believe we have an effect.’ Dr Lui looks away from the screen, visibly overcome by emotion. Dr Tse glances at him, and scowls.

The strange thing is, there's no hint in Po-kwai's voice that she's noticed her triumph. She just keeps calling the data as patiently as always—and the sound of her voice, even without the hook of randomness, is just as hypnotic as ever.

Three minutes later, the run ends, decaying into the usual noise for the rest of the session. When Po-kwai emerges, *sans* dark glasses, she stands in the doorway for a moment, shielding her eyes with her forearm, then she squints about the room, looking dazed.

And then, dejected.

Dr Tse says, 'Congratulations.'

She nods and whispers hoarsely, 'Thanks.' She hugs herself and shudders, then her mood suddenly brightens. She turns to me. 'I've done it, haven't I?'

I nod.

'Well, don't just stand there. Where's the champagne?'

The ad hoc celebration only lasts about an hour; four people (and one zombie onlooker) don't make much of a party. I know there are twelve other scientists and nine other volunteers working on the project—they're listed in **Meta-Dossier**—but apparently Dr Leung isn't eager to share the news of her success with these rival teams.

The scientists talk shop, discussing plans to pump their subject's head full of positron-emitting tracers to confirm certain aspects of 'the effect'—but nothing they say gives me any clues as to how 'the effect' arises. Po-kwai sits by, looking tired but happy, occasionally joining in the conversation and out-jargoning them all.

In the elevator, she says, 'Well, at least now I know that I'm *it*.'

'Sorry?'

'Not the control. Didn't you know? In the mornings, another volunteer has been doing exactly the same thing—counting ions from the same Stern-Gerlach machine. It was a double-blind experiment; one of us had a placebo mod, one of us had the genuine article... and only the computers knew who had what—until now. Poor woman. If *I'd* gone through all of that for nothing, I'm sure *I'd* be furious.' She laughs. 'Maybe that's what tipped the balance; maybe that's why I'm *not* the control.' I give her a puzzled look; she smiles in a way that makes it clear that she's joking, but the point of the joke escapes me.

We alight on the thirtieth floor; Po-kwai says she's too tired to eat. As always, I search the apartment methodically. She sighs. 'Tell me: even assuming that some rival of ASR found out about the project—and managed to get access to the files showing which volunteers had the genuine mod—

do you honestly believe they'd go to all the trouble of trying to kidnap one of us?'

BDI went to all the trouble of kidnapping *Laura*—for the sake of the very same talent that Po-kwai now possesses. But talk of BDI is forbidden, and Po-kwai knows nothing about Laura; from comments she's made, it's clear that she assumes—or was told—that the mod was designed on a computer, from scratch.

I shrug. 'I'm sure they'd much rather get their hands on the mod's specifications, but —'

'Exactly! *That* would take a thousand times less work than grabbing someone and scanning them —'

'— but you can be sure that the specifications aren't exactly unprotected, so it would be crazy to make the alternative more tempting. I don't think you should be worried—but I don't think any of the security here is wasted. It's hard to say how far a competitor might go. I have no idea what the commercial value of this thing might be in the long term... but just imagine how much you could make in a casino in just one night.'

She laughs. 'Do you know how many atoms there are in a pair of dice? You're asking me to scale up today's result by roughly twenty-three orders of magnitude.'

'What about electronic devices? Poker machines?'

She shakes her head, amused. 'Not in a million years.'

What about picking locks? Maybe that's out of the question, maybe it took Laura thirty years to learn how to perform feats like that. This prototype mod is unlikely to include anything but the primary skill, leaving out all of Laura's experience in applying it... but Po-kwai still deserves to know the truth about the talent she's received—and surely the more she knows, the more she's likely to achieve. How can it be in the Ensemble's best interests to keep her in the dark about the mod's origins, and potential? Maybe I have no right to question that decision... but I can't pretend that it makes sense to me.

She slumps down on the couch, and stretches, then glares at me reproachfully. 'We've just made the scientific breakthrough of the century, and you're talking about *poker machines*?'

'I'm sorry; gambling is the first thing that came to mind. I can't say I've given much thought to the nobler applications of telekinesis.'

She winces. '*Telekinesis!*' Then adds, reluctantly, 'Well... yeah, I suppose that's exactly what the media will call it—if we ever get to drop all this security bullshit and publish the results.'

'So what should they call it?'

'Oh... neural linear decomposition of the state vector, followed by phase-shifting and

preferential reinforcement of selected eigenstates.’ She laughs. ‘You’re right: we’d better think of something catchier, or the whole thing *will* end up being grossly misreported.’

Her description is meaningless to me, but –

‘“Eigenstates”? They’re something in quantum mechanics, aren’t they?’

She nods. ‘That’s right.’

For a second, I think she’s about to elaborate, but she doesn’t; she just yawns. I’m certain, though, that she’d happily explain everything (or as much as she knows); all I’d have to do is ask: how does this mod actually work? What’s the mechanism, what’s the trick? *What’s the secret at the heart of the Ensemble? Just what is it that I’m living for?*

She says, ‘Nick, I’m pretty tired —’

‘Of course. Good night, then. I’ll see you tomorrow.’

‘Good night.’

* * * *

I sit in the anteroom, dutifully staring at the door in front of me—

—and catch myself, at three fifty-two, listening to the interminable chirping of synthetic insects... mildly, but undeniably, irritated by the sound.

I try to sink back into stake-out mode; instead, I find myself growing bored, and then uneasy. I run **P3**’s diagnostics, for the twentieth time in a week.

[NO FAULTS DETECTED.]

What’s happening to me?

It’s not a disease—it can’t be; all my mods claim they’re intact, and even if their self-checking systems had themselves become corrupted, random damage to the neurons involved is hardly likely to have caused exactly the right changes to generate false reports of good health.

What if the damage isn’t random? What if an enemy of ASR is infecting the security staff with nanomachines? But if that’s so, then their tactics are absurd. Why would they slowly degrade our mods, giving us days in which to ponder the symptoms? It would make infinitely more sense to build latent puppet mods, which could wait in silence, subjectively undetectable, until they were all activated at some predetermined moment.

What, then?

Karen appears in front of me. I try to banish her, without success. She just stands there; silent, frowning slightly, apparently as much at a loss to explain her presence as I am. I plead with her: ‘I’m primed. You know how much you hate to see me primed.’ This argument doesn’t move her, and no wonder; clearly, I’m *not* primed—whatever **P3** might think.

What use is a bodyguard whose optimization mods no longer function? *Who suffers uncontrollable hallucinations.*

I close my eyes, calm myself. It’s simple: tomorrow, I’ll go to ASR’s occupational health unit, explain the symptoms and let the experts sort it out. Whatever’s wrong with me, they’ll know how to fix it.

The prospect of having my skull inventoried by strangers is humiliating, but that’s just too bad. I’ll have to explain about **Karen** ... and the loyalty mod? I’ll fudge that, somehow; they don’t have to know all the details. What matters in the end is serving the Ensemble, and I can’t do *that* if I’m falling apart.

I open my eyes. **Karen** hasn’t moved.

I say, ‘Well, if you’re going to hang around, what do you want to do? Stand guard with me?’

‘No.’

‘What, then?’

She reaches down and touches my cheek. I take hold of her other hand—more starkly aware than usual of the mod contriving to restrain me from putting my fingers through her non-existent flesh. I slide my thumb across the back of her hand, pausing on the familiar shape of each knuckle.

‘I do miss you. You know that.’

She doesn’t reply.

There has to be a way to get her back. Maybe I can learn to keep her from blaspheming against the Ensemble; learn to control her more tightly—without entirely destroying the illusion of her autonomy. Or... maybe I can have her modified, constrained—give her a ‘loyalty mod’ of her own. Why didn’t I think of that before? Mods can be adapted. Anything is possible.

I look up and meet her eyes. The calm, untroubled love that she engenders seems to waver slightly, like an image reflected in a mirror-smooth lake, subtly distorted by some hidden current in the depths. A chill of anticipation hits me; I feel no forbidden emotion—no grief, no guilt, no anger. But the mere thought that *this* mod might fail, too—that everything it rules out, everything from which it shields me, might become *possible* again—leaves me momentarily light-headed with fear.

I let go of her hand, and she –

She fills the room.

She spreads, smears, replicates, like some holographic paintbox gimmick gone wild. I leap to my feet, knocking over the chair, as the space around me grows thick with ever more copies of her illusory body. I shield my face, but I can still *feel* her brushing against me on all sides. A droning rises up from all directions, garbled and incoherent, but unmistakably her voice.

I cry out –

— and she vanishes, completely.

In the abrupt silence, memory echoes the last moments of sound—and I realize that my own cry almost masked another voice.

Po-kwai.

I enter the apartment, weapon drawn. Advertising signs in the mock windows' cityscape—holograms of holograms—light the way. **P2** claims it can't localize the shout—that the data is ambiguous—but I suffer the bizarre conviction that *I* know it came from the bedroom. Obvious first call, anyway. The door is ajar; I kick it wide open. Po-kwai, standing in a far corner of the room, spins round, startled. I freeze for a moment, trying to read her face, hoping for a signal—a flick of the eyes giving away the intruder's location—but she merely looks alarmed, and baffled, by my presence. I step into the room.

'You're alone?'

She nods, and then manages a nervous, angry laugh. 'What are you doing? Trying to frighten me to death?'

'Didn't you call out?'

She scowls, and seems about to deny this vehemently—but then she catches herself, and looks about the room, as if suddenly unable to account for her surroundings. 'I think... I must have had a nightmare. Maybe I yelled in my sleep. I don't know.' She puts a hand to her mouth. 'I'm sorry. You must have thought —'

'It's all right.' I holster the gun; it's clearly making her uneasy.

'Nick, I'm sorry.'

'Don't be; there's no harm done. I'm sorry that I startled you.' With the pressure off, I have time to observe: I'm primed again, **P3** is functioning normally. Which is good news—but as inexplicable as everything else.

She shakes her head, still apologetic. ‘I don’t even remember getting out of bed.’

‘Do you sleepwalk?’

‘Never. Maybe I had such a shock, in the dream, that I leapt out of bed, shouting... but only really woke once I was on my feet. I honestly can’t remember.’

I glance at the bed; it doesn’t look much like she ‘leapt’ out of it. I don’t argue, though; if she sleepwalks, that’s worth knowing, but there’s nothing to be gained by embarrassing her if she doesn’t want to admit it.

‘Yeah. Well—sorry about the intrusion. I’d better let you get some sleep.’

She nods.

Back in the anteroom, I can hear her moving restlessly about the apartment. I sit and wait for **P3** to fail, for **Karen** to appear and go berserk again, but nothing happens. Hoping that the glitch has miraculously vanished is just wishful thinking; the truth is, for all I know it might recur at any time—and I’d rather confront the doctors as a babbling wreck, smothered by the ghost of my dead wife, than have them probe me superficially and offer the same bland reassurances as the mods themselves: NO FAULTS DETECTED.

Ten minutes later, Po-kwai emerges. ‘Would you mind—if I sat out here for a while?’

‘Of course not.’

‘It’s too late to go back to sleep, it’s too early to eat breakfast; I don’t know what to do with myself.’

She brings out a second chair and sits, bent forward, still visibly agitated.

I say, ‘Maybe I should get you a doctor.’

‘Don’t be silly.’

‘Tranquillizers —’

‘*NO!* I’m fine. I’m just not used to armed guards bursting into my room waving guns, that’s all.’ I start to apologize, but she silences me. ‘I’m not *complaining*. I’m glad you’re doing your job. It’s just that I’m—finally—coming to terms with the fact that *your job* is necessary. They were perfectly frank at the interview, they explained precisely what the security arrangements would be; it’s entirely my fault if I shrugged it off as paranoia.’

‘But what’s changed your mind? Me, overreacting? I’m sorry; I should have handled things

more calmly. But you have no reason to feel besieged; the chances are that nobody outside of ASR even knows that the project *exists*.’

‘Yeah. It’s just...now that I know I’m not the control, now that the thing is actually working... and if I think about how much R&D investment I now... *embody*...’ She shakes her head. ‘I got into this for the physics—I thought I’d be more of a collaborator, not just a guinea pig. Leung treats me like an idiot. Tse *is* an idiot. Lui treats me like some kind of fragile minor deity; I don’t know what *his* problem is. And nothing’s going to be published for years. This ought to be on the front screen of *Nature* tomorrow: ROLE OF THE OBSERVER IN QM CONFIRMED—AND MODIFIED!’

‘Role of the – ?’

‘Observer. In quantum mechanics.’ She looks at me as if I’d said something blatantly disingenuous, and then it dawns on her: ‘They haven’t even *told you*, have they?’ She makes a noise of disgust and disbelief. ‘Oh, yeah. Nick’s just a bodyguard, just a minor flunkey—why should anyone bother to let him know what he’s risking his life for?’

I shake my head. ‘I’m not risking my life. And if I don’t need to know, maybe it’s better —’

‘Oh, crap!’

‘I mean it.’

P3 keeps me calm—but I can observe, dispassionately, a kind of spiritual vertigo building up inside me. *I don’t want to hear the Ensemble’s secrets; I don’t want to hear the final, worldly, explanation; I don’t want to pierce the veil.*

Primed, though, it’s a remote and insubstantial panic; it doesn’t belong to me. Primed, I’m content with a literal-minded obedience—and I’ve had no instructions to maintain my reverential ignorance. The quasi-mystical trappings with which I’ve embellished the Ensemble don’t come from the loyalty mod itself, and the zombie boy scout has no need for them.

In any case, I have no choice. Po-kwai says firmly, ‘Just *listen*. The technicalities are messy, but the essentials are simple. Have you heard of the quantum measurement problem?’

‘No.’

‘What about Schrödinger’s Cat?’

‘Of course.’

‘Well, Schrödinger’s Cat is an illustration of the quantum measurement problem. Quantum mechanics describes microscopic systems—subatomic particles, atoms, molecules—with a mathematical formalism called the wave function. From the wave function, you can predict the probabilities of getting various results when you make measurements on the system.

‘For example: suppose you have a silver ion, prepared in a certain way, passing through a magnetic field and then striking a fluorescent screen. Quantum mechanics predicts that half the time, you’ll see a flash on the screen as if the ion veered upwards in the magnetic field, and half the time you’ll see a flash as if it veered downwards. That can be explained by the ion having a *spin*, which makes it interact with the field; it gets pushed either up or down, depending on the way its spin is pointing, relative to the field. So by observing the flashes on the screen, you’re measuring the ion’s spin.

‘Or suppose you have a radioactive atom with a half-life of one hour. Point a particle detector at it which is wired up to a device which breaks a bottle of poison gas and kills a cat, if the atom decays. Enclose the whole set-up in an opaque box; wait an hour, and then look inside. If you do the experiment again and again—with a fresh atom and a fresh cat each time—quantum mechanics predicts that half the time, you’ll find the cat dead, and half the time you’ll find it alive. By seeing which it is, you’ll have measured whether or not the atom has decayed.’

‘So... where’s the problem?’

‘The problem is: *before* you make a measurement in either of these cases, the wave function doesn’t tell you what the outcome is going to be; it just tells you that there’s a fifty-fifty chance either way. But once you’ve *made* the measurement, a second measurement on the same system will always give the same result; if the cat was dead the first time you looked, it will still be dead if you look again. In terms of the wave function, the act of making the measurement has, somehow, changed it from a mixture of two waves, representing the two possibilities, to a “pure” wave—called an eigenstate—representing just one. That’s what’s called “the collapse of the wave function”.

‘But why should a measurement be special? Why *should it* collapse the wave function? Why should some measuring device—itsself made up of individual atoms, all of which are presumably obeying the very same quantum mechanical laws as the system being measured—cause a mixture of possibilities to collapse into one? If you treat the measuring device as just another part of the system, Schrödinger’s equation predicts that *the device itself* should end up in a mixture of states—and so should anything that interacts with it. The bottle of poison gas should end up described by a wave function which is a mixture of a broken state and an unbroken state—and the cat should end up as a mixture of a dead state and a living state. So why do we always see the cat in one pure state, dead or alive?’

‘Maybe the whole theory’s simply wrong.’

‘No, it’s not as easy as that. Quantum mechanics is the most successful scientific theory ever—if you take for granted the collapse of the wave function. If the entire theory was wrong, there’d be no such thing as microelectronics, lasers, Optronics, nanomachines, ninety per cent of the chemicals and pharmaceuticals industry... Quantum mechanics meets every experimental test that anyone’s ever performed—so long as you assume that there’s this special process called “measurement”—which obeys totally different laws from the ones that operate the rest of the time.

‘So, the aim of studying the quantum measurement problem is to pin down exactly what a “measurement” *is*, and *why* it’s special. When does the wave function collapse? When the particle detector is triggered? When the bottle is broken? When the cat dies? When someone looks in the box?’

‘One view is to shrug and say: quantum mechanics correctly predicts the probabilities of the final, visible results—and what more can you ask for? Atoms are only revealed through their effects on scientific instruments, so if quantum mechanics lets you calculate, precisely, what percentage of the time you’ll get various instrument readings—or positions of flashes of light, or cat mortalities—you have a complete theory.’

‘Other people have tried to show that the wave function ought to collapse when the system reaches a critical size—or a critical energy, or a critical degree of complexity—and that any useful measuring device would be well over the threshold. People have invoked thermodynamic effects, quantum gravity, hypothetical nonlinearities in the equations... all kinds of things. None of which has ever quite explained the facts.’

‘Then there’s the many-worlds theory —’

‘Alternative histories, parallel universes...’

‘Exactly. In the many-worlds theory, the wave function *doesn’t* collapse. The entire universe splits into different versions, one for every possible measurement. One universe has a dead cat, and an experimenter who saw that it was dead; another universe has a live cat, and an experimenter who saw that it was alive. The trouble is, the theory doesn’t say *why* any of this should happen—or even at what point the universe splits. Detector? Bottle? Cat? Human? It doesn’t really answer anything.’

‘Maybe there are no answers; maybe it’s all just a metaphysical quibble —’

She shakes her head. ‘*Metaphysics* has been an experimental science since the nineteen eighties. Although, personally, I’d like to think that the field really began in earnest from today.’ She glances at her watch. ‘Sorry, *yesterday*. Tuesday, the twenty-fourth of July, two thousand and sixty-eight.’

She waits patiently—with a faintly smug grin—until it hits me:

‘*In the brain?* Somehow, you’ve shown that the collapse of the wave function happens in the brain?’

‘Yes.’

‘But... *how?* What’s any of this got to do with *influencing* the ions, making them all go one way? Aren’t you using some kind of electromagnetic effect —’

‘*No!* No biological field could be strong enough —’

‘That’s what I thought. But—how, then?’

‘The mod does two things. The first one is, it stops me collapsing the wave function; it disables the parts of the brain that normally do so. But if that was all it did, the ions would still be random, fifty-fifty... it’s just that it would be you, Leung, Tse and Lui who’d be collapsing the system, instead of me.

‘But the mod also allows me to *manipulate* the eigenstates—now that I no longer clumsily, randomly, destroy all but one of them. It lets me change their relative strengths—and hence change the probabilities of the experiment’s possible outcomes.

‘In theory, I suppose I could then collapse the wave function myself—but it’d make the experiment less elegant to have the same person do both. So, the people in the control room collapse the whole system—which includes the silver ion, the fluorescent screen, and me—but only after I’ve changed the odds so they’re no longer fifty-fifty.’

‘So... everyone in the control room is part of the experiment? That’s why the histograms don’t change until *after* you’ve spoken the ion’s direction—because if *we* knew the results before you’d had a chance to influence the probabilities, we’d collapse the ions randomly?’

‘That’s right.’

I think it over for a moment. ‘You say we collapse “the whole system”. So *you* exist as a mixture, until we hear your voice?’

‘Yes.’

‘And what does that... feel like?’

She laughs. ‘*That’s* the most frustrating thing of all: *I don’t know!* I literally don’t remember. Once I’m collapsed, I end up with only one set of memories; I only recall seeing *one* flash of light on the screen. I don’t even remember what it’s like to operate the eigenstate part of the mod... Didn’t you ever wonder why it was taking me so long to make the thing work? And I don’t know if I *ever* “see” two flashes, even for a moment; I suspect that my two states evolve too independently for that. What happens may be a bit like the many-worlds model, on a very small scale. Effectively, there may be two almost separate versions of me—if only for a fraction of a second before I’m collapsed. But whatever goes on in the rest of my brain, the two states of *the mod* definitely *do* interact—their wave functions interfere, strengthening one eigenstate and weakening the other. If not, the whole experiment would come to nothing—it *would* be just a metaphysical quibble.’

I hesitate, bemused, and try to back-track through the discussion to the point where it derailed from reality. Finally, I say, ‘Are you serious about any of this? You’re not just stringing me along for a joke? Paying me back for crashing into your room? Because if that’s it, you’ve won—I concede defeat. You’ve got me to the point where I can’t tell which parts are genuine, and which parts you’re making up.’

She looks hurt. ‘I wouldn’t do that. Everything I’ve told you is the truth.’

‘It’s just... this is all beginning to sound like the kind of gibberish the quantum mystics spout —’

She shakes her head vehemently. ‘No, no—*they* claim there’s some *non-physical* element to consciousness—something independent of the brain, some ill-defined “spiritual” entity which collapses the wave function. Yesterday’s experiment proved them absolutely wrong. The parts of the brain which the mod disables don’t do anything mystical; they perform a sophisticated—but perfectly comprehensible, perfectly *physical*—action.

‘I *know* it all sounds bizarre—but the whole point is that, in fact, it’s utterly commonplace. *Everyone* spends their whole life collapsing the systems they interact with. That’s a very old idea; many of the pioneers of quantum mechanics believed that the observer had a crucial role to play—that a measuring device alone wasn’t enough to collapse the wave function. But it’s taken more than a century to pin down exactly *where* in the observer it happens.’

I still don’t know whether or not to believe a word of this—but she seems convinced, so at the very least, it’s worth understanding precisely what she believes. I put aside my scepticism, and struggle to catch up.

‘Okay... so a “measuring device” isn’t enough, you have to have an “observer”—but what constitutes an observer? People, yes... but what about computers? What about cats?’

‘Ah. Existing computers, definitely not. Collapsing the wave function is a specific physical process—not an automatic by-product of a certain degree of intelligence, or self-awareness, or whatever—and computers simply haven’t been *designed* to do it... although no doubt some will be, in the future.

‘As for cats... my guess would be that they do it, but I’m not exactly an expert on comparative neurophysiology, so don’t take my word for it. It may be years before anyone gets around to finding out exactly which species *do* and *don’t*. Then there’s the whole question of the evolution of the trait—and just what “evolution” meant in an uncollapsed universe. People are going to spend decades unravelling all the implications.’

I nod dumbly—and hope that she’ll shut up for a moment, while I try to unravel a few implications myself. If all of this is true, what does it tell me about Laura? Could ‘manipulating eigenstates’ let her pick locks and elude security cameras? Maybe... but how could a chance mutation, or a random congenital abnormality, grant her such elaborate skills? The mere loss of the ability to collapse the wave function, yes—random damage can easily produce *deficits*. But what are the odds of brain damage resulting in the kind of sophisticated powers that Po-kwai claims the mod provides? And yet, Laura *must* have those powers; how else could she have escaped from the Hilgemann? And how else could the mod itself provide them? I can’t believe that BDI designed the whole thing from scratch—in *six months*—simply by studying the normal human trait that Laura was

missing.

So, which is more preposterous: BDI inventing the neural manipulation of eigenstates, in less time than most companies take to develop a new games mod... or a random event handing Laura—and BDI—the finished product on a silver platter?

Po-kwai continues, ‘It’s a pretty sobering thought, though: until one of our ancestors learnt this trick, the universe must have been a radically different place from the one we know. *Everything* happened simultaneously; all possibilities coexisted. The wave function *never* collapsed, it just kept on growing more and more complex. And I know it sounds ludicrously—grandiosely—anthropocentric... or geocentric... to think that life on this one planet could have made such a difference, but with *so much* richness, *so much* complexity, perhaps it was inevitable that, somewhere in the universe, a creature would evolve which undermined the whole thing, which annihilated the very diversity which had brought it into being.’

She laughs uneasily; she seems almost embarrassed—the way some people become when recounting news of a disaster or atrocity.

‘It’s not easy to come to terms with, but that’s what we *are*. We’re not just the universe “knowing itself—we’re the universe *decimating* itself, in the very act of gaining that knowledge.’

I stare at her, disbelieving. ‘What are you saying? That the first animal on Earth with this trait... collapsed *the whole universe*?’

She shrugs. ‘Maybe it wasn’t on Earth, but there’s no reason why it can’t have been. Somebody had to be first. And not quite the whole universe—one casual glance at the night sky would hardly have measured everything. It would have thinned out the possibilities considerably, though—fixed the Earth and the sun, for a start: condensed them out of the mixture of *all possible arrangements of matter* that might have occupied the solar system. Fixed the brightest stars to within the acuity of this creature’s vision, discarding all the alternative possible configurations. Think of the constellations that might have been; the stars and the worlds that vanished forever when this ancestor of ours opened its eyes.’

I shake my head. ‘You can’t be serious.’

‘I am.’

‘I don’t believe you. What evidence is there? From *one* little experiment with *silver ions*, you’re claiming that this hypothetical ancestor of humans—and possibly cats—transformed some kind of grand, glorious mixture of *every possible universe* that might have happened since the Big Bang... into whatever minuscule fraction of *that* would give this creature a single view of the night sky? Obliterating all the rest? Committing a kind of... cosmological genocide?’

‘Yes. Maybe literal genocide. Life—intelligent life—need not collapse the wave function. If there was life before us which *didn’t* collapse the wave, then we would have collapsed *it*. Which

might have meant obliterating entire civilizations.’

‘And you think we’re still doing it? Collapsing things light years away? Other stars? Other galaxies? Other forms of life? “Thinning out the possibilities?” Hacking away at the universe—*just by observing it?*’

I laugh, suddenly remembering. ‘Or rather, we *were*, until —’

I stop myself mid-sentence, and close my eyes for a moment, giddy and claustrophobic. The unspoken conclusion unfolds in my brain regardless, and no mod in my skull seems able to render it harmless.

Po-kwai says softly. ‘Yeah. We were. Until The Bubble.’

* * * *

8

After a morning in the ion room, confirming that the previous night's results were no fluke, Po-kwai is given a fortnight to rest while preparations are made for the next phase of the experiment. Being confined to the building doesn't seem to bother her; she spends most of her time reading. 'It's what I'd be doing anyway,' she says. 'And if I can forget that I don't have any choice, the whole situation is perfect: peace and quiet—and reliable airconditioning. That's my idea of heaven.'

The chant vanishes from my dreams. **P3** functions perfectly. **Karen** does not return. I ask Lee Hing-cheung, circumspectly, about his own mods. It turns out that he has only **Sentinel**, **Meta-Dossier** and **RedNet**—and apart from the original problem during the ion experiments, he's had no trouble with any of them. My determination to uncover the cause of my own mods' erratic performance fades; I can't see the point in presenting myself to a doctor or neurotechnician when I have no symptoms—and I'm reluctant to risk disclosing the fact that I have a loyalty mod to people who aren't meant to know. I promise myself to seek help at the first sign of dysfunction, but as each day passes with no relapse, the hope that the problem has 'cured itself' seems less and less unreasonable.

Having feared some ingenious, but ultimately mundane, explanation for Laura's 'telekinesis'—having dreaded the burden of one more contradiction, one more disparity between my feelings about the Ensemble and the truth about its activities—Po-kwai's revelations are more than I could have hoped for. The Ensemble is probing the deepest questions of the nature of reality, the nature of humanity—and, possibly, the reasons for The Bubble as well. It fills me with shame to recall that I seriously entertained the notion that the sole purpose of this grand alliance might have been the grubby exploitation of Laura's escapological skills. I should have known it was something higher.

But if it had been 'grubby exploitation', after all? The Ensemble would have remained the most important thing in my life; the loyalty mod guarantees that. Fearing disillusionment and rejoicing in the affirmation of my faith are equally absurd. I spin this observation in my head, but it leads nowhere.

I find Po-kwai's staggering contention—that life on Earth might be intrinsically inimical to the rest of the universe—equally intractable. The notion that humanity is, or was, part of a kind of cosmic necrosis, depleting the universe of possibilities, committing inadvertent genocide on a scale beyond comprehension, is easy enough to hold in the mind—to state as an isolated, abstract proposition—but impossible to *pursue*. My sense of horror rapidly gives way to disbelief; I feel like I've been led through one of those bogus mathematical 'proofs' which claim to demonstrate that one is equal to zero. I back out of this mental cul-de-sac and hunt for a flaw in the argument. When I come on duty in the late afternoon, Po-kwai breaks off her reading, and we resume the debate.

