



GREG EGAN • ROBERT REED • BRUCE STERLING

# SCIENCE FICTION

THE BEST OF THE YEAR

2008

EDITED BY  
RICH HORTON

EDITION

**SCIENCE FICTION:  
THE BEST OF THE YEAR**

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**SCIENCE FICTION:  
THE BEST OF THE YEAR**

**2008 EDITION**

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*Edited by Rich Horton*



PRIME BOOKS

**SCIENCE FICTION:  
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## THE YEAR IN SCIENCE FICTION, 2007

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*Rich Horton*

The best novel I read this year is a novel that has the rare—dare I say unique?—distinction of being quite plausibly a contender for the Pulitzer Prize and the Hugo and Edgar Awards at once: Michael Chabon's *The Yiddish Policemen's Union*, at once a brilliant alternate history novel, a gripping murder mystery, and a moving portrayal of a man's life and his love for his ex-wife. Now, Michael Chabon has spent considerable energy the past few years urging more attention to what might be called "genre values"—most simply, a greater emphasis on plot. And there is no doubt he has practiced what he preaches—his novels are worth reading anyway, but SF fans ought to try, in addition to *The Yiddish Policemen's Union*, his other 2007 book, *Gentlemen of the Road* (not really fantasy, but quite exotic and adventurous historical fiction), his 2002 YA fantasy *Summerland*, and his wonderful Pulitzer winner *The Amazing Adventures of Kavalier and Clay* (2000)—mostly a mainstream novel, but about a pair of comic-book writers.

I'll be honest—I am always keeping an eye on the reception of SF within the so-called "mainstream" literary audience. I admit that in the past my eye was often jaundiced—or aggrieved—hard to avoid some of that feeling on encountering phrases like that opening Sven Birkerts's review of Margaret Atwood's SF novel *Oryx and Crake*: "I am going to stick my neck out and just say it: science fiction will never be Literature with a capital "L," and this is because it inevi-



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tably proceeds from premise rather than character.” But for all that mainstream critiques of SF often stem either from ignorance (perhaps they don’t like SF movies, or Michael Crichton, but have not read the best SF) or false premises (why does proceeding from premise rather than character preclude a work being Literature?), we must also admit that they sometimes have at least half a point. For one, much SF, even much that we love, is deeply flawed in both characterization and prose—and these flaws can be addressed, can be fixed. And for another, SF readers are often as ignorant of the mainstream as mainstream readers are of SF.

So, Chabon’s advocacy and his own work aside, is the mainstream really embracing SF? Or even Fantasy? Well, there have been other notable recent SF novels in the mainstream, including last year’s Pulitzer Prize winner, *The Road*, by Cormac McCarthy. And the most recent winner of the Nobel Prize for Literature, Doris Lessing, has written a lot of science fiction—and she’s not afraid to admit it! (Even her most recent novel, *The Cleft*, is SF.) I don’t think there is any doubt that SFnal concepts have become more respectable than ever for use by the wider literary world. But actual in-genre work still tends to be ignored by mainstream critics. And there is still outright hostility towards even the idea of writing SF in some corners. For example, some critics complained that Lessing had been lured away from serious work by SF. And some writers (this year’s example was Jeanette Winterson—a past example was Atwood) continue to insist that their rather obviously SFnal stories somehow aren’t really SF.

I have to say, in the end there is no real point taking offense at sneers from the “mainstream” world. The works survive. I’m glad—thrilled—to see SF from Chabon and McCarthy and Lessing—and even from those less willing to openly embrace the genre, like Winterson and Atwood. The field is richer for it—and all readers are richer for the wider imaginative palette available to writers. And SF writers (and readers) are better too for serious criticism from any source—good writing does matter, characterization does matter, avoiding clichés matters.

As for short fiction, this year I saw a first-rate Stephen Millhauser

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SF story in *Harper's*; as well as a Stephen King SF story from a genre source, *Postscripts*—but remember that King also publishes in *The New Yorker*. (Indeed, King is a writer with at least some mainstream cachet who openly promotes genre writing, and at the same time a writer whose clear genre roots—and, let's be fair, occasional genre-sourced faults—have been a reason for his lack of acceptance in some literary quarters.) Alas, neither story was available for reprinting.

I began this introduction to a collection of short stories by talking about a novel . . . let's continue by mentioning other significant SF novels of 2007. Ian McDonald's *Brasyl* is in one sense a sort of companion to his excellent *River of Gods*, in that it describes a future Brazil in terms that recall the earlier novel's look at a future India. And, just as that novel was also a fascinating exploration of a cool SFnal idea (AI), *Brasyl* quite stunningly treats such notions as alternate worlds and the idea that we might be actually a simulation. Several novels are sequels—and well worth a look on their own terms: Jo Walton's *Ha'Penny* is another mystery set in the scary Nazi-influenced alternate history of last year's *Farthing*; Robert Charles Wilson's *Axis* takes us to the other planet revealed at the close of his Hugo-winner *Spin*; Karl Schroeder's *Queen of Candescence* is tremendous fun, a sequel to *Sun of Suns* in which the somewhat villainous Venera Fanning now takes center stage; and Tobias Buckell's *Ragamuffin* is wonderful space adventure, a sequel to *Crystal Rain*, featuring scary aliens and space pirates and illegal human uploads and lots of action. I suppose we could also mention that none of the writers above was born in the US—one is from Northern Ireland, one from Wales, two from Canada, one from Grenada. We can add Ken MacLeod's *The Execution Channel*, Charles Stross's *Halting State*, William Gibson's *Spook Country*, and Jay Lake's *Mainspring* to the list of significant SF novels of 2007—and while that adds two more writers born in the U.S., each of them (Gibson and Lake) have spent much of their life outside this country. (And indeed, when you consider that Gibson and Walton both now live in Canada, that makes four major novels by Canadians—not even mentioning Robert J. Sawyer's *Rollback*, one of his better novels, another Hugo nominee for him. It is indeed a