I say, 'You've admitted, yourself: it's ludicrously geocentric'

She shrugs. ‘Only if we were the first. Maybe we weren’t; maybe it happened on a thousand other planets, a billion years before it happened on Earth. I don’t expect we’ll ever know. But having pinned down the parts of the human brain which collapse the wave function, what would be *geocentric* would be assuming that *every other sentient creature in the universe* does exactly the same thing.’

‘But I’m not convinced that you *have* pinned it down. You haven’t proved, conclusively, that you’re not still collapsing the wave; you’ve only shown that the mod intervenes *before the collapse*—whatever causes it. Maybe one of the old theories is right, after all—maybe the wave collapses whenever the system gets large enough, but the mod manages to act on a length scale just below the critical size... it squeezes in its interference trick at the last opportunity.’

‘Then what about the parts of the brain that the mod disables? What’s going on there?’

‘I don’t know. But if they look like they’re “designed” to have some quantum effect, then maybe they’re a crude attempt to do the very thing that the eigenstate part of the mod does—*influence* the way the wave collapses, rather than just accept the raw probabilities. Maybe evolution has given us all a small capacity to nudge the odds; you can’t deny that *that* would have some survival value. And if the wave function has *always been* collapsing at random, whenever the system grew large enough, ever since the universe began... then all we’re guilty of is beginning to evolve some control over the process.’

She’s sympathetic, but unmoved. ‘If I don’t invoke the collapse-inhibition part of the mod—if I *don’t* disable those natural pathways—the whole effect disappears; the ions revert to randomness. That’s the first thing we tested, the morning after the successful run. Okay, your theory might still be right—the natural pathways could interfere somehow with the mod’s effects on the eigenstates, even if they had nothing to do with *collapsing* the wave. But if people had some capacity to “nudge the odds”, I think it would have been discovered by now. I don’t doubt that there are other explanations for the ion experiment—but what about The Bubble?’

‘There’s no shortage of other explanations for *that*—I must have heard at least a thousand in the last thirty years.’

‘And how many did you think made sense?’

‘None, to be honest. But how much sense does this one make? If the Bubble Makers were so vulnerable to our observations, how could they have survived for so long? How far out could telescopes see, before The Bubble? Billions of light years!’

‘Yes, but we don’t know what kind of damage—what degree of observation—they could tolerate. When the universe was totally uncollapsed, maybe there were forms of life which relied on virtually all of that diversity—forms of life in which each individual was spread out across a large part of the entire span of eigenstates, occupying an enormous range of what we’d consider to be mutually exclusive possibilities. The first collapse, for them, would have been like... taking a thin

slice out of a human's body, and throwing all the rest away.'

'So how have the Bubble Makers survived? By being very thin to start with?'

'Exactly! They must require a much narrower range of states. Maybe, for them, the effect was more like... a deep ocean being made shallow. We may have observed galaxies billions of light years away—but we haven't even collapsed *the solar system* down to the last fragment of meteor dust. Planetary systems of distant stars would still have had a lot of freedom. And maybe an individual Bubble Maker could survive just about anything, short of a face-to-face confrontation with a human being, but increasingly accurate human astronomy was depleting the wave function—"draining the ocean"—to such a degree that constructing The Bubble, to keep us from making things worse, was the only way they could preserve their civilization.'

'I don't know...'

She laughs. 'I don't *know*, either. And the whole point of The Bubble is that we never will *know*. I have other theories, though, if you don't like that one. Maybe the Bubble Makers are made of cold dark matter—axions, or some other weakly interacting particle which we've never been able to detect with much efficiency. If that were the case, we might have done them relatively little harm—but they decided that our technology was getting uncomfortably close to the point where it could start to affect them. There were plenty of astronomers searching for cold dark matter in the twenties and the early thirties—and their equipment was becoming a little more sensitive, and a little more accurate, every year. Maybe we have them to blame.'

The abstractions can be put aside. Pressing my way through the streets, the idea that the crowd around me is collectively keeping the city from dissolving into a fog of simultaneous possibilities seems not so much unbelievable, as patently *irrelevant*. Whatever elaborate, and grotesquely counter-intuitive, underpinnings there might be to familiar reality, it stubbornly continues to *be* familiar. When Rutherford showed that atoms were mostly empty space, did the ground become any less solid? The truth itself changes nothing.

What I can't put aside is the fact that the Ensemble is doing *Bubble science*—and it makes no difference whether or not their hypothesis is correct. It's the idea that counts. The layers of security, the bodyguards for the volunteers, have nothing to do with any fear of commercial competition.

The Ensemble has precisely one enemy: the Children of the Abyss.

* * * *

Boss wakes me smoothly in response to the knock on the door—leaving me clear-headed, but pissed off nonetheless; it's just after midday, and I've only had two hours' sleep. I give the HV an infrared command to display the image from the door's electronic peephole. My visitor is Dr Lui. I dress quickly, baffled. If I was needed back on duty for some reason, surely I would have had a call from Tong or Lee.

I invite him in. He surveys the room with a kind of apologetic bewilderment, as if to say that he'd never imagined that it could have been this humble, but now that he knows, I have his deepest sympathy. I offer him tea; he declines, effusively. We exchange some pleasantries, then there's an awkward silence. He smiles as if in agony, for a long half-minute, then finally says, 'My life is for the Ensemble, Nick.' It sounds half like a passionate affirmation, half like a self-loathing confession.

I nod, and then mumble, 'So is mine.' It's the truth, I shouldn't be ashamed of it—but Lui's own signals are so intense, but confused, that I can't help being infected by his ambiguity.

He says, 'I know what you're going through. The inner battles, the paradoxes, the torment. I *know*.' I don't doubt him for a moment—and I feel a pang of guilt and unworthiness: his suffering at the cusp of the loyalty mod's contradictions has clearly been a great deal worse than my own.

'And I know you won't thank me for adding to your pain. But the truth never comes easily.'

I nod idiotically at this platitude, while a detached part of me wonders: is *this the next stage*? A kind of masochistic wallowing in the conflict that the loyalty mod creates? Forcing myself to dwell upon my reason's impotence—and romanticizing my distress into some kind of mystical, revelatory suffering? It makes a certain perverse sense: I don't *want* to resent the mod—so why shouldn't I try to view my mental turmoil in a different light, redefine its meaning, declare that it's leading me towards deeper insight and stronger faith?

Lui continues, 'We both want to serve the Ensemble—but what does that actually mean? Day by day we do our jobs, obey our instructions, play our part—hoping that those above us in the chain of command can be trusted to have the Ensemble's best interests at heart. But the question you *must* ask yourself is: do they deserve that trust? *Are they* serving the Ensemble with the kind of absolute dedication that to you or me would be second nature... or are they merely serving their own interests? *How can we be sure?*'

I shake my head. 'They're part of the Ensemble. Our loyalty is to them —'

'*Part* of the Ensemble, yes. Our loyalty is to the whole.'

I don't know quite how to respond to that. It's certainly true—in the sense that the mod refers only to *the Ensemble*, and not to any specific person. But why bother making the distinction? What practical difference does it make?

I shift in my chair, self-consciously; Lui leans towards me, his earnest young face glowing with a kind of intellectual urgency. *Our loyalty is to the whole*. I'm beginning to wonder if he's constructed an entire system of moral philosophy around the effects of the loyalty mod—a prospect which makes me distinctly uneasy. It would hardly be the first time in history that a victim of mental illness has responded to their affliction that way—but it would certainly be the first time that I've found myself in the vulnerable position of sharing the brain-damaged prophet's impairment, down to the last neuron.

I say, reasonably, ‘We all have to get orders from somewhere. We have to assume that the chain of command works. In practice, what alternative is there? I don’t even know what the upper-level management structure of ASR is—let alone the Ensemble. And even if I did, what are you suggesting? That I should only take instructions from the very top? That would be absurd. Everything would grind to a halt.’

Lui shakes his head. ‘I’m not saying that at all. Take your instructions from the top? There’s more than one “top”. Wei Pai-ling owns BDI, yes—’ I frown and begin to disclaim any knowledge of the man, or the acronym, but Lui says impatiently, ‘I know precisely how you joined us; there’s no point wasting your breath. Wei owns BDI—but what makes you think he’s in control of everything else? He has some limited influence over the other participants in NHK—but very little clout elsewhere. Did you think BDI found Laura Andrews?’

‘I suppose —’

‘A hacking group in Seoul “found” her—working through a mountain of stolen data on breaches of security in International Services institutions—for another client altogether. But they were aware of an offer the Ensemble had circulated—good money, for data fitting certain patterns—so they passed the information on.’

‘Patterns? What patterns?’

‘I haven’t been able to find that out yet.’

‘Unexplained break-outs? I thought the Ensemble was formed after BDI stumbled onto Laura... but you’re saying the Ensemble already existed—and they were actively *looking for* someone like her?’

‘Yes.’

‘But how could they have suspected...?’

‘I don’t know—but that’s beside the point. The question is: where should your allegiance lie? Globally, Wei’s faction is in a minority. He had to bargain very hard to have BDI do the scanning of Laura Andrews—even though it was the closest appropriate facility. In the end, it was really only NHK’s regulatory vacuum that tipped the balance in his favour; most other countries police the relevant technology too tightly. But if a certain piece of legislation hadn’t been passed in Argentina, well... you and I might not even have been *employed*.’

I shake my head. ‘So what? I never assumed that Wei was in charge. The Ensemble is an alliance of different factions—why should that worry me? If they can live with each other’s differences, why can’t I?’

‘Because your loyalty is to the Ensemble—*not* to whichever faction happens to have manoeuvred itself into power. What if the alliance changes? What if it fragments, and re-forms with

new goals, new priorities? Or, fragments and *doesn't* re-form? To whom would you owe your loyalty then? Which splinter group would you fight for, if it came to that?

I start to say something dismissive, but I catch myself. The Ensemble is the most important thing in my life; I can't just shrug off questions like this, as if they weren't my concern. But—

I say, 'What can it actually mean, to be loyal to the Ensemble "as a whole"—if not to be loyal to the faction in power? It's a good enough principle for governments —' Lui snorts with derision. I say, 'Okay, I'm not suggesting that we should sink to the same level of cynicism. But what exactly are *you* suggesting? You still haven't stated the alternative.'

He nods. 'You're right, I haven't. First, I wanted you to concede that an alternative was necessary.'

I'm not sure that I've conceded any such thing, but I let it pass.

He says, 'There's only one group of people qualified to decide which of the factions—if any—truly represents the Ensemble. It's a question that has to be judged with the utmost care—and it can't possibly be a contingent matter of who is or isn't in control at any given moment. Surely you can see that?'

I nod, reluctantly. 'But... what "group of people"?''

'Those of us with loyalty mods, of course.'

I laugh. 'You and me? You're joking.'

'Not us alone. There are others.'

'But —'

'Who else can we trust? The loyalty mod is the *only* guarantee; anyone without it—wherever they are in the organization, even in the highest echelons—is at risk of confusing the true purpose of the Ensemble with their own private interests. For us, that's impossible. Literally, physically impossible. The task of discerning the interests of the Ensemble must fall to us.'

I stare at him. 'That's —'

What? Mutiny? Heresy? How can it be? If Lui does have the loyalty mod—and I can't believe that he's faked all this—then he's physically incapable of either. Whatever he does is, by definition, an act of loyalty to the Ensemble, because -

It hits me with a dizzying rush of clarity...

—the Ensemble is, by definition, *precisely that to which the mod makes us loyal.*

That sounds circular, incestuous, verging on a kind of solipsistic inanity... and so it should. After all, the loyalty mod is nothing but an arrangement of neurons in our skulls; it refers only to itself. If the Ensemble is the most important thing in my life, then the most important thing in my life, whatever that is, must be the Ensemble. I can't be 'mistaken', I can't 'get it wrong'.

This doesn't free me from the mod—I know that I'm incapable of redefining 'the Ensemble' at will. And yet, there *is* something powerfully, undeniably liberating about the insight. It's as if I've been bound hand and foot in chains that were wrapped around some huge, cumbersome object—and I've just succeeded in slipping the chains, not from my wrists and ankles, but at least from the unwieldy anchor.

Lui seems to have read my mind, or at least my expression, brother in insanity that he is. He nods soberly, and I realize that I'm beaming at him like an idiot, but I just can't stop.

'Infallibility,' he says, 'is our greatest consolation.'

* * * *

By the time Lui departs, my head is spinning—and like it or not, I'm part of the conspiracy.

The brain-damaged arbiters of the nature of 'the true Ensemble' call themselves the Canon. All have the loyalty mod—but all have succeeded in convincing themselves that 'the true Ensemble' to which they owe allegiance is *not* the organization which goes under that name.

What, then, is 'the true Ensemble'?

Every member of the Canon has a different answer.

The one thing they agree on is what it isn't: the research alliance which calls itself the Ensemble is a counterfeit, a sham.

On my own, without Lui to keep propping up this bizarre way of thinking, I find myself wondering if I really have mastered the mental contortions required to sustain it. The Ensemble is not the true Ensemble—*what kind of ridiculous, hair-splitting sophistry is that?*

And yet... if I *can* somehow believe it, that's enough to make it true. Common sense, everyday logic, simply don't come into it: I have no rational *reason* to be loyal to the Ensemble—all I have is *the anatomical fact* of the loyalty mod. The true Ensemble that the mod refers to is whatever I'm physically capable of believing it to be –

That's ludicrous, it's nonsensical...

I pace the flat, trying to stay calm, hunting for a parallel, a metaphor—a model to guide me, however crudely, into some half-sane way of imagining what's going on in my head. *The Ensemble is*

not the true Ensemble. What is *the true Ensemble*, then? Whatever I honestly believe it to be.

This is insane. If every member of the Canon is free to interpret their allegiance precisely as they choose, as if it were a matter of private conscience, without regard to the existing authority... that's anarchy.

And then it finally hits me.

I understand how I can make sense of this, how I can explain it to myself.

I stop in mid-step and say out loud, 'Welcome to the Reformation.'

* * * *

My induction into the ranks of the Canon is a gradual process; Lui arranges meetings in various locations around the city, with one or two members at a time—some from BDI, some from ASR, some from organizations unnamed. At first, I can't see what justification there could be for taking such risks; we discuss almost nothing that Lui hasn't already disclosed to me, and there'd certainly be far safer ways to introduce me to the Canon. Eventually, though, I realize that this personal contact is essential to the cementing of my new loyalties; only by talking face to face with these people can they convince me—and I them—that we really do share the mod.

Of course, the very fact that the members of the Canon should *wish* to meet, to cooperate, to confer at all, is paradoxical. Consensus should be anathema to us: the true Ensemble is defined within our individual skulls; no one else's opinion could possibly matter. Having freed ourselves from the lies of the sham Ensemble, why shouldn't we each follow our own unique, separately perfect, vision?

Because alone, divided, we'd have no hope whatsoever of reforming the sham Ensemble, of rebuilding it as it should be. United, the prospect is daunting—but not quite unimaginable.

My work goes on as if nothing had changed. The temptation to confide in Po-kwai, to explain everything that I'm going through and everything that's been concealed from her, is almost overpowering at times—but not when I'm actually in her presence, with **P3** granting me limitless self-control. Chen's instructions may no longer compel me to keep silent about Laura and BDI—but the need to protect the Canon now takes priority, and I find myself even more guarded with her than before. She seems puzzled by this at first, but then shrugs it off and withdraws into her reading. Our evening discussions of quantum metaphysics and invisible Bubble Makers come to an end. Primed, this makes no difference to me—but at home each morning, looking back on the featureless hours I've spent in the stake-out trance, I feel a strange, hollow ache in my chest, and it keeps me from choosing sleep.

The second phase of the experiment begins. Po-kwai returns to the ion room, her head full of radiolabeled glucose and neurotransmitter precursors, ringed by arrays of high-resolution gamma cameras. Very thoroughly observed—at least by the machinery. The data gathered by the gamma cameras, though, can be processed in a variety of ways, to reveal, or not to reveal, the operations of

various parts of her brain—and the choice as to what will be shown to the experimenters (or rather, co-participants) on the control room screen will be made at random, at the last moment, by the computer.

‘It’s a bit like Aspect’s delayed-choice photon experiments of the nineteen eighties,’ she explains. ‘Leung has worked out a kind of souped-up version of Bell’s Inequality, a correlation between certain neurons firing or not firing, which ought to be below a threshold value—if all our assumptions are correct.’

The technicalities are over my head, but I get the gist of it easily enough: my hopeful alternative explanations for the role of the putative wave-collapsing pathways are about to be thoroughly demolished.

Meaning what? I’m going to have to swallow a universe where I’m the heir to an incomprehensible act of genocide? I contemplate this prospect more and more frequently, but it still leads nowhere. I try feeding myself comforting parallels from evolution: I never felt guilty about the dinosaurs, did I? In fact, if Po-kwai is right, then the dinosaurs might not even have existed—in the sense that modern animals exist—until some mammal came along and made the past definite and unique, collapsing all the countless possibilities into a single evolutionary pathway. It all begins to sound reassuringly like one of those fatuous, entirely untestable, metaphysical conjectures: ‘Maybe the universe was created this morning, complete with false memories for everyone, and perfectly faked archaeological, paleontological, geological and cosmological evidence for events spread over the last fifteen billion years...’

The only trouble is, the heart of Po-kwai’s conjecture *is* testable. And the unpursuable idea spins on in my head, untouched, unanswered.

This time, the ion room is kept soundproof, and if Po-kwai mutters the results to herself as an aid to concentration, we’re spared the ordeal of listening to her. Instead, the central console is the means by which Leung, Lui and Tse will collapse selected parts of her brain. I glance at the displays myself, now and then, but the PET scans, neural maps and histograms, colourful though they are, are too cluttered, and too cryptic to me, to capture my attention, and I have no trouble turning away.

I naively expected instant results, but there are flaws to be sorted out, in the equipment, in the software, in Po-kwai’s now rusty command of the mod. No longer awash in the data, and unable to decipher the displays, I virtually lose interest while I’m on duty, even shutting out the chatter of the scientists. Primed, this is how it should be. Whatever ruling the Canon might eventually make on the worth of these experiments, my present role is perfectly clear: I’m to do the job that the sham Ensemble expects of me, as diligently as if my allegiances were unchanged.

Off duty, deprived, I find myself wondering: maybe the Canon—just like the Bubble, just like the truths of quantum ontology—makes no difference at all, in the end. Maybe, in practice, the real and the sham Ensembles will never diverge—and the distinction, crucial as it is to the members of the Canon, will remain an abstraction. Neither Lui nor anyone else has yet told me what the Canon would actually *change*, if it could control the sham Ensemble—and my own knowledge of the issues is still

too hazy for me to have any firm opinions. I know I believe that Po-kwai ought to be told about Laura, and told how the mod was designed—but I stop short of doing so, realizing that I'm in no position to predict the consequences.

Maybe the Canon's only real function is to make our ineffectual heresy seem more tangible to us. Maybe we'll plot and conspire, to prove that we're free to plot and conspire—but in the end it will be nothing but a conspiracy of obedience.

* * * *

As I step out of the bedroom, in the middle of the nightly ritual check of the apartment, Po-kwai says casually, 'We had a good set of data today. Virtually conclusive. Definitely publishable—if I can use that word under the circumstances. I didn't tell you in the restaurant... you see, I'm learning to keep my mouth shut.'

'Congratulations.'

'For what? Keeping my mouth shut?'

'For the result.'

She scowls. 'Don't be so reasonable, it makes me sick. You didn't *want us* to be right. I don't expect you to slit your wrists, but can't you at least be a little... sullen?'

'Not on duty.'

She leans against the doorframe, sighing. 'Sometimes, I really do wonder which of us is the least human—you on duty, or me when I'm smeared.'

'Smeared?'

'Uncollapsed; in multiple states. That's what we call it: smeared.' She laughs. 'That will be my claim to fame: the first human being in history to *smear* at will.'

The opportunity to contradict her, to mention Laura, hangs in the silence, tantalizing for a moment—but the risk of what it could lead to is too great. Which doesn't mean that I can't still probe around the edges. 'At will, yes—but couldn't someone have suffered neurological damage, and lost their ability to collapse the wave?'

She nods. 'Good point. That might well have happened. The thing is, nobody would ever know, *nobody could ever tell*. Every time such a person interacted with someone who *did* collapse the wave, they'd be reduced to a single history, a single set of memories—and they wouldn't even know, themselves, that anything was different.'

'But—while they were alone... ?'

She shrugs. ‘I don’t know what it means to ask that. I’ve told you, *I* end up with just one set of memories myself. The effects prove that I’ve *been* smeared, but of course someone with brain damage wouldn’t have the mod’s control over the eigenstates—so other people would collapse them according to *exactly the same probability distribution* that would have applied if they’d collapsed themselves. The end result would be the same.’ She laughs. ‘I expect Niels Bohr would have said that such a person was the same as everyone else. If there’s no way for anyone, the person included, to know what they “experienced” while they were unobserved, how can it be considered real? And I’d half agree with him: I mean, however long they went between contact with other people, each time an observation actually took place, all the states they’d occupied—all the multiple thoughts and actions they’d “experienced”—would collapse into one, perfectly mundane, linear sequence.’

‘What if they were left alone often? Left unobserved, most of the time? Do you think they could learn, somehow, to take advantage of what was happening? Force it to make a real, permanent difference—the way you can, with the mod?’

She seems about to dismiss the idea, but then she hesitates, ponders the question seriously—and suddenly smiles. ‘I wonder. How improbable is the configuration of neurons in the mod? If someone was smeared for long enough, they’d evolve all kinds of weird and unlikely neural structures—along with a whole lot of highly probable ones. Normally, that would have no effect—the most probable configurations would still be the ones chosen when the collapse took place; everything else would vanish. But if one of these unlikely versions of the brain had some ability to meddle with the eigenstates, maybe it could bootstrap itself to a higher probability.’

‘And once a version which could do that had been made “real” —’

‘- then the next time the person smeared, they’d have a double advantage. Not only would they have the eigenstate meddling ability, *per se*, but they’d be starting from a new baseline—other states with even greater skills would now be far more probable, far easier to reach. The whole thing could snowball.’ She shakes her head, enchanted. ‘Evolution in a single lifetime! Emergent probability with a vengeance! *I love it!*’

‘So it really could happen?’

‘I doubt that very much.’

‘What? You just said —’

She pats my shoulder sympathetically. ‘It’s a beautiful idea. So beautiful I’d say it just about disproves itself. If it really *could* happen, where are the end results? Where are all the case histories of brain-damaged people juggling eigenstates at will? The first stage must be too hard to reach in any reasonable time. Eventually, I’m sure, someone will get around to calculating just how long it would take to perform the initial bootstrap—but the answer could easily be months, years, decades... it *could* be longer than a human lifetime. And how long does anyone spend alone?’

‘I suppose you’re right.’

‘Well, I have to defend my place in history, don’t I? Such as it is.’

* * * *

Karen says, ‘I like her. She’s intelligent, cynical, and only a little naive; the best friend you’ve made in years. And I think she can help you.’

I blink at her, and moan softly. The strange thing is, I don’t feel at all like I’ve suffered a sudden loss of control; rather, my featureless memories of the last three hours in stake-out mode seem to have evaporated, as if they’d never been anything but a delusion.

I say, ‘What do you *want*?’

She laughs. ‘What do *you* want?’

‘I want everything to go on as normal.’

‘*Normal!* First you were a slave to a bunch of kidnappers, and now you’re apparently worshipping the thing that enslaves you. *The Ensemble in the head!* It’s bullshit.’

I shrug. ‘I have no choice. The loyalty mod isn’t going to vanish. What do you expect me to do? Drive myself insane, trying to fight it? I don’t *want* to fight it. I know precisely what’s been done to me. I don’t deny that without the mod, I *would* want to be free of it—but where does that leave me? *If I was free, I’d want to be free.* And if I was someone else entirely, I’d want completely different things. But I’m not, and I don’t. It’s irrelevant. It’s a dead end.’

‘It doesn’t have to be.’

‘What’s that supposed to mean?’

She doesn’t reply; she turns and looks ‘out’ across the city, then raises a hand and—impossibly—signals the window to enhance the hologram’s contrast, cutting back the spill from the advertising signs, darkening the empty sky to the deepest black imaginable.

Karen controlling **RedNet**? Or has the hallucinatory process which conjures up her body started manipulating the rest of my visual field? I contemplate these equally improbable explanations with equally numb resignation. There’s no point hoping any more that this problem will cure itself. The neurotechnicians are going to have to take me apart.

I stare at the perfect darkness of the Bubble, unwillingly entranced by the sight of it, whatever kind of illusion—contrast-enhanced hologram, or pure mental fabrication—‘the sight of it’ is.

A faint pinprick of light appears in the blackness. Assuming that it’s nothing but a flaw in my

vision, I blink and shake my head, but the light stays fixed in the sky. A high, slow-moving satellite, just emerged from the Earth's shadow? The point grows brighter, and then another appears close by.

I turn to **Karen**. 'What are you doing to me?'

'Sssh.' She takes my hand. 'Just watch.'

Stars keep appearing, doubling and redoubling in number like phosphorescent celestial bacteria, until the sky is as richly populated as I remember it from the darkest nights of my childhood. I hunt for familiar constellations, and for a fleeting instant I recognize the saucepan shape of Orion, but it's soon gone, drowned in the multitude of new stars coming into being around it. My eye finds exotic new patterns—but they're as transitory as the rhythms in Po-kwai's random chant, vanishing the moment they're perceived. The satellite views on Bubble Day, the most baroque space operas of the forties, never had stars like this.

A dazzling tract of light—like an impossibly opulent version of the Milky Way—thickens to the point of solidity, then grows steadily brighter.

I whisper, 'What are you saying? That the damage we've done can be... undone? I don't understand.'

The band of light explodes, spreading across the sky until the perfect blackness becomes perfect, blinding white. I turn away. Po-kwai cries out. **Karen** vanishes. I spin back to face the hologram. The sky above the towers of New Hong Kong is empty and grey.

I hesitate at the door to the apartment, just listening for a while. I don't want to startle her again, but I have no intention of becoming complacent. Nobody could have reached her without passing me... but what kind of state was I in, hallucinating cosmic visions, to know who or what might have walked right by me, unseen? The whole episode already seems completely unreal; if not for a lingering vision of the blazing sky, I'd swear that I had a seamless recollection of standing guard in stake-out mode, from the time I bid Po-kwai good night to the instant I heard her scream.

As I open the door, she's stepping into the living room, hugging herself. She says drily, 'Well, you're not much use. I could have been murdered in my bed by now.' Despite the joke, she seems far more shaken than last time.

'Another nightmare?'

She nods. 'And this time, I remember... what it was about.'

I say nothing. She scowls at me. 'So stop being a fucking robot, and ask me what I dreamt.'

'What did you dream?'

'I *dreamt* that I lost control of the mod. I dreamt that I *smeared*. I dreamt that I... filled... the

whole room, the whole apartment. And I *don't* sleepwalk, you know —' Suddenly, she starts shivering violently.

'What —'

She reaches out and grabs me by the arm, leads me down the corridor towards the bedroom. The door is closed. She points me at it bodily, takes a second to catch her breath, then says, 'Open it.'

I try to turn the handle. It doesn't move.

'It's locked. That's how paranoid I am. I lock it every night now.'

'And you woke...?'

'Outside. Half-way up the corridor.' She positions herself at the spot. 'After hitting one eight-digit combination to open the thing, and another to lock it behind me.'

'Did you...dream of doing that? Did you dream of operating the lock?'

'Oh, no. In the dream, I didn't need to touch the lock—I was *already* outside the room. Inside *and* outside. I didn't need to move...I just had to strengthen the eigenstate.'

I hesitate, then say, 'And do you think —'

She says firmly, 'I *think* my subconscious must have it in for me, that's all I can say. I must have hit the right codes in my sleep, however hard that is to believe. Because if you're wondering if the mod might have let me tunnel through a closed door—like an electron through a voltage barrier—the answer is, *it can't*. Even if that were possible in theory, this mod was not designed to do any such thing. It was designed to work on microscopic systems. It was designed to demonstrate the simplest effects—nothing more.'

I imagine my reply so vividly that I can almost hear the words: 'It wasn't *designed* at all.'

But the machinery in my skull keeps me silent, and instead I nod and say, 'I believe you—you're the expert. And it was your dream, not mine.'

* * * *

9

Lui says, ‘We can use this.’

‘*Use* it? I don’t want to *use* it, I want to put a stop to it! I want the Canon’s blessing to tell Po-kwai exactly what’s happening. I want to get the whole thing under control.’

He frowns. ‘Under control, yes, but you musn’t tell Po-kwai about Laura. Suppose Chen found out that you’d disobeyed her? Where would that leave us? Right now, I’m sure nobody even suspects the existence of the Canon; they have far too much confidence in the loyalty mod. Or far too little respect for it. They don’t seem to have realized just how powerful a combination intelligence and its antithesis could be. You know, in formal logic, an inconsistent set of axioms can be used to prove anything at all. Once you have a single contradiction, A and not A, there’s nothing you can’t derive from it. I like to think of that as a metaphor for our distinctive kind of freedom. Forget Hegelian synthesis; we have pure Orwellian doublethink.’

I look past him irritably, across the crowded lawns of Kowloon Park, to a flower bed shimmering in the heat. I have no one else to turn to, and I don’t seem to be getting through to him.

I say, ‘Po-kwai deserves to know the truth.’

‘Deserves? It’s not a matter of what she deserves, it’s a matter of what the consequences would be. I have the greatest respect and admiration for her, believe me. But do you really want to sacrifice the Canon, just to let her know that she’s been deceived? The sham Ensemble wouldn’t simply impose harsher mods on us, if that’s what you’re thinking; they’d write off their losses—they’d kill us. And what do you think they’d do to *her*, if she tried to back out now?’

‘Then we have to protect her, and protect ourselves. We have to bring the sham Ensemble down.’

Even as I say it, I realize how ludicrous a suggestion it is, but Lui says, ‘Eventually, yes. But that’s not going to happen on a whim. We need to act from a position of strength. We need to exploit whatever opportunities present themselves.’ He pauses—just long enough for my hesitant silence to sound like implicit consent—then adds, ‘Like this one.’

‘Po-kwai is losing control of her mod. I’m going insane. How is that an *opportunity*?’

He shakes his head. ‘You’re not “going insane”. Some of your mods are failing, that’s all. *Why?* P3 is designed to act as a barrier, confining you to certain, useful states of mind—and yet somehow you’re tunnelling through that barrier, into states that are supposedly inaccessible: boredom, distraction, emotional agitation. That ought to be highly unlikely—and yet you’re doing it. All the

diagnostics tell you that the mod is physically intact. Which means the system itself is undamaged... but the *probabilities of the system* are being changed. Remind you of anything?’

I shudder. ‘If you’re saying Po-kwai is manipulating *me* the way she manipulates the ions... how can she? Okay, she can alter the probabilities of a smeared system—like a silver ion whose spin is still a mixture of up and down—but what’s that got to do with me? I’m the very opposite of a smeared system: I collapse the wave, don’t I?’

‘Of course you do—but *how often?*’

‘All the time.’

‘What do you mean, “all the time”? Do you think you’re permanently collapsed? The collapse is *a process*—a process that happens to *a smeared system*. You think smearing is an exotic state—something that only happens in laboratories?’

‘Isn’t it?’

‘No. How can it be? Your whole body is built out of atoms. Atoms are quantum mechanical systems. Suppose—conservatively—that the average atom in your body, left uncollapsed for a millisecond, might do one of ten different possible things. That means, in a millisecond, it will smear into a mixture of ten eigenstates: one for each of the things it *might have done*. Some states will be more probable than others—but until the system is collapsed, *all* these possibilities will co-exist.

‘After two milliseconds, there’d be a hundred distinct combinations of things this atom *might have done*: any of the ten possibilities, followed by the same choice again. That means smearing into a mixture of a hundred different eigenstates. After three milliseconds, a thousand. And so on.

‘Add a second atom. For each possible state of the first atom, the second could be in any one of its own states. The numbers multiply. If one atom, alone, could have smeared into a thousand states, a system of two would have smeared into a million. Three atoms, and it’s a billion. Keep that up until you get to the size of a visible object—a grain of sand, a blade of grass, a human body—and the numbers are astronomical. And constantly increasing with time.’

I shake my head numbly. ‘So, how does it ever stop?’

‘I’m getting to that. When one smeared system interacts with another, they cease to be separate entities. Quantum mechanics says they have to be dealt with as a single system—you can’t lay a finger on one part without affecting the whole thing. When Po-kwai observes a smeared silver ion, a new system is formed: Po-kwai-plus-the-ion, which has twice as many states as Po-kwai had, alone. When you observe a blade of grass, a new system is formed: you-plus-the-blade-of-grass, which has as many states as you had, alone, multiplied by however many states the blade of grass had.

‘But a system which includes *you* includes the *collapse-inducing part of your brain*—which ends up smeared into countless different versions, representing all the different possible states of

everything else: the rest of your brain, the rest of your body, the blade of grass, and anything else you've observed. When this part of your brain *collapses itself*—making one version of itself *real*—it can't help collapsing the whole, combined system: the rest of your brain, the rest of your body, the blade of grass, and so on. They all collapse to a single state, in which just one of all the countless billions of possibilities actually “happens”. Then, of course, they all start smearing again...’

I say, ‘All right, I understand: people have to smear, in order to collapse. All the possibilities have to *be there*—in a sense—in order for one to be chosen. The collapse is like... drastically pruning a tree—which has to grow out a little, in all directions, before we can choose which branch we leave uncut. But we must collapse *so often* that we don't have time to be aware of being smeared, in between. Hundreds of times a second, at least.’

Lui frowns. ‘Why do you say that? How would we be “aware of being smeared”? Consciousness *seems* like a smooth flow, but that's just the way the brain organizes perceptions; reality isn't created continuously, it comes in bursts, in spasms. *Experience* must be constructed retrospectively; there's no such thing as *the present*—it's only the past that we succeed in making unique. The only question is the time scale. You say that if it was anything more than a few milliseconds, we'd somehow be aware of the process... but that's simply not true. This is how subjective time arises, how the future turns into the past, for us. We're in no position to discern how, or when, it happens.

‘Granted, in the experiments with Po-kwai when she *didn't* use the collapse-inhibiting part of the mod, she was unable to influence the eigenstates—but that's no proof of anything. Even if she failed because she collapsed herself-plus-the-ions before she could change the probabilities—and that's by no means the only explanation—you can't generalize from one person, in a laboratory, to the whole human race, all of the time. Depending on their state of mind, depending on whether they're in groups or alone, people might go for seconds, or even minutes, between collapsing. *There is no way of knowing.*’

I feel like grabbing hold of him and shaking the metaphysical stuffing out; instead I say evenly, ‘I'm asking you to help me. I don't care how *experience is constructed*. I don't care if time is an illusion. I don't care if nothing's real until it's five minutes old. It all adds up to *normality*—or it ought to. It *used to*. And don't tell me everyone smears a hundred times a day; *everyone does not* suffer hallucinations, mod failures —’

‘Maybe they do. Maybe they “suffer” precisely the kind of experiences you've been through—amongst countless others—but they simply don't remember them. They can't; their brains, their bodies, the world around them, contain no evidence that any of it ever took place. The events never *become real* for them; each time they're collapsed, their unique past contains something far more probable.’

‘Then why do *I* remember?’

‘You *know* why. Because Po-kwai is involved—and she has the eigenstate mod. She can change the probabilities.’

‘But why would she deprime me? Why would she make **Karen** appear? Why would she want to do any of that? She doesn’t even know that **Karen** exists!’

Lui shrugs. ‘I say “Po-kwai” is involved, and “Po-kwai” manipulates the probabilities... but what I should say is: “The eigenstate mod is involved.”’

I laugh derisively. ‘So now the mod is autonomous? It has goals of its own? *It’s* to blame for depriming me?’

‘No, of course not.’ He waits patiently for a young couple, laughing and kissing, to pass us—an absurd precaution; if the Ensemble wanted to know what we were saying, they’d hardly go about it by sending a pair of fake lovers strolling by. I feel a surge of dismay; I’d assumed from the start that the details of the Canon’s security measures were being concealed from me—but I’m beginning to wonder if there’s anything *to* conceal.

Lui continues, ‘If anyone is making a conscious choice, it’s you. Or rather, the combined system of you-and-Po-kwai, to be pedantic—but since she’s predominantly asleep at the time, I’d say you’re the best place to look for motives.’

‘*Predominantly* asleep?’

‘Yes.’

I stop walking, and say numbly, ‘She has the mod—but *I’m* using it?’

‘Crudely speaking, yes. When you and Po-kwai smear, you smear into *every possible state* that either of you could be in—however unlikely. There’s no reason why that shouldn’t include states where *you* influence the use of the eigenstate mod.’

I can’t seem to summon up the energy to argue against this preposterous assertion; common sense has been rendered indefensible, naive, irrelevant. I finally say, pleadingly, ‘But I don’t *want* any of the things that happen!’

Lui frowns with mild puzzlement, and then breaks into a rare smile. ‘No, of course you don’t. But apparently, you very easily *might*. Versions of you who want these things may be unlikely, *per se*—but once they have access to the eigenstate mod, they can change the whole meaning of what’s *likely* and *unlikely*.’

I’m about to reply *that yes, that’s exactly it, that’s exactly what I need to put a stop to*, when he adds:

‘And if you think what you’ve done so far is astounding, you very easily might do a great deal more—in the service of the true Ensemble.’

The Canon doesn't seek to compel me; merely to advise. The decision will be mine alone—and I *cannot* make the wrong choice—but surely the views of others who share the loyalty mod can't be entirely irrelevant?

The truth is, the very idea of trying to determine the Ensemble's interests by consensus is absurd. And the truth is, nothing could be more terrifying than the prospect of having to make such a judgement, alone. I swallow the contradiction easily enough. I think I'm beginning to understand what Lui meant by *our distinctive kind of freedom*. The mental knot the loyalty mod has created can't ever be untangled—but it can be endlessly deformed.

Over a week, meetings are held between members of the Canon whose free time overlaps, and at each stage, delegates are chosen whose shifts are successively closer to my own. Po-kwai is resting again, after her latest success, and, as before, this brings a respite in the eigenstate mod's effects on me.

It's hard to feel conspiratorial at nine in the morning. When I enter the apartment—borrowed for the day, Lui assures me, from someone with no links whatsoever to the Canon or the Ensemble—the scene is so mundane, so innocuous, that I might have wandered in on a residents' action committee, or some kind of parochial, lower-middle-class political group. The six of us sit in the tiny living room, surrounded by the absent owner's Buddhist-flavoured domestic kitsch, sipping tea and debating the best way of gaining control of the international alliance which believes we're its perfect slaves.

Li Siu-wai is a medical imaging technician at BDI. She often worked the night shift when I was there, and we must have exchanged pleasantries dozens of times—but it's hardly surprising that neither of us ever guessed what we had in common.

Chan Kwok-hung is a physicist with ASR, working on a team similar to Lui's, but with an experimental set-up involving single-atom spectroscopy in place of the silver ion spin measurements. They've yet to achieve success, so they don't yet know which of their volunteers has the genuine mod. I recall Po-kwai's joke: she turned out not to have been the control, 'because' it would have made her so angry. What worries me is, the way things are going, that's almost beginning to sound plausible.

Yuen Ting-fu and Yuen Lo-ching are brother and sister, both mathematicians (topologists, to be more precise—although I gather even that is a crude generality), university lecturers who unwisely declined a lucrative offer to work for the sham Ensemble voluntarily.

Lui begins. 'I already have enough data to construct a mod which suppresses the wave collapse indefinitely. By itself, of course, that's useless; we need to get our hands on the second half, the eigenstate selector. BDI have the specifications for that—on a ROM locked away in a vault. There's no prospect whatsoever of a hacker reaching it; it's not being accessed at all any more, let alone used on any system connected to a network. However, Nick —'

I say, ‘Hold on. Before we start talking about ways of obtaining this data... just suppose that it can be done. Suppose you get a copy of the specifications, and construct the whole mod. What then?’

‘In the short term, we concentrate on learning how to make the most effective use of it, as rapidly as possible. The ASR teams are being very cautious, confining themselves initially to microscopic systems, trying to establish a rigorous framework of quantum ontology before they proceed with anything more complex. Which is very laudable from an intellectual standpoint, but it’s obviously not a prerequisite for practical results. If Chung Po-kwai can walk through locked doors, in her sleep... imagine what an experienced user, fully aware of the mod’s potential, could achieve.’

Chan Kwok-hung says, ‘And in the long term?’

Lui shrugs. ‘Until we have our own copies of the whole mod, until we’ve carried out our own experiments to determine precisely what its advantages and shortcomings are, it’s premature to discuss a detailed strategy for taking control of the sham Ensemble.’

Li Siu-wai says, softly but firmly, ‘Which may not even be necessary. With our own, independent organization established, why bother trying to reform the sham? Why not simply ignore it?’

Yuen Lo-ching says, scandalized, ‘The false Ensemble is a travesty! *Ignore it?* It has to be torn down! It has to be *obliterated!*’

Her brother says, ‘You think they’ll leave us in peace, to pursue our own work? You think they’ll let us walk away with their secrets —’

Li Siu-wai says, ‘No, but we’ll be able to defend ourselves. If we maintain an edge in using the mod —’

‘Better to have no need to defend ourselves.’

Chan Kwok-hung shakes his head. ‘The sham Ensemble may be imperfect, but it’s still the template for the true version we perceive. We have to keep it intact—and we have to keep struggling to improve it, bringing it closer to the ideal, year by year. The task is ultimately futile—but we have to undertake it, for our own peace of mind.’

Lui says smoothly, ‘*All* of these alternatives can be considered, eventually—but if we don’t get our own eigenstate mod, there’s no hope of achieving anything at all. Which is where Nick comes in.’

He turns to me. So does everyone else.

I say, awkwardly, ‘I take it that you all understand what Lui Kiu-chung is suggesting—and that you’ve all discussed his plan with other members of the Canon. I want to hear what you think. We all seem to agree that we have to get hold of the specifications—but is this the best way of doing it? Are

there any problems, any dangers, we might not have anticipated? Is it even clear that it can work at all?’

Lui cuts in. ‘There’s no doubt about that. Consider what Laura Andrews achieved—a massively retarded woman. Consider what Chung Po-kwai has done, *in her sleep*. With Po-kwai’s “help”—by “borrowing” her eigenstate mod while she sleeps—there’s nothing to stop Nick finding a safe route, *however improbable*, that takes him from the ASR building, across the city, through BDI’s security, into the vault, and back.’

Just hearing it all spelt out again brings protests of disbelief clamouring in my head. After thirty years of refining her talent, Laura Andrews did little more than escape the Hilgemann’s mediocre security, travelling at most a couple of kilometres before being recollapsing. I’m expected to traverse a crowded city and steal the Ensemble’s most precious asset—and I won’t even have the eigenstate mod *in my own skull*.

Chan Kwok-hung says, ‘He will remain smeared, reliably? You’re sure of that?’

Lui says, ‘The collapse-inhibiting mod should be ready within days.’

Yuen Lo-ching says, ‘But these earlier episodes—how do you account for them?’

Lui shrugs. ‘They may reflect a natural failure of the collapse. Or they may be related to **P3**, the behavioural-control mod he was using at the time; it’s designed to greatly increase the probability of optimal mental states—which sounds like the very opposite of smearing—but ironically, it may have inadvertently *inhibited the collapse*, judging the process to be a “distraction” to be ruled out. Which, of course, would have had no observable consequences, until the eigenstate mod became involved.’

It’s the first I’ve heard of that theory—and I don’t see how **P3** could have played a crucial role in its own failure. Although... didn’t I feel, when it was over, as if I’d remained in stake-out mode all along? Maybe I was primed *and* deprimed—maybe the collapse somehow left traces of *both* pasts intact. Memories may only endure from a single state, under normal conditions—but with Po-kwai’s eigenstate mod shifting and recombining the ‘mutually exclusive’ possibilities, maybe that need not be the case. I *remember Karen* filling the anteroom, don’t I? What was that? A single deranged hallucination, from a wildly dysfunctioning mod? Or memories surviving from a thousand simultaneous alternative incarnations—each of which, alone, would have seemed perfectly normal?

The prospect of spending several hours smeared is already unsettling enough—even if Lui is right and it happens to everyone, all of the time, and even if I could be sure of emerging from the collapse with all but one chosen eigenstate reduced to inconsequential fiction. But if there’s a risk of multiple states leaving indelible memories, then not only will I be forced to treat *smearing* as more than an abstraction... but who knows what other tangible, physical consequences might end up being inconsistent? If I try to steal the ROM, and find myself remembering both success *and* failure, then what bizarre hybrid of the two might the rest of the world reflect?

Lui says, ‘We need to move on this as quickly as possible. We don’t know how long we have before Po-kwai begins to realize what’s happening. The sooner Nick starts refining his control of the eigenstate mod, the better our chances of keeping her in the dark long enough to make use of the situation.’ He adds—for my benefit—”This is to her advantage, as well; finding out that she’s been deceived can only put her on dangerous ground. And if Nick takes full control, she need not even experience any more disturbing “sommambulism”; he can choose their joint eigenstate so that she turns out to have been safely asleep in bed, all along, while he’s travelled across the city.’

Yeah, sure. Add one more miracle to the list. Who’s counting?

Li Siu-wai says, ‘If he fails, half-way... ?’

‘If he’s collapsed in the street, then he’s stranded—severed from Po-kwai and the eigenstate mod. He’ll just have to bluff his way back into ASR—inventing some excuse for having left his post. He risks being disciplined—but then, he may be able to smooth things over with the other security staff; after all, if there’s any investigation, how do *they* explain the fact that they never saw him leave the building in the first place?’

This scenario doesn’t impress me; nobody running **Sentinel** is going to be blackmailed into a cover-up.

‘If he’s collapsed in BDI, then obviously that’s much worse. I can only assume that we’ll all come under suspicion. Everyone with a loyalty mod will be subject to the closest scrutiny; at the very least, the Canon will have to shut down, perhaps for several years. Perhaps indefinitely. At worst’—he shrugs—‘we risk everything. But the same can be said of whatever means we use to try to obtain the data. Now is the time to decide: do we continue living so cautiously that we might just as well be serving the sham Ensemble? Or do we take the first step towards our own true vision?’

This rhetoric is surreal: *our own true vision* means something utterly different to everyone assembled here—but nobody seems greatly troubled by the fact. The sham Ensemble may have its factions (ironically, that was the core of Lui’s argument in persuading me to turn against it) but the Canon is—clearly, unashamedly—a thousand times worse. So, what are these people actually hoping for? Does each believe that their own point of view will somehow, miraculously, prevail in the end?

I don’t know. How can I hope to understand what’s going on here, when I don’t even know what my own ‘true vision’ of the Ensemble is. I try to picture myself free of BDI and ASR—while still being loyal to... *what?*

Chan Kwok-hung is speaking, but I find it hard to concentrate on his words. I’m suddenly tired of shirking the question. What *is* the Ensemble, to me? I have to discover—or decide—the answer. *How far can I stretch the definition? How radically can I deform the knot?*

It strikes me that there’s one thing which I’m certain that I *can’t* define away: the true Ensemble must be concerned with the exploration of Laura’s strange talent, by whatever means. A double-walled room in a basement. Po-kwai’s ion experiments. And now... my own bizarre

entanglement with the eigenstate mod. And the only way for me to serve the true Ensemble is to participate in that exploration, as fully as I can.

It's a shock, put so bluntly—but having uttered the truth, I find it impossible to retract. The logic is ineluctable. The fact that the whole idea of *smearing* still terrifies me only makes the conclusion all the more compelling: if I had nothing to fear, nothing to lose, what kind of *loyalty* would that be?

I glance around the room, from face to face. I realize, now, that there's no need at all to force myself to care about these people's quixotic plans—any more than they care about each other's. I'll steal the eigenstate mod's specifications for them—but I'll do it for my own reasons.

Chan Kwok-hung concludes, '—and so I believe that, on balance, it's worth the risk. My advice is to go ahead.'

Lui nods at Yuen Lo-ching. Her eyes unglaze, and she embarks upon her own justification for the conclusion that she knows she has to reach. Yuen Ting-fu and Li Siu-wai do the same in turn; I listen carefully, trying to pick up the rules, trying to learn the balancing act. There must be a fiercely personal view of the Ensemble, blatantly contradicting every other view expressed—and it must lead to agreement on the action to be taken.

Only Lui seems at all conciliatory. He simply says, 'Well, you know my position; there's no need for me to elaborate. It's up to you, Nick. It's your decision.'

I state my reasons carefully. The members of the Canon listen, stony-faced, to the proof that their own visions are unique and uncompromising. I insult no one with the slightest concession—I don't take issue directly with anyone's arguments, but I do make it clear that I find all of them irrelevant. The true Ensemble, I proclaim, *is* the mystery of Laura's gift; everything else is peripheral.

'So we can't pass up this opportunity, whatever the risks. We need the eigenstate mod—not for any tactical advantage in some meaningless power struggle, but because it embodies *everything* the Ensemble is about. And what better way can there be to obtain it, than by using the very process that lies at the Ensemble's heart? I'm willing to do whatever I have to, to make this work. *With or without your support.*'

Lui and I remain after the others have departed. I sit in silence for a while, feeling drained and confused. I still don't know if I'm convinced that the Canon can actually *function*, or whether all we've achieved is some kind of delusion of consensus. Consensus without compromise—a nice Orwellian oxymoron.

At least I've finally decided what the Ensemble in the skull means to me—although I have an uneasy feeling that in a week, or a month, or a year, it might mean something else entirely.

I say, 'Tell me, honestly: suppose I do pull it off. Suppose I get the data, and you construct the eigenstate mod.' I wave a hand at the empty chairs. 'How long do you really think *all this* can hold

together?’

Lui shrugs. ‘Long enough.’

‘Long enough *for what?*’

‘Long enough for everyone to get what they want.’

I laugh. ‘You may be right. Maybe it can go on this way indefinitely: everyone backing the same moves, for entirely different reasons. All we really *need* to disagree on is the theory, and the long-term future.’ I shake my head, bemused. ‘And what’s your reason? You’re the one who’s making everything happen, but you never really said *why*.’

He gives me that mildly puzzled frown. ‘I just told you, didn’t I?’

‘When?’

‘Five seconds ago.’

‘I must have missed it.’

‘All *I* want,’ he says, ‘is for everyone to be satisfied. It’s as simple as that.’

* * * *

Three days after the meeting, I take a small detour on my way home from the underground. I drop in at a stall which sells downmarket consumer pharmaceuticals and nano-ware: smart cosmetics, active tattoos, ‘natural’ sex aids (meaning, they act on nerves in the genitals, not the brain), muscle ‘enhancements’ (painless short cuts to dysfunctional hypertrophy), and the kind of neural mods that belong in cereal packets. I don’t know which backstreet manufacturer Lui employed to create his collapse-inhibiting mod, but collecting the finished product from a place like this doesn’t exactly fill me with confidence.

I quote the order number Lui gave me, and the stall owner hands me a small plastic vial.

Before going to bed, I spray the vial’s contents into my right nostril, and a heavily modified version of *Endamoeba histolytica*—the protozoans responsible for amoebic meningitis, amongst other delights—carry their burden of nanomachines into my brain. I lie awake for a while, thinking about the daunting navigational and constructional feats that the virus-sized robots are expected to perform—and wishing I’d asked Lui just how much experience he’s had with mod design. For all I know, the manufacturers might have used the most reliable, modern hardware available to build and program the things—but even perfectly constructed nanomachines can do perfectly fatal damage, if they’re following a design that turns vital brain centres into neural spaghetti.

Eventually I give up worrying. I’m doing all I can to serve the true Ensemble, and if I can’t

find peace in that alone...

I stare up at the ceiling, at a thin strip of morning sunlight breaking in through a crack in the blinds.

I choose sleep.

* * * *

Boss wakes me three hours early, as requested. Well, I'm not dead, paralysed, deaf, dumb or blind. Yet. I run integrity checks on all my other mods, and none have been damaged—but then, that's the least likely mistake of all. Neurons that are already part of existing mods are tagged with cell-surface proteins which no correctly functioning nanomachine could miss—and are also altered in other ways which would need to be deliberately reversed before they could be stimulated into changing their synaptic connections.

Lui gave me no name to invoke, so I have **MindTools** (Axon, \$249) perform an inventory; it can't 'scan' my whole skull by any means, but it can send a standard 'announce yourself' request down the inter-mod neural bus, and list the replies it gets back. Only the loyalty mod remains silent, refusing to name itself, or even to admit its presence.

The collapse-inhibiting mod turns out to be camouflaged, hidden inside a cheap-and-nasty games mod called **Hypernova** (Virtual Arcade, \$99). **Hypernova** is to von Neumann what, in my childhood, a dedicated games machine was to a personal computer. I flip through its menus and help text. It can be loaded with software from ROMs or on-line libraries, either through an IR mod like **RedNet**, or the crude, old-fashioned way: modulated visible light.

I might as well make the camouflage plausible; nobody has a games mod with nothing in it. I phone Virtual Arcade's library. The current best-seller is an historical war game for brain-dead weapons fetishists called *Basra 91*, boasting authentic missile's-eye views of the genocide. I pass on that, and download last week's favourite, *Metachess*. 'Every configuration of pieces generates a unique set of rules.'

I play the game for a while (losing badly on novice level), trying to invoke all of the mod's facilities in turn, but after twenty minutes I still haven't found the trapdoor into the real thing. I'm beginning to wonder if some elaborate sequence of commands is necessary, when I realize that there's still one function that I haven't touched. I go back to the downloading menu and invoke the archaic visible light option. Instead of receiving the expected complaint—that I'm not staring at an appropriate data source—a new menu appears, bearing only two words: OFF and ON. There's a tick mark beside OFF.

I hesitate, but the fucking thing has to be tested, sooner or later—and if it's going to malfunction horribly, I'd rather find out about it here and now than in the anteroom of Po-kwai's apartment.

The distinction between idle visualization and an active command to a mod is hard to describe—but it's as easily mastered, and forgotten, as the difference between real and imagined actions of the body. Only under stress does it cease to feel like second nature. As I picture the tick mark reappearing beside the word ON, I'm acutely aware of the fact that the mental image I'm manipulating *is* the menu itself.

Nothing happens, nothing changes—which is exactly as it should be. I hold my hand up before my eyes, and it conspicuously fails to dissolve into a blur of alternatives. The whole room remains as solid, as ordinary, as ever. So far as I can judge, my mental state is entirely unaltered—except for a predictable surge of relief to find that I'm still not paralysed, blind or detectably insane. Lui might have known what he was doing, after all. The mod might even be working.

In which case, I *am* now smeared—even if there are no observable consequences whatsoever. The uniqueness, the solidity, the utter normalcy of everything, is a product of the fact that I *will be* collapsed at some time in the future—this time, without Po-kwai's eigenstate mod to distort the probabilities, or to mix and confuse the alternatives.

I *will be* collapsed? Perhaps it makes more sense to assume that I'm 'already' being collapsed—at a time which only seems to lie in the future—and this whole experience is arising 'retrospectively' from that process. When the spin of an ion is measured, Po-kwai assured me, *that is* when it becomes definite, not before.

I laugh out loud. In spite of everything—Laura's feats of escapology, Po-kwai's success with the ions, my own impossible mod failures—it's still not real to me. And in spite of the fact that I know that *this* is the heart of the true Ensemble... it still sounds like a load of pretentious, inconsequential, undergraduate philosophical crap. For all I know, I've just installed the Emperor's new mod.

I bring back the menu, tick the OFF switch –

- and wonder: what about all of the versions of me who *didn't* just do that? Have *they* been destroyed by the wave-collapsing pathways in my skull... even though half of them may have been scattered around the room—or across the city—by now?

They must have been—destroyed by me, or destroyed by some other observer.

All of them?

Forget the collapse-inhibiting mod—that changes nothing but the timing. The ordinary course of events must add up to normality. However frequently or infrequently the brain performs the collapse, it must reach out and destroy even the most far-flung, improbable states. If not, then these untouched states would persist indefinitely. There's no point appealing to other observers to clean things up; they'd do the job imperfectly, too. If the collapse were not all-consuming, then the single, solid branch of reality wouldn't be unique at all. It would lie in the centre of a huge void of depleted alternatives, but that void would be finite—and beyond it would lie an infinite thicket of fine

branches, the ghosts of improbabilities too remote to have been destroyed.

And that's just not the way things are.

* * * *

I start my own experiments while Po-kwai is still waiting for the next phase of her work to begin. Perhaps that's pointless, given that—so far—the most dramatic effects have occurred on those nights when she's actually used the eigenstate mod successfully. But I can't see the harm in trying—and I might as well be optimistic. If my own use of the eigenstate mod remains tied absolutely to hers, it could end up taking me years to achieve the simplest tricks—let alone any massively improbable cross-town burglaries.

Po-kwai developed her skills working with the simplest possible systems: silver ions carefully prepared to consist of an equal mixture of just two states. I don't have access to anything so pure, but I can still work on the same basic principle: taking a system which would normally collapse according to well-known probabilities, and trying to skew the odds. Both **von Neumann** and **Hypernova** have facilities for true random-number generation—as opposed to the deterministic pseudo-random sequences produced by purely algorithmic means. They employ groups of neurons specially tailored for the purpose, balanced on a fractal knife-edge between firing and not firing, stuttering chaotically in the sway of nothing but intracellular chemical fluctuations and, ultimately, thermal noise. Ordinarily, the system should collapse in such a way as to generate random numbers spread *uniformly* throughout a specified range; any skew, any bias, would mean that I'd succeeded in changing the probabilities—favouring one of the system's states to make it more likely to be the sole survivor of the collapse—just as Po-kwai succeeded in increasing the probability of the *up* state in her silver ions.