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boom time for SF in Canada.) It has been clear for years that there has been an explosion of outstanding SF—hard SF and space opera included—from the U.K. and the former Commonwealth countries. It is perhaps not quite as clear, but I think it is true that while there is still plenty of fine work being done by Americans, they have done less of the very best work, by percentage, than ought to be expected. I have no good reasons to offer—except to suggest that the experience of living in multiple places, and among different cultures, has to be useful for an SF writer.

I'm not sure I need say much here about the best shorter fiction in the field—just read this book! These are, after all, my favorite stories of the year. Though of course there were many fine pieces I couldn't fit. In particular I had no room for novellas this year. My favorite SF novellas were "Memorare" by Gene Wolfe; "Dead Money" and "Stars Seen Through Stone" by Lucius Shepard; and "Womb of Every World" by Walter Jon Williams. Other stories I really wished I could have squeezed in here included "The Lustration" by Bruce Sterling; "The Prophet of Flores" by Ted Kosmatka; "do(this)" by Stephen Graham Jones; and "Finisterra" by David Moles.

It must be said, from a business viewpoint, that the print magazines still seem on shaky ground—circulation in general is either declining or stable. Still, the fiction at *Analog*, *Interzone*, *Fantasy and Science Fiction*, and *Asimov's* was as solid as ever in 2007. And more optimistically, there are increasingly exciting sources of fiction online. Two newer sites that publish a lot of SF (and fantasy as well) are *Jim Baen's Universe* and *Orson Scott Card's Intergalactic Medicine Show*. Both have published some very fine work. *Strange Horizons* is the longest running online fiction site (that I know of) and they continue to do excellent work, and the much newer *Helix* has also been very interesting. And you can find very good SF at such other sites as *Ideomancer*, *Abyss and Apex*, *Aeon*, *Clarkesworld* and *Challenging Destiny*, among others.

Among the smaller print magazines, *Postscripts* continues in fine fashion, as does *Electric Velocipede*, *On Spec*, and *Talebones*. (Noting that each of these also publishes lots of fantasy.) And I will also

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mention one intriguing revival: *Thrilling Wonder Stories*, of which I saw one thick new issue (as much a book as a magazine), featuring a number of reprints and some nice new stories.

The clear best SF anthology of last year was *The New Space Opera*, edited by Gardner Dozois and Jonathan Strahan, just chock full of excellent and intelligent space opera. Other fine outings were *Eclipse One*, edited by Jonathan Strahan (though that was largely fantasy); *Fast Forward 1*, edited by Lou Anders; *The Solaris Book of New Science Fiction*, edited by George Mann; and *Alien Crimes*, edited by Mike Resnick.

It may be harder than before to keep track of all the best short science fiction—between the magazines both large and small, the anthologies, and the many online sites. But the best SF is as good as it has ever been—and what follows is the best of 2007.



## DARK INTEGERS

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*Greg Egan*

“Good morning, Bruno. How is the weather there in Sparseland?”

The screen icon for my interlocutor was a three-holed torus tiled with triangles, endlessly turning itself inside out. The polished tones of the male synthetic voice I heard conveyed no specific origin, but gave a sense nonetheless that the speaker’s first language was something other than English.

I glanced out the window of my home office, taking in a patch of blue sky and the verdant gardens of a shady West Ryde cul-de-sac. Sam used “good morning” regardless of the hour, but it really was just after ten AM, and the tranquil Sydney suburb was awash in sunshine and birdsong.

“Perfect,” I replied. “I wish I wasn’t chained to this desk.”

There was a long pause, and I wondered if the translator had mangled the idiom, creating the impression that I had been shackled by ruthless assailants, who had nonetheless left me with easy access to my instant messaging program. Then Sam said, “I’m glad you didn’t go for a run today. I’ve already tried Alison and Yuen, and they were both unavailable. If I hadn’t been able to get through to you, it might have been difficult to keep some of my colleagues in check.”

I felt a surge of anxiety, mixed with resentment. I refused to wear an iWatch, to make myself reachable twenty-four hours a day. I was a mathematician, not an obstetrician. Perhaps I was an amateur diplomat as well, but even if Alison, Yuen, and I didn’t quite cover the time zones, it would never be more than a few hours before Sam could get hold of at least one of us.

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“I didn’t realize you were surrounded by hotheads,” I replied. “What’s the great emergency?” I hoped the translator would do justice to the sharpness in my voice. Sam’s colleagues were the ones with all the firepower, all the resources; they should not have been jumping at shadows. True, we had once tried to wipe them out, but that had been a perfectly innocent mistake, more than ten years before.