I spend three nights trying to influence **von Neumann's** random numbers, with no success... which is no great surprise. The combination of visualization and wishful thinking I employ—for want of anything better—seems more like an exercise for aspiring psychics than an attempt to give a precise command to a specific neural mod, whoever's skull it happens to be in. Lui is no help; he's never so much as caught a glimpse of a description of the eigenstate mod's interface. So, I laboriously steer a conversation with Po-kwai onto the topic (and probably succeed in sounding far less natural than if I'd just asked her, out of the blue).

She says, 'I've told you: I don't remember using that part of the mod; I just switch on the collapse-inhibitor, then sit back and watch the ions. The two functions are independent. The whole thing was installed as a single package, but in effect, it's two separate mods. The eigenstate mod only works when it's smeared... and while *I'm* smeared, I can—evidently—operate this smeared mod. After the collapse, though, I know nothing about it.'

'But... how can you have learnt to do something that you don't even *remember doing*?'

'Not all skills rely on episodic memory. Do you remember learning how to walk? Sure, if I've grown better at manipulating eigenstates, then that skill *must* be embodied in some kind of neural

structure, somewhere in my brain—but certainly not as a conventional memory, and probably not in any form which could ever make sense to me, or be of use to me, while I’m collapsed. I mean, *the eigenstate mod* is a neural system which only works when it’s smeared, so there’s no reason why other parts of my brain—pathways which formed naturally, during the course of the experiment—might not also work *only when smeared*.’

‘You’re saying that when you’re smeared, you know how to work the eigenstate mod—but the knowledge is encoded in your brain in a way that’s unreadable when you’re collapsed?’

‘Exactly. The knowledge must have been *stored* in the brain while I was smeared... so it’s hardly surprising that I can only decipher it when I’m smeared again.’

‘But... how can information about being smeared survive from one time to the next, when the collapse wipes out every last trace of every eigenstate but one?’

‘Because it doesn’t! That’s only true if the eigenstates don’t have a chance to interact—and the eigenstate mod means they *do* interact. There’s nothing new, in principle, about smeared systems leaving proof that they’ve been smeared; half the critical experiments in early quantum mechanics relied on it. Indelible evidence of multiple states co-existing is more than a century old: electron diffraction patterns, holograms... any kind of interference effect. You know, the old photographic holograms were made by splitting a laser beam in two, bouncing one beam off the object, then recombining the beams and photographing the interference pattern.’

‘What’s that got to do with smearing?’

‘How do you split a laser beam in two? You point it at a sheet of glass with a very thin coating of silver, angled at forty-five degrees to the beam; half the light is reflected to the side, while the rest passes straight through. But when I say “half the light is reflected,” I *don’t* mean every second photon is reflected—I mean every individual photon is *smeared* into an equal mixture of a state where it’s reflected, and a state where it passes straight through.

‘And if you try to observe *which* path each photon takes, you collapse the system into a single state—and you destroy the interference pattern, you ruin the hologram. But if you let the beams recombine, unmolested, giving the two states a chance to *interact*, then the hologram remains as tangible, lasting proof that *both* states existed simultaneously.

‘So, maybe interactions between different versions of my brain can leave some kind of permanent record of the experience of being smeared. And just as a laser-light hologram is an indecipherable mess to the naked eye—bearing no resemblance to the object whatsoever, until the image is reconstructed—this information stored in my brain may be incomprehensible to me, but presumably it comprises skills that are useful to the *smeared* Po-kwai.’

I digest this. ‘Okay. But even if there is this way for “the smeared Po-kwai” to learn things that you don’t know about... what did you actually *do* to encourage her to learn what you wanted her to learn?’

‘Chanting the ion deflections may have helped. But I suspect that just wanting the experiment to work, badly enough, was all it took. The more I wanted it, the greater the number of versions of me who’d *still* want it, once I was smeared—and so the total smeared Po-kwai must have ended up wanting it, too. Anything else would have been highly undemocratic’ She says this tongue-in-cheek, but not entirely.

I say, ‘At last—a rigorous definition of *seriousness of purpose*: when you diverge into multiple selves, how many stick to your stated goal, and how many abandon it?’

Po-kwai laughs. ‘Sure. You could quantify anything at all that way. *How do I love thee? Let me count the eigenstates ...*’

At home, deprived, I wonder about my own goals, my own *seriousness of purpose*. Nothing that happened on the two occasions when I was (noticeably, memorably) smeared was anything that I wanted. And now? I may fervently wish to serve the true Ensemble by learning to steal the eigenstate mod—but once I’m smeared, how does the voting go?

I’ve never deluded myself: I’ve never pretended for a moment that I’d be the same without the loyalty mod. But from what Po-kwai has told me about the meaning of the wave function, I’d have assumed that the very fact that the loyalty mod works, reliably, must reflect a high probability for those quantum states in which it *keeps on* working. Smearing may create some versions of me for whom the loyalty mod has failed—but they ought to be massively outnumbered by versions for whom it still functions.

And yet... I deprived with **P3** still running; I saw **Karen** without invoking her. In both cases, the same argument should apply: the majority should have been backing the status quo. But the status quo was not maintained.

So what exactly is going on when I smear in the anteroom and try—or think I try—to sway the random numbers being spat out by **von Neumann**? Nothing of consequence... or a virtual war between a billion possible versions of who I might become? Pitched battles for the eigenstate mod, the super-weapon, the reality shaper? All I end up knowing about is the subsequent stalemate—but maybe the balance of power is gradually shifting, maybe there are ‘holograms’ in my head which record the changing state of play.

The thought that there might be versions of me coming into being who act against *my* wishes, who fight against everything *I’m* living for, is so repugnant that all I want to do is mock it, dismiss it as absurd. And even if it *is* true... what can I do about it? How can I make a difference to the outcome of these battles? How can I reinforce the factions which remain in the grip of the loyalty mod—which remain loyal to *me*?

I have no idea.

I give up on **von Neumann**; there’s something highly dubious about aiming to influence

neurons in my own skull. In a junk market close to my building, I find an electronic dice generator, about the size of a small playing card. The heart of the device is a tiny sealed unit containing a few micrograms of a positron-emitting isotope, surrounded by two concentric spherical arrays of detector crystals. This set-up is immune—the seller’s know-it-all hologrammic spruiker assures me—to both natural background radiation and any deliberate attempts to tamper; no external event can be confused with the characteristic pair of gamma rays produced when a positron is annihilated within the device itself. ‘Of course, if the gentleman would prefer a model more amenable to discreet persuasion...’

I buy the tamper-proof version. The software can produce any desired combination of polyhedra; I select the traditional pair of cubes, and spend an hour testing the thing. There’s no trace of bias.

I take it with me on duty, and when Po-kwai is asleep, I sit in the anteroom, deprived, smeared and collapsed by **Hypernova**, trying to imbue my virtual selves with a sense of purpose that might survive the wave function’s inexorable dispersion. I feel a twinge of guilt about intentionally depriving, abandoning my responsibility to Po-kwai, but I can’t risk having **P3** interfere with the collapse in unpredictable ways. And I tell myself: if the Children ever do find out that ASR is engaged in blasphemous research, they’ll simply bomb the building, and there’ll be nothing I can do about it, primed or not.

The dice remain scrupulously fair.

Po-kwai begins the third phase, another measurement of correlations within her brain. I can understand Lui’s impatience with these inward-looking experiments—but at the same time, I can appreciate, more than ever, ASR’s reasons for proceeding cautiously. I may know for a fact that all kinds of macroscopic feats are possible, but I’m thrashing around in the dark trying to master them, and taking huge risks in the process. Left to themselves, ASR might take ten years before they try anything similar—but when they do, they’ll be in complete control; they’ll know precisely what they’re doing.

I think: maybe they’re the best people to explore the true Ensemble’s mysteries, after all. Slowly, methodically, rigorously, *respectfully*...

Po-kwai is successful on the second day; she seems pleased, but not surprised, by this. She’s clearly gaining confidence in her skills with the mod, despite the obscurity of the operational details. How long before this growing sense of assurance, of *control*, invades her dreams—and shuts me out?

I sit in the anteroom, watching the simulated dice rise and fall automatically, ten times a minute, hour after hour. I keep my real vision fixed on the dice, while holding two windows in my mind’s eye: the **Hypernova** menu, and an interface to an analysis program—a modified, miniature version of the ion experiment software, smuggled to me by Lui in a two-second **RedNet** handshake.

Smearing ON.

The dice are tossed.

Smearing OFF.

Enter results.

Primed, I could do this indefinitely, without the slightest change in mood. Deprimed, I slide from bursts of enthusiasm into grey tedium, then screaming boredom, then stretches of merciful automatism—from which I emerge more frustrated than ever. All of which may be helpful: whatever my differences upon smearing, it's hard to believe that I'm not unanimous in wishing to cut short this mind-numbing procedure—and the only way to do that is by succeeding.

Or is it? I can hold my virtual selves to ransom only if, after each collapse, *I* remain in control—and the truth is, I have no way of knowing what the eigenstate mod will be used for: to choose the state of the dice, or to choose my own state of mind. At the next collapse, I might find that a state has been selected in which I've simply given up on the experiment... or given up on the true Ensemble. Every time I smear, all the rules of the game are being thrown into the air, alongside the dice. I can only hope that they're harder to sway.

I pocket the dice generator seconds before Lee Hing-cheung arrives to relieve me. The program in my head—running much more slowly under **von Neumann** than it would on any decent hardware—scours the accumulated data with ever more sophisticated and obscure tests in the hope of detecting an effect, but spits out its final, unsurprising conclusion as I step off the homebound train:

[NULL HYPOTHESIS UNCHALLENGED.]

* * * *

I turn up for duty expecting to find that Po-kwai has been granted a rest day, but my orders are to report to Room 619. When I get there, Lee explains.

‘She says it doesn't tire her any more; there's no reason to hold up the work.’

I stand guard with single-minded vigilance, as if to compensate for my nocturnal dereliction. I blank out the chatter of the scientists, and suppress any sense of anticipation. **P3** distils me into a pure observer—wired to respond in an instant to any contingency, but until that moment, utterly passive.

When Po-kwai emerges from the ion room, an hour later, they call it a day. In the elevator, heading for the restaurant, I ask, ‘How's it going?’

‘Good. We've had useful data all afternoon.’

‘Already?’

She nods happily. ‘I think I've crossed some kind of threshold; everything's just getting easier and easier. Well... you know what I mean. *I* do nothing, as always. I take no credit—but it certainly

looks like the smeared Po-kwai has finally mastered **Ensemble**.’

For a moment, I’m tempted to ask her to repeat what she said, but there’s no need; I heard her perfectly, and the meaning is unambiguous. And if she’s never named the mod before, no doubt she was explicitly instructed not to—by Leung, perhaps—with sufficient emphasis for the message to sink in more fully than all the other ‘security bullshit’.

I see no reason to admonish her for the slip.

I sit through dinner with infinite patience, nodding politely while Po-kwai complains about how boring the food has become.

I sit in the anteroom, listening to her moving about the apartment, wondering what difference, if any, this information will make.

At one a.m. I deprime, and my joy is no longer constrained. The true Ensemble *is* the mod named **Ensemble**—and this perfect equation, this electrifying symmetry, is the final confirmation of everything I believe. A revelation, yes—but in retrospect it seems impossible that it could have been otherwise. *And what greater inspiration could I hope for, to guide and encourage the virtual selves who remain loyal to my mission?*

I take out the dice generator, invoke the mods, begin.

The dice fall at random, again and again, but I’m not discouraged. My smeared self can’t be expected to perform instant miracles, however fervently he’s pursuing the task... least of all when I annihilate him by collapsing, every six seconds, and he has to begin again, picking up the threads from whatever hologrammic traces of his experience are preserved in my brain.

Must I collapse so often—after every throw? It’s true that Po-kwai succeeded with this approach—and collapsing after each ion would have given her the simplest possible goal: amplifying one of just two possibilities. Her task and mine aren’t identical, though; **Ensemble** is in her skull, not mine. Maybe I need to smear for a longer time, to generate versions of myself capable of influencing the mod. How long was I smeared when **Karen** appeared, unbidden? I have no way of knowing; the process was out of my control.

Now, that’s no longer true.

I tick the ON switch.

On the table beside me, the dice generator sends the images of the cubes spinning into the air. They look almost solid—even glinting convincingly as they pretend to catch the ambient light—and they fall to the surface with a faint simulated click.

Snake’s eyes, two ones—my target.

I twitchily suppress the by now instinctive third step of the routine, and, leaving the **Hypernova** menu untouched, enter this first result into the analysis program—thinking: each time I do this, **von Neumann** will smear into multiple versions, with copies of the program which have been fed every possible combination of results so far. I don't have to think about individual throws; all I have to do is choose an eigenstate in which the analysis program eventually declares success. Surely I can manage a task as simple as that—with the help of the true **Ensemble**.

Snake's eyes for a second time.

And a third.

What if I collapsed right now, before the program gives a verdict? What will this have been—a fluke? A coincidence? A rare—but insignificant—run of good luck? Or am I already witnessing the proof that I *will remain* smeared beyond that point?

Snake's eyes, for a fourth time. At one chance in thirty-six each toss, the probability of a run of four or more—just once in all the thirty thousand tosses, the ten nights' worth of data that I have so far—is already down to 1.7 per cent.

A fifth time... at 0.048 per cent. Having crossed its arbitrary one per cent threshold, the program starts flashing messages of triumph.

Six... at 0.0013 per cent.

Seven... at 0.000037 per cent.

Eight... at 0.0000010 per cent.

I stop feeding data into the program, and just stare at the dice landing the same way again and again, like some cheap, looping advertising hologram. Maybe the generator has malfunctioned, that's all. Malfunctioned how, though? And *why*? Do I think I've 'willed' a change of circuitry that biases the thing? Am I going to crawl back to some cosy idea of telekinesis, by method unknown? I'm not even *trying* to influence the device; *I'm* just watching everything happen. Po-kwai was right: the smeared self does all the work.

I'm going to have to swallow the whole truth: I'm living through a pattern of events that will be (or has been) plucked from a few quadrillion possibilities, by the collective effort of a few quadrillion versions of me... most of whom I am about to slaughter (unless I already have).

I tick the OFF switch.

The dice keep falling: A three and a four. A two and a one. A pair of sixes.

I wipe the sweat off my face; shaken, elated, giddy with success and fear.

I reach down and grip the seat of the chair; the cool, smooth metal is as solid as ever. It doesn't take long to calm myself. I've come through unharmed, unchanged, haven't I? And I have less to fear than ever; there'll be no more mod failures, no more hallucinations. I'm in control now.

And whatever bizarre metaphysical convolutions I'm going to have to come to terms with, one simple truth remains: in the end, when I pull the plug, hit the OFF switch, collapse the wave... it *still* all adds up to normality.

* * * *

10

In the spirit of the Canon, Lui sets the agenda for my conquest of the mod without ever suggesting that my own instincts on the matter could be anything but flawless. With his prompting, I move on to more elaborate dice tricks: cycles of two, three or four different outcomes; totals that are always prime numbers; dice that always agree. The objective odds against these conditions being met by pure chance are no more spectacular than those of my first success—and in some cases are far less stringent—but nevertheless, identifying and amplifying the eigenstates for these complex patterns seems like it ought to be more of a challenge.

Then again, perhaps the criterion in all cases is simply my belief that the outcome is correct; the state is chosen only because it contains a version of me who thinks he's been successful... and if one of my virtual selves were to suffer a lapse of concentration and mistakenly believe that a five and a three had summed to a prime, he might end up being rewarded for his incompetence with the privilege of becoming real. (Maybe that's already happened. Several times. Maybe I'm slowly but steadily 'mutating' towards an increased capacity for inattentiveness and self-delusion. If this kind of 'evolution' could give Laura the brain pathways upon which **Ensemble** itself is based, I shouldn't underestimate the effects it might have on me.) I could buy a pocket HV camera and start recording everything—replaying it only after collapsing—but I'm reluctant to smuggle in too much incriminating hardware. If I'm caught simply throwing dice, that could be passed off as an innocent enough amusement; I could claim that **P3** was malfunctioning again, requiring some diversion to keep me sane through the early hours of the morning. I doubt that this explanation would stretch to making home movies on duty.

As the experiment proceeds, my resolve often wavers, but it never quite fails. This is what the true Ensemble requires of me; I'm certain of that. And if *smearing* is the antithesis of everything I stand for, everything I've spent my life trying to achieve—*control over who I am and who I can become*—then surely the perfect control that **Ensemble** grants me more than compensates for the risks... so long as it's me who's in control, however indirectly. So long as my wishes continue to hold sway when I smear.

At times, I still catch myself thinking: If *I* don't know how to invoke **Ensemble**, who does? Which, of my shortlived virtual accomplices learns the trick... and, having done so, why does he let himself die in the collapse? Why does he strengthen an eigenstate other than his own, when he could use the mod to make himself real?

But the more I think about it, the more convinced I am that Po-kwai's view must be correct: my entire smeared self operates **Ensemble**, and there is no single version of me who possesses the skill. *Whoever* the collapse made real would mimic my protestations of ignorance. The knowledge must be distributed, like the knowledge in a neural net. No single neuron in my brain embodies any of *my* skills—so why should I expect any version of me to hold the secrets of my smeared self? And

whether the smeared Nick Stavrianos rediscovers the skill anew each time he comes into being, or whether the knowledge survives the collapse, encoded in some ‘hologram’ in my brain, there *are no* virtual martyrs, no self-sacrificing alter egos who use the mod to give me what I want, at the cost of their own existence.

And my smeared self? He’s no martyr; he has no choice. One way or another, he must always end up collapsed.

Which is not to assume that he must always end up collapsed *as me*.

* * * *

Just when the whole business is beginning to seem almost mundane (I want totals of seven... I get totals of seven... what could be simpler than that?), Lui hands me a wad of sealed envelopes.

‘These are lists of one hundred random outcomes. You might try making the dice produce them.’

‘You mean, read through the list as the dice are thrown?’

He shakes his head. ‘What would be the point of that? Consult the list *after* collecting the data—but before you collapse, of course.’

I balk at this, instinctively—and fail, four nights running. And the truth is, I’m *glad* to fail: defiantly, blasphemously, self-righteously fucking *joyful*—as if my failure implied some kind of reprieve for all the discredited, ‘reasonable’ explanations that I thought I’d stopped clinging to long ago. *How can I make the outcomes match, when I don’t even know what they are? Of course I’m failing! It’s just not possible.*

At the same time, I know full well that this task is nothing special, nothing new. It no more requires ‘clairvoyance’ than the other experiments required ‘telekinesis’. It’s just a matter of choosing the right eigenstate: of making the right present become the past.

On the fifth night, as before, I note the results in a **MindTools** scratchpad, then pull an envelope from my pocket at random and tear it open. After the first three matches, I’m sure that the other ninety-seven will agree, but I diligently check them one by one.

I don’t feel the least bit disoriented—or resentful—until after I’ve ticked the OFF switch and collapsed.

But then, given the choice, why would I?

* * * *

Lui gives me a combination padlock and suggests casually, ‘Why not open this on the first try?’

‘By throwing dice?’

‘No. On your own.’

‘Using **von Neumann**?’

‘No. By guessing.’

I sit in the anteroom, waiting for Po-kwai to fall asleep. I wonder what she dreams about when I borrow the mod; nothing at all, if my smeared self chooses her state correctly... but without waking her and asking her (before collapsing), on what basis does he make that choice?

Maybe versions of me *do* wake her and ask her.

I deprime, smear, then wait five minutes. I want to be sure that I’ll end up ‘sufficiently smeared’ to operate **Ensemble**—and it’s far less off-putting to go through all the waiting now, before even attempting the task, than to leave it until I’ve succeeded—and find myself confronting the fact that I have no choice: I can’t, I *won’t*, collapse too soon.

The whole question of the timing of the collapse still unsettles me. Po-kwai has it easy; she’s given no choice. In my case, there must be eigenstates in which I choose to collapse earlier, or later, than I do in the state that’s finally made real. These attempts are inconsequential, of course; the collapse is only real if it *makes itself real*. That sounds uncomfortably circular, but at least it’s consistent: the entire wave collapses precisely when the chosen state includes the action which brings that about. Or rather, it’s consistent from the point of view of the version who becomes real—but what about the versions who attempt to collapse, and fail? Do they know that they’ve failed—and *what that means*? Or are they just mathematical abstractions who know nothing, feel nothing, experience nothing?

I take the padlock from my pocket and stare at it with increasing unease. People are notoriously bad at inventing truly random numbers; I wish I’d decided—before smearing—to ignore Lui, and use the dice. What if the combination is 9999999999? Or 0123456789? I have no doubt that it’s physically possible for me to hit the keys in any order whatsoever—but am I psychologically capable of ‘guessing’ such a ‘non-random’ sequence?

Well, I’d better be. Because if I’m not, I’m sure my smeared self—with the help of **Ensemble**—can find someone else who is.

I laugh that off. *Change equals suicide*? That’s Po-Kwai’s line, not mine. Besides, surely it’s too late for such qualms; if nothing’s real until the collapse, then surely I’ve ‘already’ collapsed. This whole experience has already been selected—and I’ve already become whoever I have to become in order to open the lock. And it doesn’t feel like much of a change to me.

But as I move my index finger towards the keypad, I suffer a sudden shift of perspective:

I'm one of at least ten billion people, sitting in at least ten billion rooms, confronting at least ten billion locks. If I guess the correct combination, I live. If not, I die. It's as simple as that.

What makes me think that *I* have 'already' succeeded? The fact that the room looks normal? The fact that I'm experiencing anything at all? If the collapse doesn't *manufacture* experience—if it merely *selects* it—then why should the perceptions of any one version of me be radically different from the others? Why should the state that happens to *become* real be the only one that *seems* real?

I start to put the lock down—nobody's forcing me to go through with this—but then I think: *That's the very worst thing I can do.* My smeared self is going to choose someone who opens the lock, not someone who abandons the whole experiment. If I give up, my chances of surviving are *zero*.

I stare at the lock, and try to psych myself out of these absurd fears. I've smeared before, and come through. *Yes, of course I have—or I wouldn't be here at all. That says nothing about my situation now.* I shake my head. This is ludicrous. Everybody collapses. What do I think—everyday life is founded on a process of constant genocide? If I couldn't swallow that for hypothetical aliens, why should I swallow it for human beings?

Hypothetical aliens? Who do I think made The Bubble?

So... what am I going to do? Sit here and wait for Lee to turn up and take the decision out of my hands? Or do I plan to find a way to spend the rest of my life *unobserved*? But even that wouldn't save me: when the chosen version of me chooses to collapse, I'll vanish—unless I *am* the chosen version... and the odds against that are worse than ten billion to one.

I don't know what breaks the spell, but suddenly—mercifully—I'm sceptical again. Part of me muses: *If quadrillions of virtual humans really are dying every second, then death is nothing to fear.* It's a purely intellectual observation, though; I don't believe I'm going to die. I raise the lock and hit ten keys without thinking, almost without looking, then I stare at the tiny display above the keypad: 1450045409.

Too orderly? Too random?

Too late. I tug the ring.

* * * *

Lui stands by the central pond in Kowloon Park, throwing bread to the ducks. I think he's seen too many bad spy movies. He doesn't even glance my way when I'm standing right beside him.

I say, 'There's not much point pretending you don't know me; I think our employer might already be aware of the fact.'

He ignores that. ‘What happened last night?’

‘Success.’

‘On the first try?’

‘Yes, *on the first try.*’ I glance down at the pond, and try to decide if I want to kill him or embrace him.

After a moment, I say, ‘It was a good idea. The padlock. It was torture—for five minutes—but I have to admit that in the end it was worth it.’ I laugh, or I try to—it doesn’t sound at all convincing. ‘I tell you, when that fucking thing sprang open, I’d never been so happy in my life. I almost died from sheer relief. And... there’s no logic to this, I know, but... nothing could have made me more confident that whatever happens now, I *will* come through.’

He nods solemnly. ‘Operating the mod isn’t the challenge. The challenge is learning how to think about it. You have to find a frame of mind which lets you pass through these situations, untroubled. We can’t have you succumbing to metaphysical terror in the middle of your raid on BDI.’

‘No.’ I laugh again, more successfully this time. ‘Mind you, I don’t think I’ll find many locks in BDI with such easy combinations. Ten nines, in real life? Hardly.’

Lui shakes his head. ‘Easy combinations? What does that mean? For you, they’re all easy, now.’

* * * *

It takes me another week to master locks that ought to need keys. Lui shows me his calculations: the odds against a few quantum-dot transistors in a lock’s microchip spontaneously obliging me with all the right malfunctions are no worse than the odds against one hundred consecutive snake’s eyes. The fact that neither event would normally be expected to occur in the entire history of the universe (if such a time scale can be so glibly invoked, when it’s likely that *nothing at all* ‘occurred’—in the human sense—for most of that history) is beside the point. The point is, I’ve convinced myself that it can be done—and the smeared Nick Stavrianos seems to find that helpful.

Security cameras still worry me, though.

‘If I’m observed, I’m collapsed. Collapsed at random, by whoever’s watching the monitor.’

Lui says, ‘Not at random. You still have control of the eigenstate mod. And not collapsed—not if you make the probability small enough. You don’t collapse *yourself* when you don’t want to, do you? Even though that’s certainly a possible event. Stop thinking of your smeared self as this fragile, defenceless, precarious system which can’t survive a single glance.’

‘But one glance *will* destroy —’

‘No. *Can*, not *will*. One glance *can* collapse you, certainly. And dice *can* fall in all kinds of ways—but they don’t, if you don’t let them. Observation, in itself, doesn’t collapse the wave. You don’t become blind when you smear, do you? The collapse is a distinct process. If someone observes you, the two wave functions interact—they become a single entity. That gives the observer the power to collapse you—but it also gives *you* the power to manipulate the observer and prevent the collapse.’

‘So we battle for the fate of the wave function? Just when I’ve stopped worrying about struggling against all my own hypothetical selves, I have to face a tug-of-war for reality with someone who’s indisputably as real as I am.’

‘Think of it that way, if you like—but it won’t be much of a competition. Your “opponents” won’t even know what the wave function *is*, let alone have any capacity to manipulate it.’

‘That hasn’t stopped several billion people from collapsing it, a few thousand times a day.’

‘Collapsing themselves, and inanimate objects, and other—equally ignorant, equally powerless—people. They’ve never faced anything like you.’

‘People have faced Laura Andrews.’

Lui smiles. ‘Exactly. And yet she still managed to break out of the Hilgemann twice, didn’t she? What more proof do you need?’

* * * *

The first night that I abandon my post, I remain on the level of Po-kwai’s apartment, and confine myself to rooms and corridors that are—plausibly—deserted. I wander through the fields of a dozen cameras and motion detectors; my colleagues in the central security room should, at the very least, demand an immediate explanation, but no coded infrared message blasts down from the ceiling transceivers. Proving what? That I’ve ‘caused’ the cameras and sensors to malfunction discreetly? That I’ve ‘made’ the guards inattentive? Or that I’ve merely kept any sign that I’ve been observed from reaching me—that I’ve fended off the consequences until after the collapse? I walk past the silent apartments of the other volunteers, wondering—jealously—if any of these people have begun to master **Ensemble**. Lui thinks not, but he can’t be certain. I can live with my need for Po-kwai’s unconscious intercession, but the thought of anyone else gaining access to the mysteries of the true Ensemble fills me with disgust. Nobody in the world shares the insight that the loyalty mod has granted me; only *I* have the right to travel this path. I hold this belief side by side with the knowledge that my ultimate aim is to deliver **Ensemble** to the Canon, but the contradiction seems superficial, an irrelevant abstraction.

I return to the anteroom, collapse—and wait to see if I’ve achieved invisibility, or mere ostrich-like self-deception. Could my smeared self tell the difference between states where I truly went unnoticed and states where I fooled nobody but myself? Which is the least probable: to walk

past a camera unseen—or to distort my own memories and perceptions to convince myself that I've done so?

I don't know—but nobody arrives to accuse me of dereliction of duty. The hours pass as uneventfully as ever. Then again, maybe I'm already huddled, catatonic, in a corner of some basement prison cell, and tonight's apparent success is the product of nothing but my smeared self's selection of a version of me with extraordinary hallucinatory skills. How can I rule that out? The fact that it's 'unlikely' no longer means anything at all. If I can succeed against spectacular odds, I can fail in the very same way.

Lee Hing-cheung takes over. I sit in the train home, staring at the other passengers, daring this contrived vision to decay into surreal anarchy. But the carriage remains solid, the people stare back at me coolly, the stations appear through the windows in just the right order, at just the right times. It's hard to believe that there's room for so much clockwork in my head.