Sam said, “Someone from your side seems to have jumped the border.”

“Jumped it?”

“As far as we can see, there’s no trench cutting through it. But a few hours ago, a cluster of propositions on our side started obeying your axioms.”

I was stunned. “An isolated cluster? With no derivation leading back to us?”

“None that we could find.”

I thought for a while. “Maybe it was a natural event. A brief surge across the border from the background noise that left a kind of tidal pool behind.”

Sam was dismissive. “The cluster was too big for that. The probability would be vanishingly small.” Numbers came through on the data channel; he was right.

I rubbed my eyelids with my fingertips; I suddenly felt very tired. I’d thought our old nemesis, Industrial Algebra, had given up the chase long ago. They had stopped offering bribes and sending mercenaries to harass me, so I’d assumed they’d finally written off the defect as a hoax or a mirage, and gone back to their core business of helping the world’s military kill and maim people in ever more technologically sophisticated ways.

Maybe this wasn’t IA. Alison and I had first located the defect—a set of contradictory results in arithmetic that marked the border between our mathematics and the version underlying Sam’s world—by means of a vast set of calculations farmed out over the internet, with thousands of volunteers donating their computers’ processing power when the machines would otherwise have been idle. When we’d pulled the plug on that project—keeping our discovery secret, lest IA find a

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way to weaponize it—a few participants had been resentful, and had talked about continuing the search. It would have been easy enough for them to write their own software, adapting the same open source framework that Alison and I had used, but it was difficult to see how they could have gathered enough supporters without launching some kind of public appeal.

I said, “I can’t offer you an immediate explanation for this. All I can do is promise to investigate.”

“I understand,” Sam replied.

“You have no clues yourself?” A decade before, in Shanghai, when Alison, Yuen, and I had used the supercomputer called Luminous to mount a sustained attack on the defect, the mathematicians of the far side had grasped the details of our unwitting assault clearly enough to send a plume of alternative mathematics back across the border with pinpoint precision, striking at just the three of us.

Sam said, “If the cluster had been connected to something, we could have followed the trail. But in isolation it tells us nothing. That’s why my colleagues are so anxious.”

“Yeah.” I was still hoping that the whole thing might turn out to be a glitch—the mathematical equivalent of a flock of birds with a radar echo that just happened to look like something more sinister—but the full gravity of the situation was finally dawning on me.

The inhabitants of the far side were as peaceable as anyone might reasonably wish their neighbors to be, but if their mathematical infrastructure came under threat they faced the real prospect of annihilation. They had defended themselves from such a threat once before, but because they had been able to trace it to its source and understand its nature, they had shown great forbearance. They had not struck their assailants dead, or wiped out Shanghai, or pulled the ground out from under our universe.

This new assault had not been sustained, but nobody knew its origins, or what it might portend. I believed that our neighbors would do no more than they had to in order to ensure their survival, but if they were forced to strike back blindly, they might find themselves with no path to safety short of turning our world to dust.



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Shanghai time was only two hours behind Sydney, but Yuen's IM status was still "unavailable." I emailed him, along with Alison, though it was the middle of the night in Zürich and she was unlikely to be awake for another four or five hours. All of us had programs that connected us to Sam by monitoring, and modifying, small portions of the defect: altering a handful of precariously balanced truths of arithmetic, wiggling the border between the two systems back and forth to encode each transmitted bit. The three of us on the near side might have communicated with each other in the same way, but on consideration we'd decided that conventional cryptography was a safer way to conceal our secret. The mere fact that communications data seemed to come from nowhere had the potential to attract suspicion, so we'd gone so far as to write software to send fake packets across the net to cover for our otherwise inexplicable conversations with Sam; anyone but the most diligent and resourceful of eavesdroppers would conclude that he was addressing us from an internet café in Lithuania.

While I was waiting for Yuen to reply, I scoured the logs where my knowledge miner deposited results of marginal relevance, wondering if some flaw in the criteria I'd given it might have left me with a blind spot. If anyone, anywhere had announced their intention to carry out some kind of calculation that might have led them to the defect, the news should have been plastered across my desktop in flashing red letters within seconds. Granted, most organizations with the necessary computing resources were secretive by nature, but they were also unlikely to be motivated to indulge in such a crazy stunt. Luminous itself had been decommissioned in 2012; in principle, various national security agencies, and even a few IT-centric businesses, now had enough silicon to hunt down the defect if they'd really set their sights on it, but as far as I knew Yuen, Alison, and I were still the only three people in the world who were certain of its existence. The black budgets of even the most profligate governments, the deep pockets of even the richest tycoons, would not stretch far enough to take on the search as a long shot, or an act of whimsy.

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An IM window popped up with Alison's face. She looked ragged. "What time is it there?" I asked.

"Early. Laura's got colic."

"Ah. Are you okay to talk?"

"Yeah, she's asleep now."

My email had been brief, so I filled her in on the details. She pondered the matter in silence for a while, yawning unashamedly.

"The only thing I can think of is some gossip I heard at a conference in Rome a couple of months ago. It was a fourth-hand story about some guy in New Zealand who thinks he's found a way to test fundamental laws of physics by doing computations in number theory."

"Just random crackpot stuff, or . . . what?"

Alison massaged her temples, as if trying to get more blood flowing to her brain. "I don't know, what I heard was too vague to make a judgment. I gather he hasn't tried to publish this anywhere, or even mentioned it in blogs. I guess he just confided in a few people directly, one of whom must have found it too amusing for them to keep their mouth shut."

"Have you got a name?"

She went off camera and rummaged for a while. "Tim Campbell," she announced. Her notes came through on the data channel. "He's done respectable work in combinatorics, algorithmic complexity, optimization. I scoured the net, and there was no mention of this weird stuff. I was meaning to email him, but I never got around to it."

I could understand why; that would have been about the time Laura was born. I said, "I'm glad you still go to so many conferences in the flesh. It's easier in Europe, everything's so close."

"Ha! Don't count on it continuing, Bruno. You might have to put your fat arse on a plane sometime yourself."

"What about Yuen?"

Alison frowned. "Didn't I tell you? He's been in hospital for a couple of days. Pneumonia. I spoke to his daughter; he's not in great shape."

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“I’m sorry.” Alison was much closer to him than I was; he’d been her doctoral supervisor, so she’d known him long before the events that had bound the three of us together.

Yuen was almost eighty. That wasn’t yet ancient for a middle-class Chinese man who could afford good medical care, but he would not be around forever.

I said, “Are we crazy, trying to do this ourselves?” She knew what I meant: liaising with Sam, managing the border, trying to keep the two worlds talking but the two sides separate, safe and intact.

Alison replied, “Which government would you trust not to screw this up? Not to try to exploit it?”

“None. But what’s the alternative? You pass the job on to Laura? Kate’s not interested in having kids. So do I pick some young mathematician at random to anoint as my successor?”

“Not at random, I’d hope.”

“You want me to advertise? ‘Must be proficient in number theory, familiar with Machiavelli, and own the complete boxed set of *The West Wing*?’ ”

She shrugged. “When the time comes, find someone competent you can trust. It’s a balance: the fewer people who know, the better, so long as there are always enough of us that the knowledge doesn’t risk getting lost completely.”

“And this goes on generation after generation? Like some secret society? The Knights of the Arithmetic Inconsistency?”

“I’ll work on the crest.”

We needed a better plan, but this wasn’t the time to argue about it. I said, “I’ll contact this guy Campbell and let you know how it goes.”

“Okay. Good luck.” Her eyelids were starting to droop.

“Take care of yourself.”

Alison managed an exhausted smile. “Are you saying that because you give a damn, or because you don’t want to end up guarding the Grail all by yourself?”

“Both, of course.”

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“I have to fly to Wellington tomorrow.”

Kate put down the pasta-laden fork she’d raised halfway to her lips and gave me a puzzled frown. “That’s short notice.”

“Yeah, it’s a pain. It’s for the Bank of New Zealand. I have to do something on-site with a secure machine, one they won’t let anyone access over the net.”

Her frown deepened. “When will you be back?”

“I’m not sure. It might not be until Monday. I can probably do most of the work tomorrow, but there are certain things they restrict to the weekends, when the branches are off-line. I don’t know if it will come to that.”

I hated lying to her, but I’d grown accustomed to it. When we’d met, just a year after Shanghai, I could still feel the scar on my arm where one of Industrial Algebra’s hired thugs had tried to carve a data cache out of my body. At some point, as our relationship deepened, I’d made up my mind that however close we became, however much I trusted her, it would be safer for Kate if she never knew anything about the defect.

“They can’t hire someone local?” she suggested. I didn’t think she was suspicious, but she was definitely annoyed. She worked long hours at the hospital, and she only had every second weekend off; this would be one of them. We’d made no specific plans, but it was part of our routine to spend this time together.

I said, “I’m sure they could, but it’d be hard to find someone at short notice. And I can’t tell them to shove it, or I’ll lose the whole contract. It’s one weekend, it’s not the end of the world.”

“No, it’s not the end of the world.” She finally lifted her fork again.

“Is the sauce okay?”

“It’s delicious, Bruno.” Her tone made it clear that no amount of culinary effort would have been enough to compensate, so I might as well not have bothered.

I watched her eat with a strange knot growing in my stomach. Was

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this how spies felt, when they lied to their families about their work? But my own secret sounded more like something from a psychiatric ward. I was entrusted with the smooth operation of a treaty that I, and two friends, had struck with an invisible ghost world that coexisted with our own. The ghost world was far from hostile, but the treaty was the most important in human history, because either side had the power to annihilate the other so thoroughly that it would make a nuclear holocaust seem like a pinprick.

Victoria University was in a hilltop suburb overlooking Wellington. I caught a cable car, and arrived just in time for the Friday afternoon seminar. Contriving an invitation to deliver a paper here myself would have been difficult, but wangling permission to sit in as part of the audience was easy; although I hadn't been an academic for almost twenty years, my ancient Ph.D. and a trickle of publications, however tenuously related to the topic of the seminar, were still enough to make me welcome.

I'd taken a gamble that Campbell would attend—the topic was peripheral to his own research, official or otherwise—so I was relieved to spot him in the audience, recognizing him from a photo on the faculty web site. I'd emailed him straight after I'd spoken to Alison, but his reply had been a polite brush-off: he acknowledged that the work I'd heard about on the grapevine owed something to the infamous search that Alison and I had launched, but he wasn't ready to make his own approach public.