By the time I'm home, every hint of doubt has evaporated. I'm not hallucinating anything—or at least, no more than usual. As I lie in bed listening to the familiar street sounds, the mundanity of the world enfolds me, more comforting—and more strange—than ever before. I stare up at the ceiling, and every crack in the plaster, every patch of sunlight, seems patient beyond comprehension, a miracle of endurance defying belief. I could keep watch for a billion years, waiting for some sign of the underlying truth to reveal itself, and still be spared. How can I call this feat an illusion, a lie?

The light dims, and there's a sudden burst of rain against the window. And for a moment I wonder: which did we really create? The unique, solid, macroscopic world of experience? Or the multi-valued, smeared, quantum world that seems to underpin it? Po-kwai believes that our ancestors collapsed the universe... but if the reverse were true—if the twentieth-century creators of quantum mechanics didn't so much *discover* the laws of the microscopic world, as *bring them into being*—would we even know the difference? Is it any harder to believe that the human brain might have manufactured the quantum world from the classical, than it is to believe the opposite? And with all our—inescapably -anthropocentric experiments, can we ever hope to discover the objective, inhuman truth?

Maybe not. But I still know which trait seems most human to me.

A crowd of children on their way to school, caught in the rain on the street below, start squealing.

I choose sleep.

* * * *

I arm myself with a dozen excuses before setting out to challenge ASR's security by leaving the thirtieth floor. There's no need for explanations, though; the two guards at the security station avert their eyes as I pass, a perfectly choreographed moment that leaves me wanting to laugh with delight—or sink gibbering to the floor at this final proof of my complete derangement. Instead, I close my eyes

for a moment and tell myself, unconvincingly, that it's no stranger than one hundred consecutive snake's eyes.

I decide to take the stairs rather than the elevator; both are monitored, but it strikes me that the elevator might 'link' me with anyone whose passage through the building is affected in some way by my use of it.

I decide to take the stairs? Maybe I have no choice in the matter; maybe every last detail of my thoughts and actions has been, or will be, selected by my smeared self. But the illusion of free will remains as compelling as ever, and I can't (literally *can't*?) help thinking that the choice was mine.

I descend to the sixth floor, which is meant to be completely sealed off at this hour—but the door from the stairway behaves precisely as if it were unlocked. The security station is unmanned, and heavy steel shutters block the way; they begin to glide apart before I even glance at the control box—which ought to require two magnetic keys, and central authorization.

I step through, giddy for a moment with a mixture of megalomania and paranoia; I really don't know whether to feel empowered, or manipulated. I'm not *doing* any of this...and yet, there's no doubt that it *is* exactly what I want. From the very first dice trick, my smeared self has done my bidding. Clearly, all my fears of mutiny were unfounded; those early mod failures, those visions of **Karen**, must have been nothing but an aberration. And that's hardly surprising: I had no—conscious—idea what I was doing, so no wonder I had no control.

Every lab, every storeroom, is open to me. I wander from room to room at random, heedless of locks and cameras—at first, fighting a growing sense of unreality, but then willingly succumbing to it. I don't believe for a moment that I'm literally dreaming, but it's easier to let this dreamlike mood overtake me than to keep up the battle between ingrained common sense and the elaborate, intellectual reasons why all of these bizarre miracles are permitted in the waking world. Lui was right: the challenge—for me—isn't operating the mod, but finding ways to stay sane while it happens.

And it is a lot like dreaming. Doors open because they *should* open; I remain undetected because the logic of the dream demands it. And like any dream protagonist, I can't expect free will, I don't presume to be in control. In Room 619 I hesitate, and idly wish for the chair beside the main console to levitate, or slide across the floor towards me—but I'm not at all surprised when it does neither. Not because I doubt that it's possible; just because it wouldn't be right.

I know, in the manner of dreams, when it's time to leave the sixth floor and trudge back up the twenty-four flights of stairs. The exertion this requires is scrupulously realistic, and my numbness gradually clears—enough to let me grow anxious again. *All those doors, all those locks, all that surveillance hardware . . .* multiplying out the probabilities makes the whole exercise seem dangerously fragile and precarious.

I baulk at the exit to the thirtieth floor, afraid that these doubts might rebound on *me—that I might be punished for my lack of faith*. I wait for my breathing to grow quieter, knowing how absurd

that is, but pandering to my obsolete instincts for the sake of peace of mind.

Finally, I steel myself and open the door—one more casual miracle to prove that all is well, or one more improbability piled upon a tottering edifice—and step through.

The guards contrive not to see me, as efficiently as before (and I think *I* have problems with free will). I walk through the checkpoint with my eyes straight ahead, and turn the corner without looking back. The moment I'm out of their (potential) sight, I very nearly collapse—desperate to set the night's events in concrete, to make my impossible luck indisputably, irreversibly real—but as the **Hypernova** menu pops into my mind's eye, I recall that I'm still in the field of view of at least two cameras.

As a gesture to normality, I open the door to the anteroom in the ordinary way: with a coded **RedNet** pulse, a thumbprint and a magnetic key. Then I wonder—too late—if this authorized event is more likely to be logged in the building's security computer than all the illicit entries that I *know* went unnoticed. I slam the door behind me, muttering, 'I'm getting sloppy. I've got to take more care.'

Po-kwai laughs. 'I wouldn't say that. But I was surprised when I found you weren't here.' She frowns. 'What's wrong?'

I shake my head. 'Nothing. I thought I heard an intruder. It was a false alarm, though; there's nothing to worry about.'

'An intruder? Where?'

'Out in the corridor.'

'But aren't there cameras? How could anyone... ?'

I shrug. 'Hardware can be undermined. In theory. But forget it, there was nobody there.'

'You look like you raced this "nobody" to the roof and back.'

I realize I'm visibly sweating, and it's not from climbing the stairs. I wipe my forehead apologetically. 'I did check the staircase, a few levels up and down. I must be getting out of condition.'

'I'm surprised your mods actually allow you to perspire.'

I laugh weakly. 'It'd be very dangerous not to. Appetite suppression is one thing, but screwing up thermoregulation would be... suicidal.'

She nods, and says nothing. She seems more baffled than suspicious; if she doubts my story, I expect she thinks that I've played down the incident, not invented it. I try to think of a way to keep her from innocently asking Lee Hing-cheung about *last night's excitement*, but nothing comes to mind.

Don't tell anyone about this, because ... what? Because I don't want to seem like an idiot, chasing phantoms? She knows that the guards at the checkpoint 'must' have seen me.

More importantly: how long has she been awake? Since before I walked through the checkpoint, surely; it can't have taken me more than twenty seconds to get from the stairway to this room. *So how did I get past the guards? Has she collapsed herself, collapsed me, broken my link to Ensemble—or are we both still smeared?* And if we are... what happens if I shut off the collapse-inhibiting mod now? Is the past I remember already irrevocable? Or if I collapse now, do I risk some other sequence of events—chosen at random, or chosen by Po-kwai's smeared self-taking its place?

I have to stay smeared until she's asleep again—or *predominantly asleep*. I have to be certain that the choice of eigenstate is mine.

I move into the anteroom. All I have to do is stay calm, make small talk, wait for her to grow tired. 'What woke you?'

She shrugs. 'I don't know.' Then she changes her mind and says sheepishly, 'Another stupid dream.'

'What about? If you don't mind me —'

'Nothing very exciting. Wandering around on the sixth floor. Sneaking from lab to lab, like some kind of burglar—but I didn't steal anything. I just wanted to prove that I could go wherever I pleased.' She laughs. 'No doubt acting out my resentment over the way I've been shut out of the scientific side of the work here. I'm afraid my dreams are usually like that—pretty transparent.'

'So what happened to wake you?'

She frowns. 'I'm not sure. I was coming up the stairs, and... I don't know, I was afraid of something. Afraid of being caught out. I was headed back here, and for some reason I was terrified that someone would see me.' She pauses, then adds, deadpan, 'Maybe that's what you heard in the corridor. Me on my way back.'

I know she's joking, but my skin crawls. *Who's choosing this conversation? My smeared self? Her smeared self? The joint wave function of the two of us?*

'Yeah? So you've been quantum-tunnelling through walls again? And floors. Why bother taking the stairs? Why not just move from A to B?'

'Well, in dreams, who knows? I expect my subconscious lacks the imagination to face the whole truth about quantum physics. And the courage.'

'Courage?'

She shrugs. 'Maybe that's not the right word. Courage? Honesty? I don't know what's needed.'

But lately, I've been thinking a lot about the... part of me... that's lost when I collapse. And it's stupid, I know—but when I try to accept the fact that there are... women almost exactly like me, who exist for a second or two, experience something that I don't, and then vanish...' She shakes her head dismissively, almost angrily. 'Pretty precious, isn't it? Worrying about the death of my virtual alternatives. How many lives do I want?'

'You tell me.'

'Just one, personally—but I expect those other selves wouldn't mind one each, as well.' She shakes her head again, decisively. 'But it's crazy thinking that way. It's like... shedding tears over dead skin. It's what we are, it's the way we function. Humans make choices; we "murder" the people we might have been. If the work I'm doing makes that uncomfortably explicit, it still doesn't change anything; we can't live any other way. And now that The Bubble protects the rest of the universe, we just have to come to terms with ourselves.'

I recall my own previous scepticism, and say belatedly, 'Assuming that all of this is true. There may be nothing to come to terms *with*.'

She rolls her eyes. 'Listen, don't worry: ASR aren't about to announce to the world at large that The Bubble's purpose is to defend the universe against *human depletion of alternatives*. People went crazy enough about The Bubble itself, *sans* explanations. The truth is so loaded that I'm not even sure which would be more dangerous: people misunderstanding it, or people getting it right. *Human perceptions have decimated the universe. Life consists of constantly slaughtering versions of ourselves*. Imagine what kind of sects would form around ideas like *that*.'

'And imagine what kind of reaction you'd get from the existing sects. The ones who think they've had all the answers for the last thirty-four years.' Yeah. The ones I'm supposed to be guarding you against.

Po-kwai nods, then stretches and stifles a yawn. I resist the temptation to suggest that she must be tired. She says, 'I don't know how you put up with me. If I'm not boring you with my dreams, or bitching about the way ASR is treating me, I'm spouting all this angst about obliterating alien civilizations and murdering our own alternatives.'

'Don't apologize for that. I'm interested.'

'Are you?' She gives me a searching look, then shakes her head in mock frustration. 'I can't read you, you know. If you were humouring me, I wouldn't know the difference. I'll just have to take your word for it.' She glances at her wristwatch—an ostentatious (and now dishonest) emblem of a mod-free brain. 'It's after three. I suppose I'd better —' She moves towards the doorway, then hesitates. 'I know you *physically can't* get sick of this job—but what does your family think about you working all night, every night?'

'I don't have a family.'

‘Really? No kids? I imagined you with —’

‘No wife, no kids.’

‘Who, then?’

‘What do you mean?’

‘Girlfriends? Boyfriends?’

‘Nobody. Not since my wife died.’

She cringes. ‘Oh, Nick. I’m sorry. *Shit*. My usual brilliant tact. When did it happen? Not... since you’ve been working here? Nobody told me —’

‘No, no. It was almost seven years ago.’

‘And—what? You’re still in mourning?’

I shake my head. ‘I’ve never been *in mourning*.’

‘I don’t understand.’

‘I have a mod that... defines my responses. I don’t grieve for her. I don’t miss her. All I can do is remember her. And I don’t need anyone else. I *can’t* need anyone else.’

She hesitates, curiosity no doubt battling some outmoded sense of propriety, before it strikes home that *I have no grief to respect*. ‘But... how did you feel at the time? Before you had this mod installed?’

‘I was a cop, then. I was on duty when she died—or near enough. So...’ I shrug. ‘I didn’t feel a thing.’

For an instant, I’m starkly aware that this confession is as improbable as anything I’ve done all night—that the smeared Nick-and-Po-kwai is plucking it from the thinnest realms of possibility with as much fastidiousness as each feat of lock-picking and sentry-dodging. But then the moment passes, and the illusion of will, the smooth flow of rationalization, returns.

‘I wasn’t hurt by her death—but I knew that I would be. I knew that as soon as I deprived—shut down my behavioural mod—I’d suffer. Badly. So I did the obvious, sensible thing: I took steps to protect myself. Or rather, my primed self took steps to protect my unprimed self. The zombie boy scout came to the rescue.’

She’s doing a pretty good job of hiding her reaction, but it’s not hard to imagine: equal parts pity and revulsion. ‘And your superiors just let you go ahead?’

‘Oh, shit, no. I had to resign. The department wanted to throw me to the jackals: grief therapists, loss counsellors, trauma-adjustment specialists.’ I laugh. ‘These things aren’t left to chance, you know; there’s a departmental protocol several megabytes long, and an army of people to implement it. And to be fair to them, they weren’t inflexible—they offered me all kinds of choices. But staying primed until I could physically circumvent the whole problem wasn’t one of them. Not because it would have made me a bad cop. But it would have been awfully bad PR: join the police force, lose your spouse—and rewire your brain so you don’t give a fuck.

‘I could have sued to keep my job, I suppose; legally, I had a right to use any mod I liked, so long as it didn’t affect my work. But there didn’t seem much point in making a fuss. I was happy enough the way things turned out.’

‘Happy?’

‘Yes. The mod made me happy. Not buzzed, not wired—not euphoric. Just... as happy as Karen had made me, when she was alive.’

‘You don’t mean that.’

‘Of course I do. It’s true. It’s not a matter of opinion; that’s precisely what it *did*. It’s a matter of neural anatomy.’

‘So she was dead, and you felt just fine?’

‘I know that sounds callous. And of course I wish she’d survived. But she didn’t survive, and there was nothing I could do about that. So I made her death... irrelevant.’

She hesitates, then says, ‘And you never think that, maybe...?’

‘What? That it’s all some kind of awful travesty? That I’d rather not be this way? That I should have gone through the *natural* process of grief, and emerged with all my *natural* emotional needs intact?’ I shake my head. ‘No. The mod is a complete package, a self-contained set of beliefs on every aspect of the matter—including its own appropriateness. The zombie boy scout was no fool; you don’t leave any loose ends, or the whole thing unravels. I *can’t* believe it’s a travesty. I *can’t* regret it. It’s exactly what I want, and it always will be.’

‘But don’t you ever wonder what you’d think, what you’d feel... without the mod?’

‘Why should I? Why should I care? How much time do *you* spend wondering what you’d be like with a totally different brain? *This* is who I am.’

‘In an artificial state —’

I sigh. ‘*So what?* Everyone’s in an artificial state. Everyone’s brain is self-modified.

Everyone tries to shape who they are. Are neural mods so terrible, simply because they do it so well—because they actually let people get what they want? Do you honestly think that the brain-wiring that comes from natural selection, and an accidental life, and people’s own—largely ineffectual—striving to change themselves “naturally”, is some kind of touchstone of perfection? Okay: we spent thousands of years inventing ludicrous religious and pseudo-scientific reasons as to why all the things we couldn’t control just happened to be the best of all possible alternatives. God must have done a perfect job—and if not God, then evolution; either way, tampering would be sacrilege. And it’s going to take a long time for the whole culture to grow out of that bullshit. But face the truth: it’s a heap of outdated excuses for not wanting the things we couldn’t have.

‘You think it’s tragic that I’m happy with the way I am? Well, at least I know *why* I’m happy. And at least I don’t have to kid myself that the end product of a few trillion random events constitutes the indisputable, unimprovable pinnacle of creation.’

I wait an hour after she’s gone, and then collapse. The process (of course) is uneventful; the past (inevitably) is ‘still’ as I remember it. I’m fully aware that this proves nothing, that it couldn’t seem to happen any other way—but the irrational lesson of the padlock is reinforced nonetheless: fearing that I won’t be the one to survive, and then finding that I *have* survived (as if that were some kind of miracle, and not a tautology), drives home the conviction that there’s always only one ‘true’ version of me. It may be a delusion—but it’s the kind of delusion that I badly need.

I think back over my forced confession with a faint sense of humiliation, but it doesn’t last long. So, Po-kwai knows about **Karen**. She disapproves. She pities me. I’ll live.

One thing worries me, though.

What if the smeared Po-kwai takes control again? Out of nothing but curiosity, she changed me enough to make me disclose a secret that I—once—would never have shared with her in a million years.

Armed with knowledge, disapproval and pity, what would she change next?

* * * *

Lui agrees that we have to accelerate our schedule, to forestall Po-kwai's growing influence. My relief is mixed with apprehension; the prospect of rushing ahead to the break-in, without the gradual progression of rehearsals I'd been expecting, leaves me feeling desperately ill-prepared. In theory, the burglary may be little more than a long sequence of the kind of tasks I've already performed—but I still can't fight down an image of each successive feat as one more storey piled on top of an impossibly precarious house of cards. The last time I broke into BDI, at least I understood the nature of the risks I faced—even if my knowledge of the details turned out to be incomplete. This time, I'll be relying entirely on my smeared self agreeing to collapse—a process akin to suicide, for him—in a suitably advantageous manner. *And why should he?* Because 'most' of his component selves (in a vote weighted by probability) want him to? It may look like it's worked that way, so far—but what do I really know about his motives? Nothing. I become him; he in turn becomes me; but his nature remains opaque to me. I want to believe that he's aware of my aspirations, moved by my concerns—but that may be nothing but wishful thinking. For all I know, he could have more in common with the Bubble Makers than with any human being on the planet, myself included.

I am, of course, free to change my mind. The Canon will do nothing to compel me. But I can't give up, I can't back out. I know I'm serving the true Ensemble in the only way I can—and although it may be absurd to hope that this 'blessing' guarantees my success, I have to believe that it makes the risk worth taking.

* * * *

In Kowloon Park, just thirty-six hours before the break-in is due, Lui hands me a device the size and shape of a matchbox; sealed, black and featureless, except for a single unlit LED.

'One last party trick,' he says. 'See if you can make the light come on.'

'What is it?' I hide my irritation; my immediate response is that anything not directly concerned with tomorrow night is a waste of time—but I have to admit that everything he's suggested in the past has turned out to be helpful.

He shakes his head. 'I don't want to say. For every task you've attempted so far, you've known exactly what you were up against. Succeed with this, and you'll have proved to yourself that even that knowledge isn't necessary. And you'll have proved that whatever BDI has in store—however difficult, however unexpected—you'll be able to defeat it.'

I think this over, but in all honesty, it doesn't ring true. 'I don't need to prove that; I'm already convinced. I never had circuit diagrams for the dice generator, the locks, the cameras. Believe me, I rid myself of the telekinesis myth long ago. I *know* I've been choosing outcomes, not manipulating

processes. It's all been "black boxes" to me; I don't need a literal one to drive home the point.'

I try to hand the thing back, but he won't accept it. 'This is special, Nick. Longer odds than anything you've done so far. Roughly comparable to the entire BDI break-in. If you succeed, it'll mean you can be certain that such weak eigenstates *are* accessible.'

I flip the box over on my outstretched palm. He's lying, but I can't think why. I say flatly, 'Make up your mind. Which is it: the challenge of the unknown, or a test of sheer improbability?'

'Both.' He shrugs, then says—too affably by far—'But if you really want to know how it works —' I give him a look of pure disbelief, and he goes silent.

Even with P5's help, it's hard to judge the weight of something so small—but there's certainly more in the box than, say, just a standard, pinhead-sized microchip and a battery—Lui tries to look nonchalant as I toss the thing into the air. The way it spins suggests a roughly uniform distribution of density: no lumps, no empty spaces. What kind of electronics fills an entire matchbox?

I say, 'What is it? Graphite you want turned into diamond? It's too light for lead into gold.' I frown. 'Maybe I'll just have to cut it open and see.'

Lui says quietly, 'There's no need for that. It's an optical supercomputer—taking random stabs at factoring a mega-digit number. To do the job systematically would take about ten-to-the-thirtieth years. The chance of the machine succeeding in a few hours, by pure good luck, is proportionately infinitesimal. However, in your hands...'

For a moment, I'm actually scandalized: earnest, tormented Lui Kiu-chung is pimping my talent (borrowed from Po-kwai, stolen from Laura) for filthy commercial gain... but my shock soon gives way to grudging admiration. Let a computer smear—with the right kind of quantum randomness—and you create, in effect, a 'parallel' machine with an astronomical number of processors. Each one executes the same program, but applies it to different data. All you have to do is be sure that when you collapse the system, you choose the version that happened to find the needle in the mathematical haystack. And the world's first service to factor the huge numbers at the heart of (hitherto) *de facto* unbreakable codes is sure to rake in a fortune—at least, until word spreads too widely that such a service exists, and people stop trusting the codes.

I say, 'How do you know I won't just make the thing malfunction? If I can do it to locks, I can do it to computers. What if I choose some hardware failure so the light comes on for a wrong answer?'

He shrugs. 'That can't be made literally impossible—but I've taken steps to minimize the relative probabilities. In any case, it's easy enough to check the answer—and if it's wrong, we can just try again.'

I laugh. 'So, how much are you charging for this? Who's the client? Government or corporate?'

He shakes his head primly. ‘I have no idea. There’s a third party, a broker—and they’re discreet about *their own* identity, let alone —’

‘Yeah, sure. But... how much are you getting?’

‘A million.’

‘That’s all?’

‘There’s considerable scepticism. Understandably. Later, once the method is proven, we can raise the price.’

I grin at him, and toss the box high in the air. ‘And what’s my cut? Ninety per cent sounds fair.’

He’s not amused. ‘The Canon has considerable expenses: the mod that lets you smear still hasn’t been fully paid for.’

‘Yeah? And once you have the eigenstate mod, you won’t need my help at all, will you? So I’d better make good use of my bargaining position, while it lasts.’ I was joking when I started the sentence, serious by the time I finished it. I say, ‘Is this what the true Ensemble *is*, for you? Selling *code-breaking services* to whoever’s willing to pay?’

He doesn’t reply—but he doesn’t deny it. He just gives me that old look of deep spiritual agony.

I ought to be angry—angry that he planned to screw me, angrier still at this *blasphemy*—but the truth is, after all the pathological brain-fucked fanaticism that the loyalty mod has engendered in most of the Canon—myself included—there’s something almost... *refreshing* about his simple opportunism. I ought to be outraged—but I’m not. If anything, I feel a pang of envy: it seems he’s manipulated his chains into a form that makes them almost irrelevant. Unless he was some kind of saint beforehand—someone who never would have dreamt of profiting from the Ensemble’s work—his original personality may now be virtually restored.

The corollary of all of this envy and admiration is obvious—but false. Knowing what the loyalty mod is, I can’t help being heartened to see that Lui is free of it—but that doesn’t mean I want the same freedom for myself.

He says, ‘I’ll give you thirty per cent.’

‘Sixty.’

‘Fifty.’

‘Done.’ I don’t give a shit about the money; it’s a matter of pride. I want to make it clear to

him that I, too, am almost human. ‘Who else in the Canon knows about this?’

‘Nobody. Yet. I’d like to present it to them as a *fait accompli*; I’m sure they’d all acknowledge that we need to raise funds, but I’d rather not give them the chance to argue about the details.’

‘Very wise.’

He nods wearily. He has the same intensity, the same air of guilt and confusion about him as always, but the whole meaning of it has changed; half of it, no doubt, is pure affectation—and the rest, genuine exhaustion from maintaining so many layers of deception. I don’t feel *deceived*, though, I don’t feel cheated; the fact that I misread him so badly, for so long, only serves to make his unexpected sanity all the more welcome.

* * * *

I smear for ten minutes before taking the device from my pocket—my standard precaution against the disconcerting effects of losing the delusion of free will. The LED is still unlit. I stare at it for a while, but nothing happens. I’m puzzled by one thing: the probability of a malfunction causing the light to come on by now can’t be literally zero—so why hasn’t my smeared self seized upon a state in which that happens? Perhaps he’s cautious enough to wait for the states containing a working computer and a right answer to begin to emerge—and, hopefully, drown out the false signal.

I grow bored, then nervous, then bored again; I wish I could use **P3**. I ought to be able to mimic its effects—by choosing a state in which I ‘happen to’ feel exactly as if I were primed—but my smeared self never seems to bother. I can’t stop half-expecting to be interrupted by a shout from Po-kwai—but, thinking back on the times when I’ve woken her, there’s always been a trigger: a strong emotion, a shock. Staring at a black box, waiting for a light to come on, just doesn’t rate. *And tomorrow?* If I can manage to stay calm, perhaps I’ll be safe... whatever ‘manage to stay calm’ means, when the mere fact that I *might* wake Po-kwai, increasing her influence on everything that happens, must be taken into account to determine whether or not I actually *do*. Trying to trace out a linear chain of cause and effect is futile; the most I can hope for is successful rationalization along the way, and a kind of static consistency in the pattern of events, looking back on them afterwards.

It’s four seventeen when the LED finally glows, a steady, piercing blue. I hesitate before collapsing. The longest odds ever—*so, how many versions of me die, this time?* But those qualms have been all but ‘bred out’ of me. I still don’t know what to believe, but each time I come through the supposed holocaust unscathed, it grows ever harder to care. I tick the OFF switch –

- and... *someone* survives. My memories are consistent, my past is unique; what more can I ask for? And if, a second ago, ten-to-the-thirty-something living, breathing human beings really were sitting here, wondering when the LED would finally come on for them... well, the end was quick and painless.

In any case, Po-kwai is right; this is what it means to be human: slaughtering the people we

might have been. Metaphor or reality, abstract quantum formalism or flesh-and-blood truth, there's nothing I can do to change it.

* * * *

I cut through Zeno's Lethargy and choose sleep, with surprising ease. In the early afternoon, I deliver the computer to—of all places—the junk-nanotech stall where I picked up **Hypernova**. (More of Lui's bizarre notions of security; I swear to myself that, after tonight, I'm going to start sorting out that mess.) The LED is still glowing when I hand the thing over—an encouraging sign. Apparently, the program loops endlessly once it finds the factors, repeatedly confirming the result...so either I've caused some permanent corruption which is making the machine consistently lie, or the whole audacious scheme has worked—and an independent check on a second computer will soon settle the issue. Just what our sceptical clients will make of this impossible feat, I don't know; in their place, I'd suspect I was being set up for a torrent of disinformation. Maybe they'll decode great slabs of genuine data, and assume that it's all designed to mislead them. I glance up at a patch of cloudless blue sky, and laugh.

Po-Kwai is on a rest day, but that's no problem; I've used **Ensemble** successfully under these conditions three times before. The smeared Nick-and-(dreaming)-Po-Kwai clearly has it down to a fine art now, the requisite skills preserved between incarnations in some corner of my skull, or hers, or both.

I sit in the anteroom, primed, but nonetheless infected with a sense of anticipation—enough, at least, to keep me from sinking into a pure stake-out trance. I wonder idly, not for the first time, if in fact I could have 'stolen' **Ensemble** straight from Po-kwai's skull, by sheer brute choice of eigenstate: selecting the 'spontaneous' rearrangement of my own neurons into a perfect copy of the mod. But I don't see how my smeared self could have discriminated between a successful result and all the alternative, useless, neural rewirings possible; any test of efficacy would have required me to collapse first.

At dinner, Po-kwai seems morose. I ask her what's wrong.

She shrugs. 'Nothing new. I'm just sick of being bullied, and patronized, and gagged. That's all.'

'What's Leung done now?'

'Oh, nobody's *done* anything. Nothing's changed. It just... all seems even more stupid and oppressive than usual, today. I read an article in *Physical Review* this morning: a whole new treatment of the measurement problem. They add a few more dimensions to space-time; throw in a few nonlinearities, asymmetries and assorted fudge factors; and—miracle of miracles!—the collapse of the wave falls out the other end.'

I know I should have dutifully silenced her half-way through the word 'measurement'—if only for the sake of appearances—but the hypocrisy would have been too much.

She says, ‘People are wasting valuable time, heading down paths that I *know* are blind alleys. That makes me a liar by default. I don’t expect Leung to divulge any commercial secrets—like neural maps, or details of the mod—but I don’t see why we can’t at least publish the results of the experiments.’ She makes a sound of pure frustration. ‘I signed the secrecy provisions freely; I have no one to blame but myself. Of course, they wouldn’t have hired me if I hadn’t signed, so in a sense I had no choice—but that doesn’t make me feel any better about it.’

I say blandly, ‘I’m sure ASR will release everything, in good time. How long has it been since your first result? Three months? Newton didn’t publish his work for years.’

‘*Newton’s* work,’ she says bitterly, ‘wasn’t this important.’

* * * *

I deprime, smear, wait—the familiar routine. I spend some time trying to calm myself—until I realize that what I’m feeling is more excitement than fear. It’s an unfamiliar emotion; it’s a long time since I confronted anything challenging—let alone dangerous—without using **P3** to neutralize the experience. I feel a surge of pure resentment: the zombie boy scout has cheated me out of half my life; stolen it, and then gone through the motions like a sleepwalker, not even truly *living it* for me... but I quash this maudlin bullshit. The zombie boy scout has saved my life a thousand times—and it was my choice to live that way. I never *wanted* excitement, I never wanted to be a mindless adrenalin junkie. I’ve been ‘cheated out of’ nothing but an early death.

And what ‘danger’ am I confronting now? I know I can bypass any amount of security hardware. I’ve proved that I can choose eigenstates as improbable as everything that lies ahead. *What is there left to fear?*

Only change.

I stare ‘out’ the fake window at a cluster of dark towers shrouded in sparks of golden light, and think: the city I have to cross tonight is no place I’ve ever known. In the real New Hong Kong, locked doors do not fall open, guards do not avert their gaze. I’ll be walking out into a dream city, where anything at all can happen.

I laugh softly. Anything at all, yes—but out of that infinite diversity, I’ll choose nothing but the smoothest, simplest burglary in history. Nothing but success, without complications or harm. *Or change.*

* * * *

Walking unseen through the thirtieth-floor checkpoint is an easy start; if everything collapses now, all I’ve done is left my post for thirty seconds, to ask a colleague to take my place while I deal with an urgent bowel movement that my mods seem unable to delay. Not correct procedure, but nobody’s going to shoot me for that.

I glance at the guards, a young man and a middle-aged woman; they coyly look away. I wonder: Do they *feel* manipulated? Or are they rationalizing their actions (convenient beyond belief, for me—but not intrinsically all that bizarre) as easily as ever? If my smeared self chooses a state in which they're visibly inattentive, but leaves the hidden details of their mental processes to chance, then I expect the odds are that the state also includes an elegant justification. If the brain can pull off that trick, so consistently, for eigenstates chosen purely at random, then surely the bias that I'm introducing—skewing their actions, but blind to their thoughts—shouldn't spoil the effect.

Between the twelfth and eleventh floors, I hear a door below me fly open. I freeze, think of backtracking—but before I can move, a technician bounds up the stairs right past me, whistling tunelessly.

I slump against the wall. A few seconds later, the door of the thirteenth floor slams shut. *Did he see me?* He was in a hurry; he would have ignored me, regardless—so could my smeared self tell the states apart? (Why didn't he keep the man out of the fucking stairwell altogether, until I'd passed?)

Have I been collapsed, or not?

I take out the dice generator, flick it on.

Snake's eyes. And again. And again. And again.

I'm greatly relieved... but there's something perverse, something almost insane about this test. If I were collapsed then, yes, the odds against this pattern would be overwhelming... but if I'm smeared, *all* patterns occur—so I'm decreasing the intrinsic probability of the eigenstate that constitutes success, putting more demands on my smeared self, and creating ever more versions of myself who *know* that they won't be chosen.

And proving that *I* will survive the final collapse? Or at least, someone who arises from me: a 'descendant', a 'son'? No, I'm not even doing that. *Every* version who used the dice has smeared into versions who witnessed every possible outcome; if a billion versions consulted the dice, then a billion of the subsequent 'offspring' will have seen four snake's eyes.

I have no choice but to take it on faith that I'm the one who'll end up *real*.

I continue.

I'm linked to the technician now—and keeping him from collapsing Nick-and-Po-kwai-and-(at-least)-two-guards. *What about the other people on his shift?* My mind balks, but I keep moving. Even if he 'hadn't' come into the stairwell—whatever that means when we're not yet collapsed—would the mere fact that he *might have* done so been enough to correlate our wave functions? I'm linked to Po-kwai, aren't I—without *this version of me* having observed her since I smeared.

I leave the stairwell on the ground floor and cross the foyer, staring at the guards staring into

thin air. I ‘do all I can’ to notice whether or not I’ve been seen, ‘making it easier’ for my smeared self to choose the correct state.

The front doors slide open, and I step out onto the forecourt—set back from the street, and largely concealed by a cluster of food stalls, all closed at this hour. I can hear people shouting and laughing nearby, and the whir of bicycles in the distance, but mercifully, there’s nobody in sight as I move around the building to the laneway where the robot delivery van is parked. I glance back once, half expecting to find myself being pursued by a guard who snapped out of his trance a moment too soon. That must be happening to someone. *But not to me.*

There’s plenty of slack in the timetable; it’s only 01:07, and the van’s not due to depart until 01:20. I climb into the back, and sit in the dark. My presence or absence will have no effect on the vehicle’s actions; its route and schedule have been pre-programmed, so nobody observing its passage will be observing *me*—measuring me ‘in’ or ‘out’. However, they will be collapsing the van itself—keeping it on a single, plausible, ‘classical’ trajectory from here to BDI—and it’s comforting to have that restraint imposed. I’m not sure what difference it makes in the end...but it’s good to know that the vehicle won’t be free to take every possible path across the city. Somehow, the thought of versions of me arriving at *the wrong destination entirely* seems worse than any other kind of fate.

When the van starts to move, the effects are barely perceptible; the motor is silent, the acceleration gentle. Sitting on the cool metal, smelling the faint odour of plastic from some recent cargo, everything is disconcertingly mundane.

I find myself at a loss to know how to pass the time. I don’t want to dwell on the dangers ahead; there’s nothing to be gained by contemplating the ‘improbability’ of success. I can’t go into stake-out mode, but I distract myself by concentrating on trying to judge the van’s progress—without aid from **P5**, without even consulting the route marked out on **Déjà Vu**’s street map. The ride is smooth, but taking a corner is unmistakable, and I plot each turn-off on a vaguely imagined map, summoned from memory alone. I notice occasional, faint decelerations as the van avoids other traffic—deviations from the predetermined schedule, yes, but still entirely independent of me. I was wrong: outside the van there’s no dream city, just the same New Hong Kong as always.

And inside?

I can’t help myself; I take out the dice generator and run it again. The machine is too smart for its own good; the holograms it creates are always scrupulously consistent with ambient light, and so, in the darkness, the dice are rendered realistically invisible. Another chance to decide not to throw the dice... *and risk not being chosen?* I use a flashlight to watch the snake’s eyes fall—and whatever the logic, the sight is powerfully reassuring. I shut the thing down after witnessing six tosses—having reduced my eigenstate’s probability by a factor of about two billion.

The van takes frequent, gentle turns as it moves through the clusters of branching streets towards BDI. I lose track of where I am; the pathological layout here is too complex to recall in detail, unaided. When the van finally halts, I wait thirty seconds, to convince myself that it hasn’t merely paused for some unforeseen obstruction. I climb out, and find myself standing almost on the

spot where I released *Culex*, back in January. Memories of the night flood back, with perfect clarity—but the process feels more like voyeurism than nostalgia; I have no right to stare so brazenly into the life of that dead stranger.

It's three minutes past two. I have fifty-seven minutes. I glance up at the grey sky, at The Bubble weighing down on me, oppressive as a blanket of thunderclouds. From nowhere comes an irritable thought: I should have waited for Lui to pay me. Five hundred thousand dollars. And *then* decided if my commitment to the true Ensemble really demanded this piece of lunacy.

I could crawl back into the van.

I don't, though—and any versions of me who did are as good as dead, and they surely know it. How do they feel about that? How do they rationalize *that*?

I head for the fence.

I climb over as I did before; the prospect of unnecessary miracles on open ground makes me uneasy—and my smeared self, as always, complies with my expectations. Or vice versa.

I have no idea who's on duty tonight, but I picture Huang Qing and Lee Soh-lung. Preferably playing cards, not bothering to glance at the monitors. I still don't know at what point I sabotage this kind of observation: in the camera's sensor chip, the cable, the display—or the retina, or brain, of the watcher. Whatever gets me by unnoticed; all I can choose is the outcome, and who knows what mechanism is most likely?

I enter by the same window, but this time there's no need to cut; it slides open at my touch. I climb through, and make my way slowly across the lab, hands outstretched, wishing I still had the wireframe map that guided me the last time. I bump into a stool, then a bench, but I don't send any glassware crashing. *Those of me who did might as well slit their wrists on the fragments.* I move down the hallway, and into the stairwell. The vault, according to Li Siu-wai, is on the fourth floor, in the back of Chen Ya-ping's office; in fact, even after all this time, I think I can recall a blue no data region in the *Culex* map in just that spot.

Half-way up the stairs, doubt hits me like a blow to the chest. *Po-kwai is twenty kilometres away. Fast asleep. We're not 'linked', we're not 'smeared', she's not helping me 'choose reality'. How could I have ever swallowed all that quantum-mystical voodoo? It's bullshit. Lui set me up; it's as simple as that. The Canon is a trick, to test my loyalty. He sabotaged my mods. Planted a rigged dice generator in a stall near my home. Conspired with Po-kwai, and the guards here, and at ASR.*

And the padlock? How could he have known that I'd try something as ridiculous as 9999999999, first time?

But if he's screwed around with my mods, there's no telling what else he's done inside my skull. For all I know, **Hypernova** might grant him absolute control over everything I do, everything I

think. He could have *made me* guess the right combination.

I lean against the wall, trying to decide which is the most insane: believing in this pointless, farcical, massively implausible conspiracy... or seriously thinking that I can open locks by splitting into ten billion people.

I stare down into the darkness of the stairwell. And the true Ensemble? The mystery I'm living for? Is that nothing but another lie? I *know* it's nothing but the loyalty mod, the way my brain's been wired, but -

I search my pockets for something coin-like, something Lui can't possibly have interfered with. The best I can do is the flashlight's spare button-shaped power cell; there's a plus sign engraved on one side and a minus sign on the other. I crouch on the landing, the flashlight beam making a wedge of brightness on the concrete.

'Five plus signs,' I whisper. 'That's all.' The odds are one in thirty-two; not much of a miracle to ask for.

Plus.

Plus.

I laugh. *What did I expect?* The true Ensemble would never abandon me.

Minus.

A strange numbness spreads through me, but I toss the cell again, quickly—as if what follows might somehow undo the past, if only I act swiftly enough.

Plus.

Minus.

I stare at the final verdict—and realize that it proves nothing. Everything I've been living for might still be either true or false.

Either way, though, there's no point going on.

* * * *

I bound up the last two flights of stairs, jubilant, invulnerable. If those five simple plus signs haven't purged me of every last trace of doubt and paranoia, then nothing will.

Once I'm in Chen's office, I switch on the flashlight—unsure why I didn't 'risk' using it when crossing the lab on the ground floor, but confident now that there is no danger. I could turn on every

light in the building and scream at the top of my voice, and nobody would know I was here.

What looks like a normal connecting door leads to a small room fronting the vault itself: an unimposing construction of dull grey polymer composite—harder to cut, abrade, melt or burn than a metre or two of solid steel, but about a thousand times lighter. The control panel has a thumb-scanning window, a numeric keypad, and three slots for keys. I hesitate, half expecting to have to wait a while for the lock to smear sufficiently, but a green light on the panel shines almost at once. Of course—the thing has been smeared since long before I walked in; every unobserved inanimate object does so. All I've done is observed it without collapsing it—and hence smeared myself still further into different versions, a whole new lineage for each eigenstate of the lock, giving me the power to choose its state when I choose my own.

I grasp the handle and tug it, far harder than I need to; with a soft click the door flies open, almost hitting me in the face. I step round it, and walk into the vault.

Six by six metres, and most of it empty space. I play the flashlight beam across the far wall; there's a rack of shelves going up to the ceiling. Eight shelves, each bearing twenty neat plastic ROM boxes—the kind that hold two hundred chips.

I move in closer. Most of the boxes are labelled with ranges of serial numbers: 019200-019399, and so on. The boxes on the lowest two shelves, and the rightmost two on the third shelf, are unlabelled and empty, but the rest seem to be full. That makes a total of twenty-three thousand, six hundred chips.

I take the dice generator from my pocket—why shouldn't I make this easy on myself?—but then change my mind and put it away. *Will one of my sons survive—or one of their cousins, who used the dice? Both are capable of success.* I reach out quickly and grab a box. It has a simple, purely mechanical lock. Perhaps I could make even *this* slide open by pure choice—my first ever feat of truly macroscopic quantum tunnelling—but I don't. I open it with a skeleton key, which takes almost a minute. I resist the temptation to close my eyes before lifting a chip from its cavity on the moulded tray—and resist the temptation to put it back and choose again, when I realize that I've taken one from the very edge of the tray. I plug the ROM into a reader with an IR transceiver, then I invoke **RedNet** and **CypherClerk**, and talk to the reader. I say, 'Show me the ID page, in English.' The shadows of the vault fade almost to blackness, and a window of vivid blue-on-white text rushes towards me from the centre of my visual field:

'ENSEMBLE'

Neural Modification Algorithm

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INTERNATIONAL

Unauthorized reproduction of this software by any method, in any media, is a violation of the Intellectual Property Covenant of 2045, and is punishable under the laws of the Republic of New Hong Kong, and other signatories to the covenant.

Working by touch, I plug a blank chip into the reader's second port, and say, 'Copy everything, deleting all security, removing all encryption. Verify one thousand times.'

A sentry icon appears in front of the window, and says, 'Password?'

I close my eyes—to little effect—blank my mind, and 'hear' my virtual larynx 'whisper' something in Cantonese. It's not a word I've picked up, and I don't bother asking **Déjà Vu** for a translation. The sentry bows and vanishes, and a caricature of a medieval monk copying a manuscript in comical fast-motion takes his place.

I stand in the centre of the vault, swaying gently. I have no way of knowing if I'm experiencing success—or just some combination of hardware, mod and natural-brain malfunctions which looks exactly like it. For isolated tasks, the odds look good: if I *am* inside a vault in the BDI building, then with a mere twenty-three thousand, six hundred chips to choose from, the number of states in which I really did pick the right one must surely swamp those in which the chip reader and/or **CypherClerk** lied, and pretended that I had **Ensemble** when I really had something else. But as for the probability of hallucinating *the whole night's work* without even leaving ASR, compared to that of actually opening all those locked doors... I don't know. All I can be sure of is that after the collapse, it won't take long to tell the difference; either I'll have a copy of **Ensemble** in my pocket, or not.

Verifying the copy one thousand times is pure overkill; if a mistake in the copying process is unlikely under normal conditions, and my smeared self does nothing to seek out such an event, then it should remain as improbable as ever. I'm still glad that I'm doing it, though; part of me refuses to believe that I can force locks and cameras into wildly implausible failures, and then take it for granted that other equipment, equally vulnerable to quantum tunnelling, will operate flawlessly.

After a few minutes, the monk stops work, bows and vanishes. I shut down **CypherClerk**, and then, with almost ridiculous deliberation, I unplug the ROM, pocket the reader, place the ROM back on the tray, lock the box, return it to the shelf. I play the flashlight beam across the wall, searching for anything I might have disturbed, but everything looks just the way I found it.

I turn round. There's a woman in a nightdress standing in the doorway; thin, mid-thirties, Anglo features, skin as black as my own.

Laura Andrews—but not as I saw her in the basement, disguised as Han Hsiu-lien. Laura Andrews, as in the Hilgemann's files, as in my client's transmission.

How did she get out of the basement? Stupid question. But how did she do it tonight, when she couldn't manage it before? Have I done something, inadvertently, to undermine the security systems monitoring her? But if she's finally succeeded in escaping... what's she doing up *here*?

I reach for a can of tranquillizer, thinking: *and why should my smeared self let her interrupt me?* Does this prove that I won't be chosen... that I'm now as good as dead—

She says, ‘You have what you came for?’

I stare at her, then nod.

‘And what exactly do you plan to do with it?’

‘Who are you? Are you Laura? *Are you real?*’

She laughs. ‘No. But your perceptions of me will be. I speak for Laura—or Laura-and-the-smearred-Nick-and-Po-kwai, and others. But mostly Laura.’

‘I don’t understand. You “speak for Laura”? Are you Laura, or not?’

‘Laura is smearred; she can’t talk to you herself. She’s talking with the smearred-Nick-and-Po-kwai, but she’s created me to talk to you.’

‘I—’

‘Her complexity is spread *across* eigenstates; the two of you could never interact directly. But she’s concentrated enough information into a single-state mode to communicate the essentials. She’s made contact with the smearred-Nick-and-Po-kwai -but they’re childlike, unreliable. Which is why I’m talking to you.’

‘I—’

‘You’ve stolen **Ensemble**. Laura has no wish to prevent that. But she wants you to understand exactly what it can do.’

Still confused, I say defensively, ‘I *know* what it can do. I’m here, aren’t I? I opened this vault.’ I suppose I shouldn’t be shocked to discover that the *smearred* Laura is not retarded—after all, she was smart enough to get out of the Hilgemann, and she’s had thirty-four years of emergent probability to refine whatever brain pathways work best in that mode. But to find her able to manufacture apparitions to lecture me on the use of **Ensemble** is still something of a revelation.

She shakes her head and says, ‘You don’t understand—but you will. Laura will amplify a state in which you do.’

‘She’s *manipulating* me —’

‘She’s *communicating* with you, in the only way she can. Her effects, I promise, will be independent of those of the smearred-Nick-and-Po-kwai. And, given your brain physiology, the most likely route to understanding is a conversation, like this one.’

Like this one? Meaning, of course, that there are other conversations, and maybe *this* won’t be the one that succeeds. But that’s been true of everything I’ve done tonight; becoming squeamish, now,

would be ludicrous.

‘Go on.’

The spokesperson says, ‘The first thing you must understand is that the extent of the collapse is finite. The human brain only has a certain degree of complexity, and a finite number of people with finite brains can’t destroy an infinite number of states. What’s more, there are states in which the brain pathways involved in the collapse have ceased to function; without those pathways, the state is untouchable. The collapse is a local phenomenon. It depletes part of superspace—the space of all eigenstates—but only part. An infinite amount remains intact.’

A single branch of reality, in the middle of a huge void-but beyond that void, an infinite thicket. Isn’t that exactly what I suspected, the first time I smeared and collapsed? But—

‘How can we be...surrounded by all of this, and not detect it?’

‘To detect a state you have to collapse it to reality. How can you do that to a state which doesn’t partake in the collapse?’

‘Then how do *you* know that these states exist?’

‘Laura knows.’

‘How?’

‘The uncollapsed parts of superspace aren’t uninhabited. There’s intelligent life spread across the eigenstates. When one civilization discovered the depleted region you inhabit, they studied the borders—cautiously—and then took steps to seal off the region.’

‘By creating The Bubble?’

‘Yes. But before The Bubble was put into place, one individual decided to explore further—to enter the region itself.’

‘And... Laura’s seen this alien? It sought her out and made contact—because she doesn’t collapse the wave?’

The spokesperson smiles. ‘No. Laura *is* the explorer. Or at least, the explorer shaped her, to become the closest thing to itself that it could achieve. It crossed the depleted region and interacted with your reality. In doing so, it was collapsed—destroyed—but it arranged the collapse in a way that coded part of its complexity into Laura’s genes. When she’s collapsed, Laura can barely function - because most of her brain is taken up with pathways that only work when she’s smeared. But when she *is* smeared, she is, in effect, the explorer reborn.’

‘Laura is the avatar of a Bubble Maker?’ A distracting voice whispers: *Believe it, or you’re*

dead for sure. ‘Why did she stay in the Hilgemann? Why has she stayed here? Surely she could escape —’

‘She *has* escaped. She’s explored most of the planet.’

‘*Most of the planet?* But they caught her, twice —’

‘Yes, they caught her near the Hilgemann—but not because she was trying to escape permanently. She never intended to be collapsed anywhere, except in her room—but out of all the trips she made, those two went wrong. The Hilgemann was a safe, convenient base; she was left unobserved long enough to smear to a degree of complexity which enabled her to mount expeditions. From that point on, she could keep herself uncollapsed, in the same way that you have.’

‘So why go back to the Hilgemann at all? Why not stay unobserved forever, smeared forever?’

‘Smearing is an exponential process. Within a day or two, remaining unobserved would have required her to suppress the collapse of everyone on Earth. And after a day or two of *that* —’

She hesitates.

‘What?’

The depleted region would be filled. Humanity would tunnel through the Bubble and make contact with the rest of superspace. What would happen *then* is hard to predict, but one possibility is that the wave function in this region could never be collapsed again.’

I struggle to comprehend this. The whole world smeared, permanently? *How*—when all the co-existing possibilities must include states that cause a collapse? *But the only collapse that works is one that makes itself real.* A world in which *no collapse becomes real* is just as consistent on those terms as one with a unique reality.

‘So...Laura didn’t stay smeared, to avoid dragging us into this catastrophe?’

‘Exactly. And *this* is what you have to understand about **Ensemble**: anyone who uses it can do the same.’

‘You mean, *I* might —’

‘Anyone who smears for too long; the time scale is a matter of days. Laura has no wish to deprive you of the option of leaving The Bubble—but nor does she wish to force this on you. Your own smeared selves may not show the same respect.’

‘My smeared self has always done exactly what I’ve wanted.’

‘Of course. You hold him hostage; this world is inimical to him. He relies on your

cooperation. But each time you smear and collapse, as well as choosing outcomes that satisfy you, he's able to improve himself—selecting changes in your brain which make him more sophisticated, more complex. He's evolving, gaining strength.'

A chill passes through me. 'Then...will he even *let me* remember you saying that?'

'Laura guarantees it.'

I shake my head. 'Laura says this, Laura says that. Why should I believe anything you've told me? Why should I even believe that you are what you say you are?'

She shrugs. 'You will believe, one way or another; there must be eigenstates in which you do. As for what *I* am—I'm a set of perceptions which happens to convince you. Nothing more, nothing less.'

I spray her with tranquillizer. She smiles as the mist settles on her skin, then she purses her lips and gently exhales. The cloud of tiny droplets reappears in front of her, then rushes towards me, *shrinking*, and—before I can put up a gloved hand to shield myself—flows back into the nozzle of the can.

I sag to my knees. She vanishes.

After a while, I climb to my feet and make my way out of the building.

* * * *

Half-way across the city, the van comes to a halt. The horn sounds, then someone shouts urgently, 'Nick! Come out! Something's happened!' I recognize Lui's voice.

I hesitate, confused and angry. Has he gone mad? Is he trying to sabotage everything? If I stay in the van, maybe I can still return to ASR safely. But then it sinks in: he wouldn't be here without a good reason. *I must already be collapsed.*

I clamber out. He's standing in front of the van with outstretched arms, blocking its way. A group of cyclists pass us, staring; I feel like I'm standing naked on the street—observable again, vulnerable again to the same contingencies as everyone else. We're on the outskirts of the city centre; I blink at the jewelled buildings looming ahead. It's hard to accept that I've been delivered back into the ordinary world, without a jolt, without a premonition.

Lui says, 'They know you're missing.'

'How? Why couldn't I stop it?'

He shakes his head angrily. 'I don't know *why*. Too many people involved. That isn't important; it's happened.'

‘What do you mean, too many people?’

‘They found a bomb. About twenty minutes ago.’

‘Oh, shit. *The Children*. Po-kwai...?’

‘She’s fine. They defused it. Nobody’s been hurt—but the building went on full alert, they swept every corner... you can imagine. They found three other devices. And they found you missing. Maybe you just couldn’t juggle all the possibilities—keeping the bombs undetected *and* unexploded. I don’t know. But you have to leave the city.’

‘What about you? And the others?’

‘I’m going to stay. The Canon will have to keep a low profile—but they still don’t know we exist. I expect ASR will assume that the Children got to you somehow. A puppet mod...’

‘If the Children had put a puppet mod in my skull, I would have stayed in the fucking building and *made sure* that the bombs went off.’

He scowls impatiently. ‘Okay. I *don’t know* what ASR will think. It doesn’t matter. You have to leave. The rest of the Canon aren’t implicated; we can look after ourselves.’ He steps away from the van; it speeds off into the darkness. Then he takes a card from his shirt pocket and hands it to me. ‘Five hundred thousand dollars. Pure, anonymous credit, drawn on an orbiting account. Go to the harbour, not the airport; ASR will find it harder to pull strings there. And with this, I expect you can out-bribe even them.’

I shake my head. ‘I can’t go.’

‘Don’t be stupid. If you stay, you’re dead. But with the eigenstate mod, the Canon stands a chance of staying one step ahead. You did get it?’

I nod. ‘Yes. But you can’t use the mod; the risk is too great.’

‘What do you mean?’

I recount my experience in the vault. He listens to the entire revelation with remarkable equanimity; I wonder if he believes a word of it. When I’m finished, he says, ‘We’ll be careful—we’ll only use it for short periods. You’ve smeared for over four hours, without any kind of trouble.’

I stare at him. ‘You’re talking about gambling with...’ I can’t find the right words. *The planet? Humanity?* Neither would exactly be *lost*. . . just embedded in something larger. But that’s not the point.

‘You’ve proved that it’s safe, Nick. An hour or two can do no harm. What do you want to do

—bury the data? Undiscover it? You can't. The sham Ensemble still have their copies—do you want them to keep their ascendancy, after all they've done to you? One way or another, every question the mod raises is going to be explored. I thought that was important to you.'

I say, automatically, 'Of course it is.'

And then realize that I don't mean it at all. I don't give a fuck about *the mystery of the true Ensemble*.

Stunned, I wait for the backlash, the denial.

There's nothing but silence. *The loyalty mod is gone; I've tunnelled right out of its constraints*. I close my eyes expecting my purposeless soul to evaporate and diffuse into the air.

'Nick?'

I shake my head, open my eyes. 'Sorry. I was... dizzy for a second; some side-effect of the collapse.' I take off my gloves and reach into the pocket where the chip reader is, the copy of **Ensemble** still plugged in. Without removing the device from my pocket, I invoke **RedNet** and **CypherClerk**, and start copying data into **CypherClerk's** buffers.

Lui says, 'We can't waste time arguing. Give me the data, and get moving.'

'I told you, the mod's too dangerous.' So why am I copying it before erasing it? Do I really trust myself to use it wisely—to make a modest fortune breaking codes, without imperilling Life As We Know It? The arrogance is breathtaking. But I don't stop the flow of data.

Lui says quietly, 'Phone a bank, verify the card. Half a million dollars. That's what we agreed on.'

I shake my head. 'I don't care about the money.' I almost hand the card back, but if I do it with my free left hand, he may wonder what I'm doing with my right hand.

Lui looks away, sad and tortured as ever. I think: Making money from the mod is *important* to him—and people get nasty if you mess with their religion. I prime, and reach for my gun; left-handed, too late. I feel a targeting beam on my forehead, and freeze; a moment later, two armed women emerge from the alleyway in front of us. Neither are aiming their weapons at my head; a third person, the source of the beam, must still be in the shadows covering them.

Lui says, 'Put your hands on your head.'

The copy is ninety per cent done. I stall. 'I didn't expect this kind of—'

He grabs my arms and jerks them into place. The zombie boy scout observes helpfully: I should have done an erase-with-copy, wiping everything as it was transmitted.

Lui takes my gun, searches me, and quickly finds the reader. As he takes it from my pocket, I broadcast an erase command, but the positioning is bad. **CypherClerk** gives me an error message from **RedNet**, then a ‘tutor’ icon appears in my head and starts delivering a lecture on troubleshooting infrared connections. I shut it down.

Lui says, ‘The card is valid. Half a million dollars. I haven’t cheated you. Head for the docks, and you’ll be out of this mess by dawn.’

I say, ‘You don’t believe me, do you? About Laura, the Bubble Makers, any of it?’

He looks me in the eye and says softly, ‘Of course I believe you. I worked out most of it myself, six months ago. Why do you think the sham Ensemble were searching for the pattern of events that led them to Laura? They’d guessed the reason for The Bubble—and they hoped the Bubble Makers might have given us a key: an example of what we had to *become*, if we wanted to leave the prison they’d built around us.’

He steps aside, and one of his goons approaches. I wait, with a strong sense of *déjà vu*, for a tranquillizing spray, or a hypodermic in the neck.

Instead, the woman draws a nightstick and swings it towards the side of my head.

* * * *

12

As I come round, **PI** reports bruising and mild concussion, but nothing requiring treatment. I feel no discomfort; pain is converted into pure information. I stagger to the side of the road, and deprime—but still feel nothing; acting on standing orders, **Boss** takes over the role of anaesthetist.

I call the PanPacific Bank's verification service, and plug the card into my SatPhone. It seems to be precisely what Lui claimed it was: half a million dollars of transnational liquid funds; fully cleared, no strings attached. I order a sequence of transactions which sends the money hurtling around the globe a few hundred times—losing a little value with every orbit, but losing any chance of being traced or recalled even faster—and surviving the scrutiny of over a thousand separate financial institutions. It comes to a halt after ten minutes, depleted by five per cent, but indisputably real, and irreversibly mine, now.

Why? He came prepared to take the data from me by force, so why pay me a cent? True, he'll be able to earn enough from **Ensemble** to make a mere half-million seem irrelevant—and the payment does make it more likely that I'll leave him to do that in peace. It's a bribe, to get me out of the way. He could easily have killed me instead; I should count myself lucky.

And I should take his advice. Head for the docks. Bribe my way out of the country. There's nothing to keep me here.