I sat through an hour on “Monoids and Control Theory,” trying to pay enough attention that I wouldn't make a fool of myself if the seminar organizer quizzed me later on why I'd been sufficiently attracted to the topic to interrupt my “sightseeing holiday” in order to attend. When the seminar ended, the audience split into two streams: one heading out of the building, the other moving into an adjoining room where refreshments were on offer. I saw Campbell making for the open air, and it was all I could do to contrive to get close enough to call out to him without making a spectacle.

“Dr. Campbell?”

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He turned and scanned the room, probably expecting to see one of his students wanting to beg for an extension on an assignment. I raised a hand and approached him.

“Bruno Costanzo. I emailed you yesterday.”

“Of course.” Campbell was a thin, pale man in his early thirties. He shook my hand, but he was obviously taken aback. “You didn’t mention that you were in Wellington.”

I made a dismissive gesture. “I was going to, but then it seemed a bit presumptuous.” I didn’t spell it out, I just left him to conclude that I was as ambivalent about this whole inconsistency nonsense as he was.

If fate had brought us together, though, wouldn’t it be absurd not to make the most of it?

“I was going to grab some of those famous scones,” I said; the seminar announcement on the web had made big promises for them. “Are you busy?”

“Umm. Just paperwork. I suppose I can put it off.”

As we made our way into the tea room, I waffled on airily about my holiday plans. I’d never actually been to New Zealand before, so I made it clear that most of my itinerary still lay in the future. Campbell was no more interested in the local geography and wildlife than I was; the more I enthused, the more distant his gaze became. Once it was apparent that he wasn’t going to cross-examine me on the finer points of various hiking trails, I grabbed a buttered scone and switched subject abruptly.

“The thing is, I heard you’d devised a more efficient strategy for searching for a defect.” I only just managed to stop myself from using the definite article; it was a while since I’d spoken about it as if it were still hypothetical. “You know the kind of computing power that Dr. Tierney and I had to scrounge up?”

“Of course. I was just an undergraduate, but I heard about the search.”

“Were you one of our volunteers?” I’d checked the records, and he wasn’t listed, but people had had the option of registering anonymously.

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“No. The idea didn’t really grab me, at the time.” As he spoke, he seemed more discomfited than the failure to donate his own resources twelve years ago really warranted. I was beginning to suspect that he’d actually been one of the people who’d found the whole tongue-in-cheek conjecture that Alison and I had put forward to be unforgivably foolish. We had never asked to be taken seriously—and we had even put prominent links to all the worthy biomedical computing projects on our web page, so that people knew there were far better ways to spend their spare megaflops—but nonetheless, some mathematical/philosophical stuffed shirts had spluttered with rage at the sheer impertinence and naïvety of our hypothesis. Before things turned serious, it was the entertainment value of that backlash that had made our efforts worthwhile.

“But now you’ve refined it somehow?” I prompted him, doing my best to let him see that I felt no resentment at the prospect of being outdone. In fact, the hypothesis itself had been Alison’s, so even if there hadn’t been more important things than my ego at stake, that really wasn’t a factor. As for the search algorithm, I’d cobbled it together on a Sunday afternoon, as a joke, to call Alison’s bluff. Instead, she’d called mine, and insisted that we release it to the world.

Campbell glanced around to see who was in earshot, but then perhaps it dawned on him that if the news of his ideas had already reached Sydney via Rome and Zürich, the battle to keep his reputation pristine in Wellington was probably lost.

He said, “What you and Dr. Tierney suggested was that random processes in the early universe might have included proofs of mutually contradictory theorems about the integers, the idea being that no computation to expose the inconsistency had yet had time to occur. Is that a fair summary?”

“Sure.”

“One problem I have with that is, I don’t see how it could lead to an inconsistency that could be detected here and now. If the physical system A proved theorem A, and the physical system B proved theorem B, then you might have different regions of the universe obeying different axioms, but it’s not as if there’s some universal

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mathematics textbook hovering around outside spacetime, listing every theorem that's ever been proved, which our computers then consult in order to decide how to behave. The behavior of a classical system is determined by its own particular causal past. If we're the descendants of a patch of the universe that proved theorem A, our computers should be perfectly capable of *disproving* theorem B, whatever happened somewhere else fourteen billion years ago."

I nodded thoughtfully. "I can see what you're getting at." If you weren't going to accept full-blooded Platonism, in which there *was* a kind of ghostly textbook listing the eternal truths of mathematics, then a half-baked version where the book started out empty and was only filled in line-by-line as various theorems were tested seemed like the worst kind of compromise. In fact, when the far side had granted Yuen, Alison, and I insight into their mathematics for a few minutes in Shanghai, Yuen had proclaimed that the flow of mathematical information *did* obey Einstein locality; there was no universal book of truths, just records of the past sloshing around at lightspeed or less, intermingling and competing.

I could hardly tell Campbell, though, that not only did I know for a fact that a single computer could prove both a theorem and its negation, but depending on the order in which it attacked the calculations it could sometimes even shift the boundary where one set of axioms failed and the other took over.

I said, "And yet you still believe it's worth searching for an inconsistency?"

"I do," he conceded. "Though I came to the idea from a very different approach." He hesitated, then picked up a scone from the table beside us.

"One rock, one apple, one scone. We have a clear idea of what we mean by those phrases, though each one might encompass ten-to-the-ten-to-the-thirty-something slightly different configurations of matter. My 'one scone' is not the same as your 'one scone.' "

"Right."

"You know how banks count large quantities of cash?"

"By weighing them?" In fact there were several other cross-checks



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as well, but I could see where he was heading and I didn't want to distract him with nit-picking.

"Exactly. Suppose we tried to count scones the same way: weigh the batch, divide by some nominal value, then round to the nearest integer. The weight of any individual scone varies so much that you could easily end up with a version of arithmetic different from our own. If you 'counted' two separate batches, then merged them and 'counted' them together, there's no guarantee that the result would agree with the ordinary process of integer addition."

I said, "Clearly not. But digital computers don't run on scones, and they don't count bits by weighing them."

"Bear with me," Campbell replied. "It isn't a perfect analogy, but I'm not as crazy as I sound. Suppose, now, that *everything* we talk about as 'one thing' has a vast number of possible configurations that we're either ignoring deliberately, or are literally incapable of distinguishing. Even something as simple as an electron prepared in a certain quantum state."

I said, "You're talking about hidden variables now?"

"Of a kind, yes. Do you know about Gerard 't Hooft's models for deterministic quantum mechanics?"

"Only vaguely," I admitted.

"He postulated fully deterministic degrees of freedom at the Planck scale, with quantum states corresponding to equivalence classes containing many different possible configurations. What's more, all the ordinary quantum states we prepare at an atomic level would be complex superpositions of those primordial states, which allows him to get around the Bell inequalities." I frowned slightly; I more or less got the picture, but I'd need to go away and read 't Hooft's papers.

Campbell said, "In a sense, the detailed physics isn't all that important, so long as you accept that 'one thing' might not *ever* be exactly the same as another 'one thing,' regardless of the kind of objects we're talking about. Given that supposition, physical processes that *seem* to be rigorously equivalent to various arithmetic operations can turn out not to be as reliable as you'd think. With scone-weighing, the

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flaws are obvious, but I'm talking about the potentially subtler results of misunderstanding the fundamental nature of matter."

"Hmm." Though it was unlikely that anyone else Campbell had confided in had taken these speculations as seriously as I did, not only did I not want to seem a pushover, I honestly had no idea whether anything he was saying bore the slightest connection to reality.

I said, "It's an interesting idea, but I still don't see how it could speed up the hunt for inconsistencies."

"I have a set of models," he said, "which are constrained by the need to agree with some of 't Hooft's ideas about the physics, and also by the need to make arithmetic *almost* consistent for a very large range of objects. From neutrinos to clusters of galaxies, basic arithmetic involving the kinds of numbers we might encounter in ordinary situations should work out in the usual way." He laughed. "I mean, that's the world we're living in, right?"

Some of us. "Yeah."

"But the interesting thing is, I can't make the physics work at all if the arithmetic doesn't run askew eventually—if there aren't trans-astronomical numbers where the physical representations no longer capture the arithmetic perfectly. And each of my models lets me predict, more or less, where those effects should begin to show up. By starting with the fundamental physical laws, I can deduce a sequence of calculations with large integers that ought to reveal an inconsistency, when performed with pretty much any computer."

"Taking you straight to the defect, with no need to search at all." I'd let the definite article slip out, but it hardly seemed to matter anymore.

"That's the theory." Campbell actually blushed slightly. "Well, when you say 'no search,' what's involved really is a much smaller search. There are still free parameters in my models; there are potentially billions of possibilities to test."

I grinned broadly, wondering if my expression looked as fake as it felt. "But no luck yet?"

"No." He was beginning to become self-conscious again, glancing around to see who might be listening.

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Was he lying to me? Keeping his results secret until he could verify them a million more times, and then decide how best to explain them to incredulous colleagues and an uncomprehending world? Or had whatever he'd done that had lobbed a small grenade into Sam's universe somehow registered in Campbell's own computer as arithmetic as usual, betraying no evidence of the boundary he'd crossed? After all, the offending cluster of propositions had obeyed *our* axioms, so perhaps Campbell had managed to force them to do so without ever realizing that they hadn't in the past. His ideas were obviously close to the mark—and I could no longer believe this was just a coincidence—but he seemed to have no room in his theory for something that I knew for a fact: arithmetic wasn't merely inconsistent, it was *dynamic*. You could take its contradictions and slide them around like bumps in a carpet.

Campbell said, "Parts of the process aren't easy to automate; there's some manual work to be done setting up the search for each broad class of models. I've only been doing this in my spare time, so it could be a while before I get around to examining all the possibilities."

"I see." If all of his calculations so far had produced just one hit on the far side, it was conceivable that the rest would pass without incident. He would publish a negative result ruling out an obscure class of physical theories, and life would go on as normal on both sides of the inconsistency.

What kind of weapons inspector would I be, though, to put my faith in that rosy supposition?

Campbell was looking fidgety, as if his administrative obligations were beckoning. I said, "It'd be great to talk about this a bit more while we've got the chance. Are you busy tonight? I'm staying at a backpacker's down in the city, but maybe you could recommend a restaurant around here somewhere?"