Nothing? I think back over the last few hours, trying to pin down the instant of my liberation from the loyalty mod—but I can recall no tortuous struggle to assert my 'true' identity, no triumphant feat of mental agility that finally unravelled the knot. But then, nor was there any such battle for my loyalty, the day the mod was imposed. It was always a matter of brain physiology—not logic, not strength of will. Exactly what changed that physiology—whether the minority of versions of me who'd tunnelled through the mod's constraints somehow swayed my smeared self into choosing one of their number to survive the collapse (*namely, me*), or whether the crisis at ASR simply left him with so many factors to juggle that he ceased even to care about anything so trivial as his collapsed self's religion—I'll never know. Maybe the smeared Po-kwai intervened. Whatever the reason, it's happened –

Has it? Lui claimed that I'd been collapsed... and probably believed it... but the only collapse that works is the one that makes itself real. Maybe I'm still smeared, as is Lui, and every one of ASR's guards, and the whole incident—the bombs being found, Lui coming to warn me, *everything up to and including this moment*—is part of an eigenstate that will be discarded, part of the extravagant cost of the night's unlikely success.

Fighting down panic, I invoke **Hypernova** and hit the OFF button... then realize that doing so proves nothing: billions of versions of me must have done the very same thing—ineffectually—

throughout the night. For a moment, the whole question seems intractable: *how can I ever know that I've become irreversibly real?*

The schedule, that's how. It's 04:07—and if everything *had* gone according to plan, I'd be back on duty, and collapsed, by now. I laugh with nervous relief. My failure *is* an irrevocable part of the unique past—and so is my liberation. And however many versions of me *would have* remained in the grip of the loyalty mod... I'm alive, and they're dead.

So I have no reason to stay. The Ensemble, 'true' or otherwise, means nothing to me.

As for the dangers of using **Ensemble**, Lui may be greedy, but he's not stupid. If he really has known about the risks all along, then no doubt he'll take great care to keep them under control. I may not like entrusting the fate of the planet to his dubious expertise—but I have no choice. I can't go to the authorities; ASR will have set me up as the prime suspect for planting the bombs—and they might even believe that themselves. What do I do? Send an anonymous message to the NHK police, claiming that *technology which might undermine the nature of reality* has fallen into unsafe hands?

The trouble is... even if Lui himself could be trusted to use the mod cautiously, there's the question of proliferation. What happens when one of his code-breaking clients grows curious about his technique and decides to cut out a few of the intermediaries, or ensure that the competition won't have access to the same service? With Lui's quaint ideas of security, it'd take them about a week to find out everything. **Ensemble** in the hands of gangsters—or, worse, **Ensemble** in the hands of the intelligence agencies of the PRC, or the USA. And even if they, too, understood the risks and exercised enough restraint to keep the planet from runaway smearing... *reality shaped by Beijing, or Washington?* Life wouldn't be worth living.

Karen appears beside me. I hesitate, afraid to speak in case she vanishes—or explodes—but then I find the courage to say, 'It's good to see you. I've missed you.'

Have I? I hunt for some memory of doing so, but then abandon the search as irrelevant. What matters is, *I would have.*

She says grimly, 'You've screwed up.'

'Yeah.'

'So what are you going to do about it?'

'What can I do? I'm now a suspected terrorist. I have nowhere to stay, no resources —'

'You have half a million dollars.'

I shake my head. 'That's something, but —'

'And you have ninety-five per cent of **Ensemble**.'

I laugh bitterly. ‘Ninety-five per cent might as well be nothing. You can’t feed a swarm of nanomachines ninety-five per cent of a mod specification, and just hope that the rest doesn’t matter.’

‘No? What about ninety-five per cent of two mod specifications?’

Two?’

Then it hits me: **Ensemble** performs two completely independent functions: inhibiting the collapse, and manipulating the eigenstates. There’s no reason for the two parts of the mod, responsible for these two separate functions, to have any overlap, any neurons in common. And if there’s no overlap, either part should be able to stand alone. The only question is...

I invoke **CypherClerk** and start wading through the data in the buffers. After a few dozen pages of preamble, I find:

```
START SECTION: ‘EIGENSTATE CONTROL’;
```

I search for the next occurrence of ‘eigenstate control’. Several hundred thousand pages later:

```
END SECTION: ‘EIGENSTATE CONTROL’
```

```
(checksum: 4956841039);
```

```
/* ***** */
```

```
START SECTION: ‘COLLAPSE INHIBITION’;
```

Karen says, ‘You have half a million dollars. You have all you need of **Ensemble...** **Hypernova** makes up for the rest. And you have more experience of being smeared than anyone else on the planet, short of Laura herself. So much for having no resources.’

I shake my head. ‘I can’t trust my smeared self. That was part of Laura’s warning: he’s played along with me so far, but I don’t know what he’ll do if he gains more strength.’

‘Yeah? And who would you rather trust: him—or Lui’s clients, and *their* smeared selves?’

I realize that I’m shivering. I laugh. ‘I’m afraid. Don’t you understand? I could turn into *anyone*. I just lost what used to be the most important thing in my life. Gone, dissolved, in an instant. You know what that means. I might lose anything. *I might lose you.*’

She says bluntly, ‘My specification will still be on file; Axon will have archived it somewhere. If you lose me, you can always get me back.’

‘I know.’ Then I look away; I can’t bear to say it to her face. ‘But I’m afraid that if I lose you, I won’t *want* you back.’

Many of the small traders start opening for business around dawn, and I manage to buy a batch of cosmetic nanomachines and a change of clothes before the streets begin to grow crowded. I hide in the stall of a public toilet while the nanomachines take effect, breaking down a significant proportion of the melanin in my skin. The change is almost fast enough to perceive, and I stare, transfixed, at my hands and forearms as they fade from the deep black UV-belt norm to an olive complexion, reminiscent of photographs of my grandfather in his twentieth-century youth. An hour later, my kidneys have extracted the metabolites, and I urinate a surreal dark stream. It's absurd—but peeing away my skin colour is at least as disorienting as anything else that's happened in the last twelve hours. Whatever's changed inside my skull, up until now at least I *looked* the same.

I check my appearance in a mirror, dragging my thoughts back to practicalities. Merely rendered pale, pattern-recognition software could still match me with ASR's records, but at least I'm no longer vulnerable to every bystander who might have seen my face splashed about the news systems.

In fact, when I access *The NHK Times*, there's no mention of a foiled bombing attempt, by the Children or anyone else. The global news systems are the same. It looks like ASR have kept the whole thing to themselves; perhaps they don't want the NHK police pondering the mystery of exactly *why* the Children chose to target them.

This cheers me up a little. I'm hardly out of danger—the Ensemble will have put me on a dozen private hit lists—but it's still nice to know that I'm not going to end up framed as a member of the Children of the Abyss.

Sitting on a park bench in a patch of—reflected-morning sunlight, plugged into the world via **CypherClerk**, **RedNet**, and my SatPhone, I hire an online nanoware expert system to deal with the ragged edges of my partial copy of Ensemble. Just as well; apart from simply discarding the incomplete second section, the preamble needs to be edited to reflect the change from two sections to one. Nanoware is never treated lightly; a neural mod specification with the slightest inconsistency would be rejected outright by the nanomachine synthesizer.

I delete the copyright notices, copy the final specification from the **CypherClerk** buffers to a memory chip, ready to hand over the counter, and search the directory for the closest manufacturer. There's a place called Third Hemisphere, barely a kilometre away.

The premises, at the end of a drab blind alley, look like shit, but once inside, I catch sight of the synthesizer—a genuine Axon model, complete with prominent authorized franchise sign. Or a convincing imitation. The woman in charge plugs my specification chip into a costing system. 'Thirty thousand dollars,' she says. 'The nanoware for your mod will be ready in a fortnight.'

According to the expert system, the synthesis should take eight hours at the most. Any further delay is nothing but queuing.

I say, ‘Fifty thousand. And it’ll be ready by ten o’clock tonight.’

She thinks it over. ‘Eighty thousand. By nine.’

‘Done.’

* * * *

I buy a gun; virtually an exact replacement for the laser taken from me this morning. Weapons are one thing NHK is *not* relaxed about, and black-market prices reflect that; at fifty-seven thousand, someone is collecting a *de facto* tariff of about three hundred per cent. I still find the generosity of Lui’s bribe unsettling, but I can see why he’d want to ease my way out of the city, rather than risk having me betray him to the Ensemble... and no doubt he was lying about his code-breaking fee, perhaps by one or two orders of magnitude.

I need somewhere to stay, but hotels are far too computerized to be safe. It takes me most of the afternoon, but I manage to rent a small flat in a mildly run-down district in the south-west—and with a suitable bribe, no ID is required. When the agent hands me the key and leaves, I collapse onto the bed. The concussion is starting to catch up with me; I’m having trouble staying awake.

Karen says, ‘So, where do we start? What’s the most immediate risk to containment?’

I sigh. ‘You know this is hopeless. Lui must have made a dozen copies of the data, by now.’

‘Maybe. But would he have trusted anyone else with them—or just hidden them?’ The room itself keeps going slightly out of focus, but her image remains perfectly sharp. I squeeze my eyes shut, and try to concentrate.

‘I don’t know. He certainly wouldn’t have given them to the other members of the Canon; I expect he’ll have told *them* that I failed to complete the break-in—if he’s had a chance to tell them anything at all.’

‘So he may still be the only person with access to the data?’

‘Perhaps. Except for the company he’s hired to manufacture *his* copy of the nanoware, of course. If he plans to keep on selling code-breaking services without me, he’s going to have to install **Ensemble** in his own skull, and learn how to use it himself.’

‘Which company?’

‘I don’t know.’ I force myself back on my feet; the floor sways for a second, then stabilizes. ‘But I think I know how to find out.’

* * * *

I'm in luck: Lui hasn't chosen a new front for his dealings with backstreet manufacturers—and after some token resistance, the owner of the stall where I picked up **Hypernova** proves remarkably cooperative. At this rate, I'll be flat broke in a matter of days, but I might as well make good use of my windfall while it lasts.

He says, 'I sent both packages to NeoMod by courier this morning. About seven o'clock. The client paid for a rush job—it would have been ready by two. But the product didn't come back to me; he phoned about noon and said he'd collect it himself, straight from the factory.'

'Both packages? How many mods did he order?'

'Just one—but he supplied his own customized vector for the nanomachines. That's pretty unusual, but —' He shrugs.

Unusual is an understatement. The standard *Endamoeba* are designed to be unable to survive for more than a few minutes outside the culture medium in which they're shipped. They rely on enzymes which they can't manufacture for themselves—which the culture medium provides, but which don't occur in nature at all. Along with several other kinds of engineered flaws, this guarantees that they have no prospect of surviving for longer than it takes them to cross the user's nasal mucous membrane; anyone else in the vicinity has about as much chance of being infected with nanomachines and 'catching the mod' by mistake as they have of becoming pregnant from a couple making love in the room next door.

And there's only one reason for using a nonstandard vector: to undermine these safeguards. *To improve the ease with which a mod can be imposed on someone who doesn't want it.*

Which makes no sense at all. If Lui plans to use Ensemble for code-breaking, what possible reason would he have to force it on to some unwilling accomplice?

'This customized vector—what do you know about it?'

He shakes his head. 'Nothing. I didn't supply it; I just sent it off along with the chip.'

'Was the vial marked in any way? With a brand name? A logo? Anything?'

'I didn't see the vial. It was packed inside a little black box—and that had no markings on it at all.'

'A little black box?'

'Yeah. No markings... just a tiny blue light on it.' He shrugs at this eccentric detail; puzzling, but none of his business. 'It was brought in separately, before the mod data. Yesterday afternoon.'

I fish out my ASR employee's badge. The stallholder squints at the photo and says, 'Yeah. A southerner. I think that's him.' He looks back up at the pale version of the very same face, without a

hint of recognition.

I fight my way through the rush-hour crowd, without any idea where I'm going. The *Endamoeba* would have smeared into *every possible* mutant strain—however exotic, however improbable, however difficult to engineer by other means. There must have been enough bioelectronics in the box to test the strain for the unlikely properties Lui wanted, and signal with the LED only if the cells could jump through all the right biochemical hoops. And I swallowed his lie about code-breaking supercomputers, and blithely chose the eigenstate which made the light come on. What properties, though? *And why?* What profit is there to be made?

But then, why do I think that Lui's idea of the true Ensemble has anything to do with *money*? Because he paid me half a million dollars? Because he sheepishly 'confessed' that the black box contained a code-breaking computer? Well, maybe it did—along with everything else; his funds must be coming from somewhere. But if the money's just a means to an end... then what's the end? If he hasn't twisted the mod's constraints into pure human greed, after all... then what quasi-religious vision *has he* constructed around the flaw in his brain?

If he's known, all along, who Laura was, why The Bubble was made, and exactly what the risks of smearing are...

I stop dead in the middle of the street and let the crowd push past me. It's all too easy to imagine how I would have reacted, if I'd learnt the facts in a different order—if I'd come to define the true Ensemble, knowing the whole truth about Laura.

Laura's progenitor died—collapsed—in the act of creating her, like some self-sacrificing God-become-woman. And now, able to smear into woman-become-God, she's shown *us precisely* how we can cease collapsing, regain our Godliness, and rejoin the rest of superspace.

I don't know Lui's background; if he grew up in NHK, it could be Taoist, Buddhist, Christian, or as atheist as my own. But perhaps it makes no difference what he believed beforehand; perhaps a story as powerful as Laura's—combined with the loyalty mod's axiomatic decree that *the work of the Ensemble is the most important thing in the world*—would have set up the same dangerous resonances in anybody's skull.

And it would have been blindingly obvious to anyone what *the work of the Ensemble* was.

I look around helplessly, as dusk overtakes the city. People squeeze by me, tense and weary, lost in their own concerns; I want to grab them by the shoulders and shake them out of their complacency.

If I'm right about all this, then there's no limit to what Lui might have done to the vector; he could have made it robust, airborne, highly infectious, quick to reproduce... everything that the original was painstakingly designed *not* to be. He could have made it the perfect vehicle for what he sees as Laura's gift to humanity.

Who do I warn?

Who would believe me? Nobody in their right mind; a *neural-mod plague* is the stuff of paranoid fantasy. The nanomachines themselves are fragile and non-virulent—and their operation is intimately linked, at the lowest level, to hundreds of specific details of the vector’s crippled biochemistry. Within those constraints, the most elaborately enhanced illegal vectors can survive at large for about an hour—useful for infecting individual victims, but hardly the stuff of epidemics. The expert consensus has always been that anything more than tinkering at the edges would require, not just nonstandard vectors, but *nonstandard nano-machines*—entailing a research effort almost as expensive as that which created the whole technology in the first place. No terrorists, no religious cult, could afford that—and probably not even a government would be able to pull it off in absolute secrecy.

As for some backyard operator engineering a vector that’s both compatible with existing nanomachines and infectious enough to constitute a threat... such a feat is no doubt every bit as implausible as factoring a megadigit code key by pure good luck.

The crowd thins out around me; the sky darkens. The world goes on as always. *It all adds up to normality.* Lui’s had the mod since two; for all I know he might have released it already. *How long would it take to spread?* He’ll have made one minor change from the version Po-kwai received: inhibiting the collapse won’t be an *option*, requiring conscious invocation; the unwitting users will have no choice. With ten thousand, or a hundred thousand people smeared, how long before their smeared selves learn to suppress the collapse of the rest of the city? And with twelve million people smeared –

I look up at the sky, and catch sight of a faint point of light above the fading glow in the west. I stare at it for ten long seconds, before I realize it’s only Venus.

* * * *

The woman at Third Hemisphere frowns and says, ‘You’re early. Come back in two hours.’

‘Speed it up. I’ll pay you —’

She laughs. ‘You can pay me whatever you like, it won’t make any difference. The machine’s been programmed, it’s building your nanomachines; nothing’s going to “speed it up” now.’

Nothing? What if I paid her to leave me alone with the synthesizer, then smeared—and didn’t collapse until I had **Ensemble** installed in my head, allowing me to *choose* the whole sequence of events to have taken place in some ‘impossibly’ short time? There’d be no risk of the machine’s accelerated action resulting in a defective mod... since if the mod turned out to be defective, the miraculous acceleration would never have taken place.

Or would it? What if I introduced some subtle flaw which didn’t manifest itself immediately? I stare at the silent machine—which looks disconcertingly like an upmarket beverage dispenser—and

I balk at the prospect of having it stray from the safety of known probabilities. It's already juggling with matter on a molecular scale, subject to quantum uncertainties; I don't want it rendered capable of spitting out *anything at all*. **Ensemble** is my only advantage; if I take short cuts and screw it up, I'll have no chance whatsoever of finding Lui in time.

I say, 'I'll wait outside. Call me, the instant —'

The woman nods, amused. 'You sound like an expectant father.'

* * * *

I should prime; go into stake-out mode and pass the time effortlessly... but some part of me violently resists the idea. To prime, now, would be irresponsible, escapist, *unnatural*...

I contemplate this alien rhetoric numbly, more bemused than horrified. I've escaped the grip of the loyalty mod by collapsing in some unlikely way—did I expect to end up perfectly unchanged in every other respect? Perhaps an increased distaste for neural mods was a necessary—or highly probable—concomitant of *wanting* to be set free.

So I wait like a human: sick with pointless, unproductive fears. Trying to imagine the unimaginable. If the whole planet smeared, permanently... what exactly would people experience? *Nothing*—because there is no collapse to make anything real? Or *everything*—because there is no collapse to make anything less than real? *Everything, separately*—one isolated consciousness per eigenstate, like the many-worlds model brought to life? Or *everything, simultaneously*—a cacophony of superimposed possibilities? What I've been through myself—or at least *those memories which have survived the collapse*—might bear no resemblance to the nature of things when there'll be *no* collapse at *any* future time. Once there's nothing to make the past unique, the whole experience could be radically different.

Whatever the case, I'm certain of one thing: Lui can't be allowed to succeed.

I only hope that my smeared self agrees.

* * * *

The Third Hemisphere woman doesn't ask what it is I'm so desperate to try. I transfer the money. She hands me the vial, and I use it at once.

She says, 'I hope we'll do business again.'

I stop pinching my nostril. 'I doubt that very much.'

I sniff twice. A drop of fluid falls to the floor.

* * * *

As I walk out of the alley, I instruct **MindTools** to notify me when **Ensemble** proclaims its existence. The expert system predicted two to three hours for installation, depending on the contingencies of the user's neural anatomy.

Back on the main road, the shopfronts are dazzling with holograms of merchandise; photorealism is out of style this year, and everything from shoes to cooking pots is rendered incandescent. I reach up and pass my hand back and forth through the spinning front wheel of a bicycle hovering two metres above the pavement, half expecting a shock of pain from the white-hot spokes.

I stand awhile, watching the crowd. *I could still buy my way out of this. In two hours, I could be on the other side of the world.* Maybe Laura was wrong; maybe whatever happens here could be *confined*, somehow. Once it's clear that there's an epidemic, if they closed the borders...

Against people who can tunnel through any kind of barrier? What do I think they're going to do? Drop the city into a black hole? Build their own Bubble?

Karen says, 'You stole the mod once; you can do it again. What does Lui have to stop you that BDI didn't?'

'And if he's already released the *Endamoeba*?'

'You don't know he's done that.'

'I don't know he hasn't.'

I stare up at the sky, and fight down a wave of vertigo. The truth is, The Bubble has never *confined* us; it's merely rendered our confinement visible. The shock was not one of limitation; the shock was being forced to confront the alternative, the infinite freedom beyond.

I say, 'I think I'm getting Bubble Fever.'

Karen shakes her head. 'Bubble Fever,' she says, 'has gone right out of fashion.'

* * * *

I have no choice but to wait for **Ensemble**—but that's no reason to delay preparing the tools I'm going to need to help me And Lui, once the mod is functional. Back in my flat, I write a small **von Neumann** program which will accept a six-digit number as input, consult **Déjà Vu**'s geographical database, and generate a map reference to a forty-five-metre square of dry land, somewhere in the city. It takes me a while to decide what else to rule out, besides water; there are plenty of land-use categories that seem 'obviously' pointless to search—too exposed, too inaccessible, or just plain ludicrous—but I can't decide where to draw the line, so I end up keeping most of them in. Airport runways are excluded, but any versions of me sent to investigate some corner of a rugby field or

sewage treatment plant will just have to live with the knowledge that they probably won't see out the night.

I stare at the map in my head and think: By morning, this city is going to be smothered with my invisible corpses. And to the sole inheritor of my past, the 'miraculous' survivor of one more collapse... these deaths will seem less real than ever.

They're real to me, though. They're in my future, all of them.

* * * *

The message flashes up, just before midnight:

[MindTools:

Broadcast received.

Sender ID: **Ensemble** (Third Hemisphere, \$80,000).

Category: Autogenesis completion.]

I try to invoke it, but no interface window, no control panel, appears in my mind's eye—which is no great surprise; this mod isn't mine to use. So I sit on the bed and invoke **Hypernova**, and bring back to life the being that **Ensemble** was made for.

What did Laura's spokesperson call him? *Childlike? Unreliable?* And if he's made of a billion endlessly dividing versions of me, what am I to him? A microscopic nonentity—as a single blood cell, or a single neuron, is to me? But then, there's no doubt that I'm forced to respect the needs of my blood cells and neurons, *en masse*. I've swayed him a hundred times before; surely one more miracle isn't unthinkable—especially when I'm so sure that I'm almost unanimous in wanting it. What versions of me could possibly wish for Lui to succeed?

I wait ten minutes, then step out of the room.

I had some fantasy of slinking unseen through side streets and back alleys, but a fantasy is all it was. Midnight is peak hour for tourists, and everyone who trades with them; the side streets and alleys are packed. I push through the crowds, thinking: Either I've been collapsed, long ago—or I'm practically doing Lui's work for him. If I'm preventing the collapse of everyone who observes me, and everyone who observes *them*... and that's true for every version of me as I spread out across the city... then how long before the whole planet is smeared? Supposedly a day or two, for Laura—but I can't count on the same time frame applying to me. She might have had ways to minimize the effect, techniques to focus her presence. Me, I've set out to scour the city; I'm not *focused* at all.

There's a busker at the entrance to the underground, wearing old-fashioned force-sensor gloves and playing a virtual violin—very skilfully, too... if she really is causing the sound, and not

just miming to it. On the escalators down, I take out the dice generator, throw six decahedrons, and feed the results into my map-dividing program.

Throwing dice to find a madman? Why not consult Lui's horoscope? Why not consult the fucking *I Ching*?

But I stifle my last vestiges of common sense, press on into the crowded station, and buy a ticket for my random destination.

* * * *

My target is a drab block of flats in a strip of residential land poking into the warehouse district north of the harbour. I approach with as much hope and caution as I can muster, torn between the clear understanding that the odds that *I* will be the one to find Lui are still only one in a million... and my irrelevant, but compelling, memories of having survived the collapse—'despite the odds'—so many times before.

The front entrance is locked, with a video paging system for visitors; the door slides open as I approach. I glance back over my shoulder as I step through into the foyer, shaken by a brief, but vivid, fantasy of the alternative: standing outside, waiting in vain for a miracle that's never going to come.

Thirty storeys, with twenty flats each. I toss three decahedrons without thinking—and get eight, nine, five; I almost panic, but then I shake my head, laughing. I'm not giving up that easily; I can play this game any way I like. I subtract six hundred and head for the stairs. If there are more of me in some flats than others, that's hardly the end of the world.

I take the stairs quietly. The building is all but silent; there's faint music from the third floor, and a child crying on the seventh; the occasional shudder of running water and flushing toilets. The banality of it all is, absurdly, reassuring—as if by some fanciful law of conservation of implausibility, those of me destined to fail might be hearing some freakish proof that their luck has been wasted... like the same incarnation of Angela Renfield's 'Paradise' being played, coincidentally, in every flat.

By the tenth floor, I've made up my mind: if Lui's not in 295, I'll search the whole building from top to bottom. *I have nothing to lose*. And if he's nowhere in the building? Then I'll search the entire street.

I see movement ahead as I step out onto the fourteenth floor, but it's only a squat cleaning robot gliding along the corridor, vacuuming the ragged carpet and sucking graffiti off the walls.

I hesitate outside Room 295, but only for a moment. I draw my gun and try the door.

It opens.

* * * *

13

Lui is standing beside a table cluttered with laboratory glassware, watching the liquid in a culture flask being stirred by a spinning magnet. He looks up angrily, then his expression suddenly softens, and—in almost welcoming tones—he says, ‘Nick. I didn’t recognize you.’

‘Step back, and put your hands on your head.’

He complies.

Do I collapse now—to seal my victory, to make it irreversible? Not yet. This is no time to be complacent; I don’t know what further improbable feats might be required.

I take a deep breath. ‘Have you released the *Endamoeba*?’

He shakes his head innocently.

‘If you’re lying, I’ll —’

What? And how would I know? The neighbourhood hasn’t visibly dissolved into a quadrillion versions—but then, neither have I, *visibly*.

‘Why not?’

He gives me a slightly bemused look, as if he can’t quite believe that I need to ask. ‘The strain sent to NeoMod was attenuated. I had no way of knowing what tests they might have done on it; I couldn’t risk sending them anything too far out of the ordinary. A place like that may be willing to bend the rules—to make a puppet mod for one gangster to slip into another’s drink—but if they’d found out they were dealing with something that could spread like the plague, they’d hardly have gone ahead and integrated the nanomachines.’ He nods at the flask being stirred. ‘I’m culturing it with a retrovirus that puts a crucial promoter sequence back into the genome. The version they saw was no more spectacular than any of the standard illegals. *This* is the real thing.’

I have no reason to believe him—but why else would he be messing around with this equipment, instead of wandering the streets, spreading the vector? I glance down at the flask; it looks like it’s thoroughly sealed, which seems bizarre... but then, he wouldn’t have wanted to risk smearing himself while engaged in something so crucial—just as I chose to stay collapsed during the synthesis of **Ensemble**.

I ask, ‘Who else has copies of the mod?’

‘No one.’

‘Yeah? There’s nobody else in the Canon who you persuaded to see things your way?’

‘No.’ He hesitates, then says matter-of-factly, ‘You were the only one who might have understood.’

I laugh drily. ‘Don’t waste your breath. I’m not part of the Canon any more; I seem to have tunnelled out of that particular asylum.’ *And you’ll be following me, soon enough—albeit by more conventional means.*

He shakes his head. ‘The loyalty mod has nothing to do with it. You’ve smeared—and collapsed—often enough to understand what there is to be gained.’

‘*Gained?*’ The truth is, I can’t begin to grasp the magnitude of what’s been averted; perhaps if I’d caught him with something more innocuous—like a medium-sized lump of plutonium—I might have been able to feel an appropriate sense of reprieve.

I say, ‘I do *understand*: this is your vision of the true Ensemble—and the loyalty mod has everything to do with *that*. I don’t blame you for being unable to stop yourself—I remember what that doublethink is like—but admit it: you *know* the whole idea is obscene beyond belief. You’ve known that all along. You’re talking about blasting twelve billion people into some kind of metaphysical nightmare —’

‘I’m talking about the end of twelve billion people dying every microsecond. I’m talking about the end of the death of possibilities.’

‘The collapse isn’t death.’

‘No? Think about those versions of yourself who didn’t find me —’

I laugh, bitterly. ‘You’re the one who taught me not to. But I’ll grant you that: for them—if they experience anything at all—it must seem like impending death. But not for ordinary people. And not for me, not ever again. People make choices; only one eigenstate survives. That’s not a tragedy, that’s *who we are*, that’s the way it has to be.’

‘You know better than that.’

‘But I don’t.’

‘Don’t you mourn the versions of yourself who persuaded Po-kwai to use **Ensemble** for you?’

‘No. Why should I?’

‘They must have been close, I think. Lovers, perhaps.’

I'm shaken by the thought, but I say calmly, 'It means nothing to me. He was never *real*. She has no memory, I have no memory —'

'But you can imagine how happy they might have been. What do you call the end of that happiness, if not *death*?'

I shrug. 'People die every day. I can't change that.'

'But you can. Immortality is possible. Heaven on Earth is possible.'

I laugh. '*Heaven on Earth*? What are you now—a millenarian? You can't know any more than I do what permanent smearing would be *like*. But if Heaven on Earth is part of it, it will co-exist with Hell. If no eigenstate is destroyed, then every conceivable kind of suffering —'

He nods, unfazed. 'Oh yes. And every conceivable kind of happiness. And everything in between. *Everything*.'

'And the end of choice, the death of free will —'

'The *death* of *nothing*. How can restoring the diversity of the universe be seen as *taking something away*?'

I shake my head. 'I honestly don't care. Just —'

'So you'd deny everyone else the choice?'

I laugh with disbelief. 'You're the lunatic who planned to force your will —'

'Not at all. Once the planet is smeared, everyone will be linked. The smeared human race can decide for itself whether or not to recollapse.'

'And you'd call the judgement of this... infant collective consciousness... a fair way to decide the fate of the planet? Even the Bubble Makers had more respect for humanity than that.'

'Of course they have respect for humanity. They comprise human beings themselves.'

'*Laura* comprises —'

'No: *all of them*. What do you think they are? Some exotic lifeform from another planet? Do you think they could have programmed *Laura's* genes to keep her from collapsing, to give her the ability to manipulate eigenstates, if they weren't smeared humans themselves?'

'But —'

‘The collapse has a finite horizon; there are always eigenstates beyond it. Do you think none of them contain human beings? The Bubble Makers are the residues of ourselves—they’re made up of versions of us so improbable that they’ve escaped the collapse. All I want to do is give us the chance to rejoin them.’

My head is throbbing; I glance down at the flask again. It may be sealed, but I’ll be a lot happier once it’s been consigned to an acid bath or a high-temperature incinerator.

I gesture with the gun. ‘Go and sit in the chair. I’m afraid I’m going to have to tie you up while I find out how to get rid of this shit.’

‘Nick, please, just —’

I say evenly, ‘Listen: if you make trouble, I’m not going to wound you; I can’t risk having you thrashing around the room. If I shoot you, I’ll have to kill you. So go and sit in the chair.’

He makes as if to comply, but then hesitates. I suddenly realize that he’s closer to the table than I thought; not within arm’s reach of the flask, but only a step away.

He says, ‘Just *think about it*, that’s all I’m asking! There must be states beyond The Bubble full of the most incredible things! Miracles. Dreams.’ His face glows with pure rapture, all traces of the old turmoil and self-disgust abolished. Maybe he’s put an end to the doublethink after all; maybe the part of him who *knew* that ‘the true Ensemble’ was nothing but a neurological aberration couldn’t bear the contradictions any longer. Maybe the loyalty mod has finally destroyed the old Lui Kiu-chung forever.

I say gently, ‘I’ve had about all the miracles I can stand.’

‘And there must be states where your wife —’

I cut him off. ‘Is *that* what all this “Heaven on Earth” crap was leading up to? Emotional blackmail?’ I laugh wearily. ‘You really are pathetic. Yes, my wife is dead. But I’ve got news for you: *I don’t give a shit.*’

He’s visibly shaken—and I’m not surprised; if he really thought he might have swayed me, I’ve just crushed his last hope. But then a kind of resignation, almost tranquillity, seems to take hold of him.

He looks me in the eye and says, ‘No, you don’t.’

He lunges forward, right arm outstretched. I burn a hole in his skull and he topples sideways, crashing to the floor, scarcely bumping the table.

The flask sits undisturbed, the magnet silently spinning.

I walk around the table and squat down beside him. The wound is just above the eyes, a charcoal-rimmed well a centimetre wide, stinking of cooked flesh. My guts are squirming; I've never killed anyone before—and never even fired a gun, or been near a corpse, unprimed. *And I shouldn't have had to kill him; I should have taken more care.*

Fuck it, none of this was his fault. The Ensemble's, yes. Laura's, yes. Laura the aloof visitor, the *passive observer*: She of all creatures should have known there was no such thing.

I should have taken more care; moved him right away from the table, at once –

And maybe I did.

The thought sets my skin tingling with fear. *Maybe I did. Almost certainly I did.* So, who will my smeared self choose? Me—or the cousin who was smart enough to do things right?

Who do I want him to choose?

I stare down at Lui's bloody face. I hardly knew him... but what would I have to give up, to raise him from the dead? Two minutes of my life, that's all. An eyeblink of amnesia. How many hours, added up over the years, have I lost from memory by now—have vanished as completely as if they'd never happened? *And how many versions of me have died while I was primed, so that the one who made the optimal decisions could be real?* This will be nothing new; I've been dying for the sake of getting things right, all my life.

It's not my decision to make, but as I invoke **Hypernova**, I whisper aloud: 'Choose someone else. Let him live. I don't care.'

I hit the OFF button –

- and nothing changes.

(Nothing would.)

I walk over to the room's only chair, slump into it, close my eyes and wait. **Karen** stands beside me, silent but reassuring.

After fifteen minutes—long enough, surely, for anyone who handled Lui more efficiently than I did to have tied him up and chosen to collapse—I invoke **CypherClerk**. I have no idea what to do with a flask of the world's most infectious protozoans, but Doctor Pangloss is sure to have a few suggestions.

* * * *

'Just *think about it*, that's all I ask. There must be states beyond The Bubble full of the most incredible things. Miracles. Dreams. *There must be states where your wife is still alive.*'

For a moment, his words are electrifying, but –

‘You don’t know that. You don’t *know* that the Bubble Makers are human; it’s all just speculation.’

He ignores this, and just repeats, softly, ‘Think about it.’

Unwillingly, I do. *Karen, alive. No more mod-generated hallucinations, no more solipsistic travesties. Everything we had, restored—with all its problems, all its failings . . . but at least it would be real.*

I recoil from these emotions, dizzy and confused. *How high a price have I paid, in escaping the loyalty mod? A new-found distaste for mods is one thing—but Karen should still be rendering these sentiments physically impossible.*

I should shut him up, ignore him. I say, ‘Even if you’re right... what could it possibly mean? It could never be real for *me*. Eigenstates diverge, they split—they don’t recombine.’

‘No? Once the world stops collapsing, anything is possible.’ He smiles beatifically. ‘The collapse is the source of time asymmetry; you might be able to tunnel back to a time before her death —’

I shake my head. ‘No. *Versions of me* might—while others wouldn’t. That’s... chaos, insanity. I couldn’t live that way: creating billions of copies of myself, just so that some tiny fraction of them could get what I wanted.’

Couldn’t I? I’ve done just that, tonight.

He hesitates, then says, ‘And you honestly don’t want a chance for someone—someone *you’ll* become—to go back to the night she died? To make things turn out differently?’

I open my mouth to deny it. Instead, I hear myself make a strange animal sound, a wail of pain escaping from subterranean depths.

He lunges forward. Startled, I take aim—too late. He has the flask by the neck, high above the table—if I shoot him, he’ll drop it for sure.

In one smooth motion, he flings it at the window. The pane is open; the insect screen tears.

I stand frozen for a second, pointing the gun at him, half prepared to blast a hole in him out of sheer anger at my own stupidity, then I rush to the window and look down. I set the laser to spotlight strength, and see shards of glass, a hint of dampness. I vaporize the puddle, and scorch the concrete around it.

Lui says, ‘You’re wasting your time.’

‘*Shut the fuck up!*’ Someone sticks their head out of window directly below me; I scream at them, and they retreat. I play the beam in ever widening circles, thinking: There’s hardly any breeze, and diffusion is a slow process. I *can* kill them all; it’s not impossible. Compared to finding Lui in a city of twelve million people –

Then I finally swallow the truth: whether I’ve destroyed the *Endamoeba* or not makes no difference. Maybe I *am* one of the unlikely versions—out of all those created since the flask hit the ground—who were lucky enough to completely sterilize the spill. It doesn’t matter; *none of us* who screwed up this way are going to survive. When reality is chosen, Lui won’t have laid a finger on the flask.

I turn back into the room to face him. ‘You and I are history.’ I laugh. ‘So now you know what you put me through with your fucking padlocks.’

I close my eyes, try to contain my fear. A version of me will live—a version who succeeded where I failed. What more can I hope for? *I wanted to be the one*. But it’s too late for that.

I say, ‘If I killed you, would it be murder? Seeing as you’re already dead?’

He doesn’t reply. I open my eyes, holster the gun. I stare at him; he still says nothing. He doesn’t look much like a man who’s accepted defeat—or even martyrdom. Maybe he still believes that *the true Ensemble* can save him.

I say, ‘I’ll tell you about the past: I walked into this room, tied you to that chair and destroyed all the *Endamoeba*. And I’ll tell you about the future: I’ll set you free from the loyalty mod. You’ll be grateful. Between us, we’ll do the same for the rest of the Canon. With their testimony, the law will take care of ASR and BDI—and maybe bring down the whole Ensemble. Then we’ll both go our separate ways and live happily ever after.’

I leave the building, and skirt around the harbour, heading for the city centre, moving just for the sake of it, trying to keep my mind blank. I could invoke **P3** and its perfect stoicism. I could invoke **Boss** and put myself to sleep. I do neither. After I’ve walked about three kilometres, I finally check the time: one thirteen.

The successful version of me must have been in the flat for at least forty minutes by now. I turn back and scream obscenities. The street is crowded, but nobody gives me a second glance. Suddenly exhausted, I sit down at the side of the road.

Habit overcomes disgust; I try to invoke **Karen**. Nothing happens. I run a **MindTools** inventory; the mod’s still there on the bus. I run diagnostics—and my skull explodes with error messages. I shut down the test and bury my head in my arms. *Okay, I die alone*. I just wish he’d get it over and done with.

After a while, I rise to my feet. I turn to a passing woman and ask, ‘What is this? The virtual afterlife?’

She says, ‘Not as far as I know.’

I take out the dice generator, put it away, take it out again. What can it prove? If I’m still smeared—and *I must be*—I’ll split thirty-six-fold at every toss, with one branch of me gradually becoming convinced of the truth... but all the others learning nothing.

I do it anyway.

Seven. Three. Nine. Nine. Two. Five.

What are you waiting for? Are you searching the city a second time, for hidden copies of the mod? Breaking into BDI again, to destroy the original?

But why would I do either—without collapsing in between, to make the night’s first miracle secure, and to reduce the risk of runaway smearing?

I glance up at the empty grey sky, then head on into the city.

* * * *

By dawn, I can doubt it no longer: I’m collapsed, I’m the sole survivor. Any successful version of me would have tried to collapse by now; the mere fact that I still exist proves that my failure is real, and irreversible.

The sun rises quickly over the Gulf of Carpentaria, sending fierce bursts of light through cracks between the skyscrapers—and whichever way I turn, I find myself facing into dazzling reflections. My head throbs, my limbs ache. I don’t wish I was dead; I just wish I was someone else. *How can I rejoice in my survival, when the cost is so high?*

I keep searching for a way out. Maybe I haven’t failed—maybe I managed to kill all the spilt *Endamoeba*. But... how could my smeared self have known that I’d done so—and even if he could, why would he have chosen such an unlikely path to success, over the multitude of others in which the flask was simply never broken?

The answer must be: he didn’t. He deliberately chose a state in which the vector was released. He must have understood, finally, what that would mean for him: no more intermittent resurrections from the hologram in my skull, like a genie let out of a bottle only to grant my impossible wishes. What did I expect? That he’d turn down the chance of ‘freedom’—or whatever alien concept he has of the world beyond The Bubble—for the sake of pleasing one cell in his body, one atom in his little finger, one irrelevant, infinitesimal part of his vast complexity?

I buy myself breakfast, leave a ten-thousand-dollar tip, then walk back to my flat to wait for

the end of the world.

* * * *

I monitor the news systems for some sign that the plague has begun, but scarcely notice what I'm reading. I alternate between fatalism and ludicrous hopes, between a heady wish to finally embrace the naked strangeness of the world, and moments of pure, stubborn disbelief. I gaze out of the window at the unremarkable city, and think: Even if humanity *maintains* this, microsecond by microsecond... after so many thousands of years, surely by now it must possess some kind of stability, some kind of inertia, some kind of independent reality.

But why should it? Do I think that by collapsing inanimate matter often enough, we've destroyed its ability to smear? Cowed it into submission, in an act of metaphysical imperialism? And do I hope that the solid macroscopic world we've created will, in turn, now anchor us to reality? The truth is, the instant we cease imposing uniqueness upon it, it will explode in a billion directions with a resilience unchanged since the birth of the universe.

Denial aside, I don't know how to anaesthetize myself, how to make these last hours bearable. The old ways are lost; the mere thought of finding solace in a mod repels me—although I can't ignore my memories: I can't forget that the loyalty mod gave me a sense of purpose, or that **Karen** made me every bit as happy as if I'd been in love. And although I don't wish for a moment to regain that synthetic happiness, that obscene travesty of love... I have nothing to take its place. *How could I?* I came into existence hours ago. I'm no repressed fragment of my previous self, no sublimated personality that's 'finally' broken to the surface. I'm a stranger in my own life, an intruder in my own skull. Worse than an amnesiac, I remember the past—but I know that I have no claim to it.

* * * *

The news systems patiently recount tales of ordinary madness: civil war in Madagascar; famine in the US north-west; another unexplained bombing in Tokyo; another bloodless *coup d'état* in Rome. The local news is all trivia—corporate takeovers and minor political scandals. By nightfall, I'm prepared to abandon all pretence at having comprehended the events of the last two days—and to sink, gratefully, into the understanding that everything that's befallen me has been a paranoid delusion.

The terminal's image flickers and dies. I thump it, and it comes back to life—but then the text wavers and disintegrates into individual letters, which slowly drift apart like flotsam, or space debris, then leave the surface of the screen itself and float out into the room. I reach out and sweep up a handful; they melt on my palm like snowflakes.

I look out across the city. Advertising holograms are fragmenting, dissolving, mutating. Some have degenerated into abstract streaks of vivid colour, slowly bleeding into the night air; others remain identifiable, if surreal: images of jets are growing scales and claws; beaming children are regressing into translucent pink embryos; a giant stream of Coca-Cola, endlessly flowing into a pair of disembodied lips, is blazing like napalm, lighting the buildings around it, sending a plume of thick black smoke twisting up into the sky.

There's an old man waiting for the elevator. I greet him; he just stares at me, wild-eyed. I hit the call button, but the status display shows nothing but a stream of random symbols, with occasional snatches of *pai-hua* too brief for me to translate. The man whispers something in Cantonese: *It knows my thoughts*. I turn to him, and he starts weeping. I try to think of a way to ease his distress, to explain what's happening, but I don't know where to begin—or what comfort it would bring him.

I take the stairs.

Out on the street, the crowds are subdued—quieter than I've ever seen them. All along I've been expecting hysteria and violence, but people seem to be mesmerized, walking in a dream. The transformed billboards make a bizarre spectacle, but they don't explain this mood. The mutating holograms and pyrotechnics could be nothing but an elaborate prank; surely nobody can yet have guessed what they presage.

No? Their smeared selves might have circled the globe, might already have linked, intermittently, into a mind more complex than the Earth has ever known. Who am I to know what insights might have been passed down to the collapsed mode?

In Observatory Road, I see a flowering vine burst from the pavement and dance like a snake. Amidst the dazed, blank-faced spectators, two small children are laughing and clapping with delight; perhaps they're choosing this event. The petals of the white blossoms form into luminous butterflies, which flutter away above the heads of the crowd; but the flowers remain intact, endlessly renewed.

Which is most likely: an eigenstate actually containing this feat—or one in which every witness is merely hallucinating it? I cling to the distinction, stubbornly—although I don't know how much longer it can last.

I turn away—to see a young man levitating, curled up and spinning head over heels in midair, eyes closed, smiling blissfully. People watch him politely, as if he were a busker juggling or stilt-walking. One old woman takes root in the ground, the cloth of her trousers and the skin of her legs melting together into bark. Another woman is turning into a statue of glass, a faint flesh-coloured hue retreating from her limbs into her torso, then fading completely. *What version of her could have chosen this suicidal outcome?* But the 'statue' stretches its arms wide, then strides purposefully away. I try to follow it, but it vanishes into the crowd.

I keep walking.

In places, the streetlights are blazing like tiny suns; a hundred metres on, the city is in darkness. I turn into an alley and find myself wading waist-deep in gold coins. I lift a handful; they're as heavy, as cool, as solid, as the real thing ought to be. I shouldn't be able to take a step, but I walk as easily as if there were nothing blocking my way.

I emerge onto a brightly lit street where it's raining blood—coarse dark stinking drops. People stand shielding their faces, screaming, or huddle on the ground, shaking and whimpering.

What is this—some smeared lunatic's vision of the end of the world? Will every insane eschatology ever dreamt of be unleashed in these last hours? Or is this nothing but an accident, an unintended glitch? Many of the smeared humans could still be inexperienced, and isolated—maybe we're collapsing them unawares, constructing a mosaic reality from a series of random snapshots of their first, infantile explorations of the space of eigenstates. I stand and watch, helplessly, until the blood in my eyes begins to blind me.

A block away, it's raining clear, sweet water, and people are turning enraptured faces to the sky to drink.

The streets seethe with transformation. Some people's features are shifting, flowing smoothly or jumping between alternatives; walking in a daze, they seem oblivious, and I touch my own face, wondering if the same thing is happening to me. Vegetation is sprouting everywhere—patches of wheat, sugar cane, bamboo; stretches of wild-looking tropical undergrowth. Some stalls are simply crumbling into fine dust; others are mutating into exotic architectural pastiche—and the walls of one have turned to flesh, blood visibly pulsing through veins as thick as my arm. I stare up at the skyscrapers, most of them surreally intact—but even as I wonder at this, the fractal cladding on one tower starts drifting down like confetti.

Within a block of ASR, I catch sight of Po-kwai sitting on the pavement in front of a food stall, staring with a fixed gaze into the crowd. When I touch her shoulder, she looks up at me, then jerks away.

'Hey. It's me. Nick.'

'Nick?' She reaches up and touches my pale hand gingerly; the sight of it seems to horrify her. She says, 'I did this to you. I'm sorry.'

I laugh. 'What do you mean? I did it to myself. The quickest disguise I could think of, that's all.' I sit down beside her.

She gestures at the crowd, and says numbly, 'I'm destroying the city, I'm turning everyone into freaks. And I can't stop it. I've tried, but *I can't stop it.*'

I take her by the shoulders, turn her to face me. She cringes, but meets my eyes.

'Listen: none of this is your fault.'

She makes a strangled, whimpering sound, then almost laughs. 'No? Who else do you know who could do this?'

For a moment, I think: Why bother explaining anything? In an hour or two, it will make no difference. She may be suffering now—but how much consolation will the truth be?

But then I steel myself, and set about answering her question.

At first, she seems almost oblivious to my words—but slowly, the logic of what I’m saying penetrates her state of shock and the stupor of misplaced guilt. By the time I reach my encounter with Laura in the vault, the old Po-kwai is back.

‘She blew the tranquillizer *back into the bottle*?’ She nods, smiling faintly. ‘Well, why not? No collapse, no time asymmetry.’

‘That’s exactly what Lui said.’

‘Lui? When?’

‘I’ll come to that.’

So far as she knows, there were no bombs discovered in ASR the night of the break-in; when she spoke to Lee Hing-cheung in the morning, he told her that I’d gone missing, but claimed that nobody knew why. Perhaps she was kept in the dark—but it’s just as likely that Lui himself arranged my collapse, and lied to me one more time.

When I describe the release of the *Endamoeba*, and my unexpected survival, she says, ‘You may be wrong to blame your own smeared self. What could he do to resist a creature twelve billion times stronger than he was?’

‘What do you mean?’

‘The entire planet, the smeared human race —’

‘But they weren’t... they still aren’t. Not the whole planet, even now —’

‘No—but if they will be, or might be, don’t you think they could choose their past? You know what *one* smeared human can do—don’t you think an amalgam of *twelve billion* would be able to tunnel its way into existence, by whatever means that would take? The versions of you who prevented the spill would have ended up collapsed, uncorrelated with anyone else—but the versions who failed would have been linked to *all this...*’—she gestures at the chaos around us—‘in the sway of at least a few thousand smeared people... and whatever’s yet to come. *It found a way to happen*, and you were part of it, that’s all.’

‘I see.’

So my ‘liberation’ from the loyalty mod, from **Karen**, is more of a joke than ever. *I am who I am* only because I served as a conduit for this apocalypse, a fault line through which the future smeared humanity could force itself into being.

Something new is happening to the crowd; groups of people are coming together. Some merely join hands or stand side-by-side—but others literally *coalesce*, their bodies melting into each other. I

look away, fighting down panic. I can't face this. *Not yet.*

I cling to a thread of normality. I try to apologize to Po-kwai for deceiving her for so long, but she brushes this aside. 'What does it matter now? I understand; you would have told me the truth, but the loyalty mod —'

'But I *didn't* tell you the truth. It makes no difference what I *would have* done. I only have one past. I have to be... responsible for it. I have to reclaim it. I have to make it mine.'

She laughs, disbelieving. 'Nick, it's all over. It doesn't matter any more.'

'And I used **Ensemble**—I invaded your skull...'

She shakes her head wearily. 'You didn't *invade my skull*. I did what you asked, that's all.'

'*What?*'

She shrugs. 'I can't remember much. Just fragments. I thought I was dreaming. I *knew* I was dreaming. We'd sit and watch the dice together; I'd make them fall the way you asked—and I knew that was impossible... but you don't remember any of it, do you?'

'No.'

'Well.' She looks away.

I glance up at the sky; a single star has appeared. By the time I point it out to Po-kwai, there's another beside it. After a moment, she says, 'They're so pale. I always thought they'd be brighter.'

The crowd falls silent, and watches as one. The stars double and redouble, just as they did in my vision in the anteroom. *Could the smeared race reach back that far? Was it choosing my eigenstates, even then?*

Po-kwai starts shivering. I whisper some soothing inanity and take her hand. She says, 'I'm not afraid. I'm just not ready. Would you make it stop, please? *I'm not ready.*'

The crowd begins to blur; the cells break up and reform, growing larger.

In the gaps between, I catch sight of someone walking alone. Karen turns to look at me, frowning slightly, as if she finds me vaguely reminiscent of someone she once knew. Then she turns and walks away.

An arc of stars blazes across the sky. I stand, still holding on to Po-kwai, hauling her to her feet, dragging her forward with me.

At the edge of the crowd, I hesitate. Fluid, human-shaped forms collide and coalesce. Po-

kwai breaks free. I step back. I catch one last glimpse of Karen, retreating, but I can't seem to move.

I raise my eyes to Heaven and the sky turns white.

* * * *

Epilogue

I spent a week travelling from camp to camp, looking for her. Everyone in the camps is—supposedly—registered on a central computer, but I thought she might have been wary; she might not have used her real name.

On that first morning, surveying the debris and carnage, I didn't believe that help would ever come. No power, no water, no transport; food to last a day at the most—and a million or more corpses rotting in the street. I took it for granted that the whole planet was in the same condition, and we'd all be left to starvation and cholera. When the helicopters started landing in Kowloon Park, I almost slit my wrists: I thought it was some kind of *miracle*, I thought the whole process had begun again.

It seems that the plague didn't spread beyond the city—or at least, those versions of events where it *did* haven't been made real. The world's population may have smeared—but the eigenstate that was finally chosen confined the damage to New Hong Kong. If there were miracles in London or Moscow, in Calcutta or Beijing, in Sydney or even Darwin, they've left no memories, they've left no trace. Perhaps the impact was the very least that it could have been, consistent with the last moment of the definite past—the last instant that anyone, anywhere collapsed.

Po-kwai travelled with me at first, but met up with her family on the third day. I think we were both glad to part. I know that, alone, it's much easier to pretend to be one more innocent, shell-shocked, uncomprehending survivor.

Uncomprehending is a relative term. I doubt I'll ever know why the smeared human race, after going to such lengths to come into existence, finally touched the infinite space beyond The Bubble—and *recoiled*. (Perhaps it didn't; perhaps it was driven back. Perhaps the Bubble Makers intervened... although if Laura's messenger was any guide, that's hard to imagine.)

But if smeared humanity couldn't face what lay beyond The Bubble, for whatever reason, then it had no choice but suicide—collapse into a state from which it would not re-emerge. Smearing is exponential growth, increase without bounds. A single, unique reality was the only stable alternative. There could be no middle ground.

Communications channels are tightly controlled—the geosynchronous satellite serving NHK has been switched into a special mode which only the UN troops can access—so I don't know what the rest of the world believes went on here. An earthquake? A chemical spill? HV news teams fly overhead, but as yet haven't been permitted to land; still, with telephoto lenses, they must have made out some of the more exotic corpses before they were buried. No doubt there are new cults springing up even now, with their own perfect explanations for everything that took place.

And no doubt stories have begun to leak out from other survivors who believe they saw the dead walk.

I'm beginning to suspect, though, that however reliable these witnesses might be, on close investigation their claims will come to nothing. I don't believe that they're lying, or that they mistook what they saw. Everything happened just as they described it—*but it was simply never made real.*

I've settled down now, in this camp on the old city's western edge. I have a registration card, I queue for food twice a day, I do exactly what I'm told. Most of the relief workers here are freshly recruited volunteers; they insist that we'll all be resettled within a year. The experienced ones, though, admit—when pressed—that a decade is more likely. New Hong Kong won't be rebuilt on the original site until investigators know *why* the city crumbled, and the answer to that—I hope—will be a long time coming.

I don't have much to do here to pass the days. I try to get some exercise, but mostly I end up lying on my bunk, thinking it all over one more time.

And last night, this is what I thought:

Maybe smeared humanity reached the edge of The Bubble—and didn't recoil, after all. Maybe the planet is still smeared. One consciousness per eigenstate, branching out endlessly; the many-worlds model come true. Blood still rains between the skyscrapers of New Hong Kong. Children still conjure up dancing flowers. Every dream, every vision, has been brought to life: Heaven and Hell on Earth.

Every dream, every vision. This one included, mundane as it seems, half-way between infinite happiness and infinite suffering.

So here I am, gazing up into the darkness, unable to decide if I'm staring at infinity, or the backs of my own eyelids.

But I don't need to know the answer. I just recite to myself, over and over, until I can choose sleep:

It all adds up to normality.

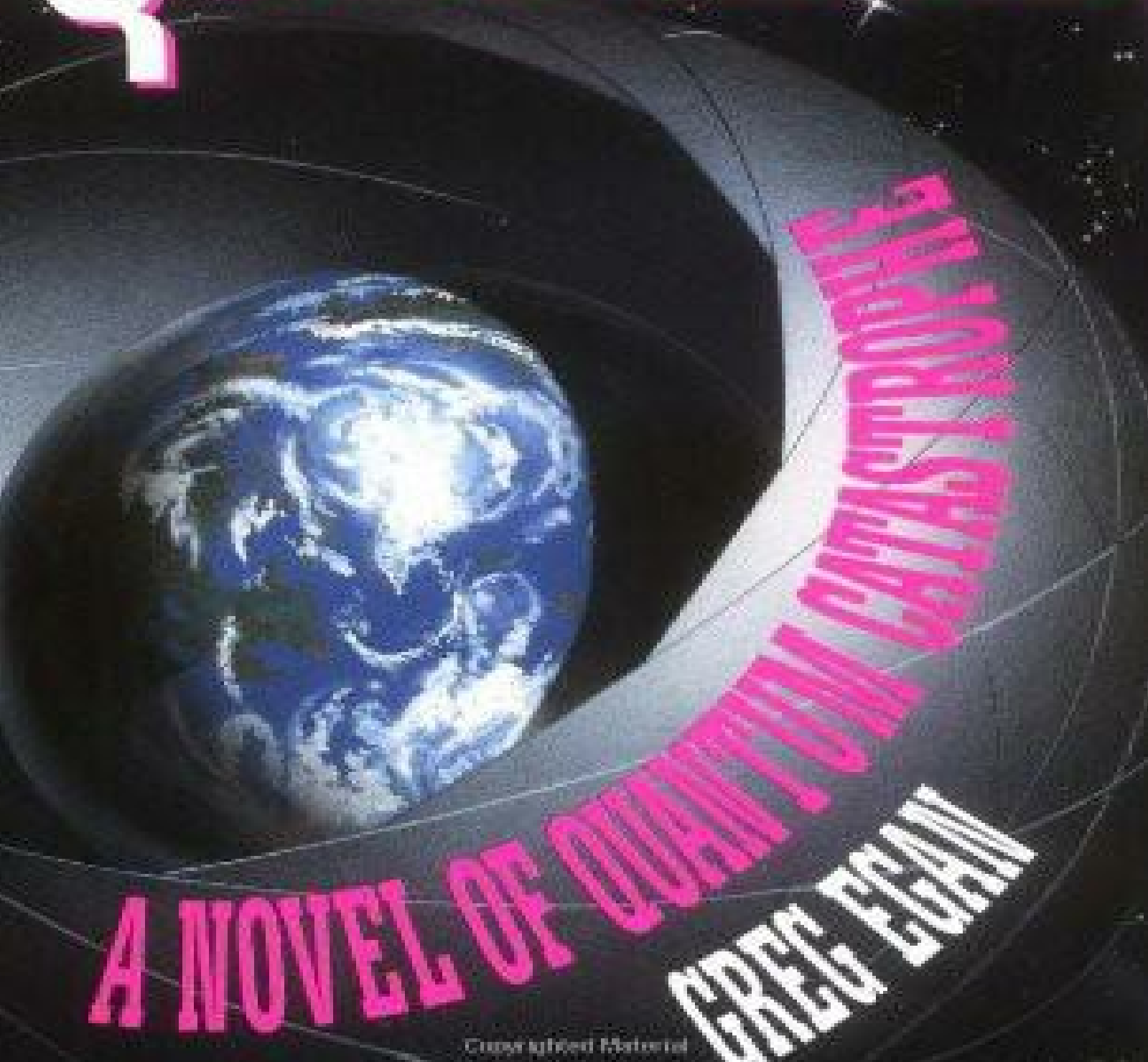
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