He looked dubious for a moment, but then an instinctive sense of hospitality seemed to overcome his reservations. He said, "Let me check with my wife. We're not really into restaurants, but I was cooking tonight anyway, and you'd be welcome to join us."

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Campbell's house was a fifteen minute walk from the campus; at my request, we detoured to a liquor store so I could buy a couple of bottles of wine to accompany the meal. As I entered the house, my hand lingered on the doorframe, depositing a small device that would assist me if I needed to make an uninvited entry in the future.

Campbell's wife, Bridget, was an organic chemist, who also taught at Victoria University. The conversation over dinner was all about department heads, budgets, and grant applications, and, despite having left academia long ago, I had no trouble relating sympathetically to the couple's gripes. My hosts ensured that my wine glass never stayed empty for long.

When we'd finished eating, Bridget excused herself to make a call to her mother, who lived in a small town on the south island. Campbell led me into his study and switched on a laptop with fading keys that must have been twenty years old. Many households had a computer like this: the machine that could no longer run the latest trendy bloatware, but which still worked perfectly with its original OS.

Campbell turned his back to me as he typed his password, and I was careful not to be seen even trying to look. Then he opened some C++ files in an editor, and scrolled over parts of his search algorithm.

I felt giddy, and it wasn't the wine; I'd filled my stomach with an over-the-counter sobriety aid that turned ethanol into glucose and water faster than any human being could imbibe it. I fervently hoped that Industrial Algebra really had given up their pursuit; if I could get this close to Campbell's secrets in half a day, IA could be playing the stock market with alternative arithmetic before the month was out, and peddling inconsistency weapons to the Pentagon soon after.

I did not have a photographic memory, and Campbell was just showing me fragments anyway. I didn't think he was deliberately taunting me; he just wanted me to see that he had something concrete, that all his claims about Planck scale physics and directed search strategies had been more than hot air.

I said, "Wait! What's that?" He stopped hitting the PAGE DOWN

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key, and I pointed at a list of variable declarations in the middle of the screen:

```
long int i1, i2, i3;  
dark d1, d2, d3;
```

A “long int” was a long integer, a quantity represented by twice as many bits as usual. On this vintage machine, that was likely to be a total of just sixty-four bits. “What the fuck is a ‘dark’?” I demanded. It wasn’t how I’d normally speak to someone I’d only just met, but then, I wasn’t meant to be sober.

Campbell laughed. “A dark integer. It’s a type I defined. It holds four thousand and ninety-six bits.”

“But why the name?”

“Dark matter, dark energy . . . dark integers. They’re all around us, but we don’t usually see them, because they don’t quite play by the rules.”

Hairs rose on the back of my neck. I could not have described the infrastructure of Sam’s world more concisely myself.

Campbell shut down the laptop. I’d been looking for an opportunity to handle the machine, however briefly, without arousing his suspicion, but that clearly wasn’t going to happen, so as we walked out of the study I went for plan B.

“I’m feeling kind of . . .” I sat down abruptly on the floor of the hallway. After a moment, I fished my phone out of my pocket and held it up to him. “Would you mind calling me a taxi?”

“Yeah, sure.” He accepted the phone, and I cradled my head in my arms. Before he could dial the number, I started moaning softly. There was a long pause; he was probably weighing up the embarrassment factor of various alternatives.

Finally he said, “You can sleep here on the couch if you like.” I felt a genuine pang of sympathy for him; if some clown I barely knew had pulled a stunt like this on me, I would at least have made him promise to foot the cleaning bills if he threw up in the middle of the night.

In the middle of the night, I did make a trip to the bathroom, but I kept the sound effects restrained. Halfway through, I walked

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quietly to the study, crossed the room in the dark, and slapped a thin, transparent patch over the adhesive label that a service company had placed on the outside of the laptop years before. My addition would be invisible to the naked eye, and it would take a scalpel to prise it off. The relay that would communicate with the patch was larger, about the size of a coat button; I stuck it behind a bookshelf. Unless Campbell was planning to paint the room or put in new carpet, it would probably remain undetected for a couple of years, and I'd already prepaid a two year account with a local wireless internet provider.

I woke not long after dawn, but this un-Bacchanalian early rising was no risk to my cover; Campbell had left the curtains open so the full force of the morning sun struck me in the face, a result that was almost certainly deliberate. I tiptoed around the house for ten minutes or so, not wanting to seem too organized if anyone was listening, then left a scrawled note of thanks and apology on the coffee table by the couch, before letting myself out and heading for the cable car stop.

Down in the city, I sat in a café opposite the backpacker's hostel and connected to the relay, which in turn had established a successful link with the polymer circuitry of the laptop patch. When noon came and went without Campbell logging on, I sent a message to Kate telling her that I was stuck in the bank for at least another day.

I passed the time browsing the news feeds and buying overpriced snacks; half of the café's other patrons were doing the same. Finally, just after three o'clock, Campbell started up the laptop.

The patch couldn't read his disk drive, but it could pick up currents flowing to and from the keyboard and the display, allowing it to deduce everything he typed and everything he saw. Capturing his password was easy. Better yet, once he was logged in he set about editing one of his files, extending his search program to a new class of models. As he scrolled back and forth, it wasn't long before the patch's screen shots encompassed the entire contents of the file he was working on.

He labored for more than two hours, debugging what he'd written, then set the program running. This creaky old twentieth century machine, which predated the whole internet-wide search for the defect, had already scored one direct hit on the far side; I just hoped

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this new class of models were all incompatible with the successful ones from a few days before.

Shortly afterward, the IR sensor in the patch told me that Campbell had left the room. The patch could induce currents in the keyboard connection; I could type into the machine as if I was right there. I started a new process window. The laptop wasn't connected to the internet at all, except through my spyware, but it took me only fifteen minutes to display and record everything there was to see: a few library and header files that the main program depended on, and the data logs listing all of the searches so far. It would not have been hard to hack into the operating system and make provisions to corrupt any future searches, but I decided to wait until I had a better grasp of the whole situation. Even once I was back in Sydney, I'd be able to eavesdrop whenever the laptop was in use, and intervene whenever it was left unattended. I'd only stayed in Wellington in case there'd been a need to return to Campbell's house in person.

When evening fell and I found myself with nothing urgent left to do, I didn't call Kate; it seemed wiser to let her assume that I was slaving away in a windowless computer room. I left the café and lay on my bed in the hostel. The dormitory was deserted; everyone else was out on the town.

I called Alison in Zürich and brought her up to date. In the background, I could hear her husband, Philippe, trying to comfort Laura in another room, calmly talking baby-talk in French while his daughter wailed her head off.

Alison was intrigued. "Campbell's theory can't be perfect, but it must be close. Maybe we'll be able to find a way to make it fit in with the dynamics we've seen." In the ten years since we'd stumbled on the defect, all our work on it had remained frustratingly empirical: running calculations and observing their effects. We'd never come close to finding any deep underlying principles.

"Do you think Sam knows all this?" she asked.

"I have no idea. If he did, I doubt he'd admit it." Though it was Sam who had given us a taste of far-side mathematics in Shanghai, that had really just been a clip over the ear to let us know that what

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we were trying to wipe out with Luminous was a civilization, not a wasteland. After that near-disastrous first encounter, he had worked to establish communications with us, learning our languages and happily listening to the accounts we'd volunteered of our world, but he had not been equally forthcoming in return. We knew next to nothing about far-side physics, astronomy, biology, history, or culture. That there were living beings occupying the same space as the Earth suggested that the two universes were intimately coupled somehow, in spite of their mutual invisibility. But Sam had hinted that life was much more common on his side of the border than ours; when I'd told him that we seemed to be alone, at least in the solar system, and were surrounded by light-years of sterile vacuum, he'd taken to referring to our side as "Sparseland."

Alison said, "Either way, I think we should keep it to ourselves. The treaty says we should do everything in our power to deal with any breach of territory of which the other side informs us. We're doing that. But we're not obliged to disclose the details of Campbell's activities."

"That's true." I wasn't entirely happy with her suggestion, though. In spite of the attitude Sam and his colleagues had taken—in which they assumed that anything they told us might be exploited, might make them more vulnerable—a part of me had always wondered if there was some gesture of good faith we could make, some way to build trust. Since talking to Campbell, in the back of my mind I'd been building up a faint hope that his discovery might lead to an opportunity to prove, once and for all, that our intentions were honorable.

Alison read my mood. She said, "Bruno, they've given us *nothing*. Shanghai excuses a certain amount of caution, but we also know from Shanghai that they could brush Luminous aside like a gnat. They have enough computing power to crush us in an instant, and they still cling to every strategic advantage they can get. Not to do the same ourselves would just be stupid and irresponsible."

"So you want us to hold on to this secret weapon?" I was beginning to develop a piercing headache. My usual way of dealing with the surreal responsibility that had fallen on the three of us was to pretend that it didn't exist; having to think about it constantly for



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three days straight meant more tension than I'd faced for a decade. "Is that what it's come down to? Our own version of the Cold War? Why don't you just march into NATO headquarters on Monday and hand over everything we know?"

Alison said dryly, "Switzerland isn't a member of NATO. The government here would probably charge me with treason."

I didn't want to fight with her. "We should talk about this later. We don't even know exactly what we've got. I need to go through Campbell's files and confirm whether he really did what we think he did."

"Okay."

"I'll call you from Sydney."

It took me a while to make sense of everything I'd stolen from Campbell, but eventually I was able to determine which calculations he'd performed on each occasion recorded in his log files. Then I compared the propositions that he'd tested with a rough, static map of the defect; since the event Sam had reported had been deep within the far side, there was no need to take account of the small fluctuations that the border underwent over time.

If my analysis was correct, late on Wednesday night Campbell's calculations had landed in the middle of far-side mathematics. He'd been telling me the truth, though; he'd found nothing out of the ordinary there. Instead, the thing he had been seeking had melted away before his gaze.

In all the calculations Alison and I had done, only at the border had we been able to force propositions to change their allegiance and obey our axioms. It was as if Campbell had dived in from some higher dimension, carrying a hosepipe that sprayed everything with the arithmetic we knew and loved.

For Sam and his colleagues, this was the equivalent of a suitcase nuke appearing out of nowhere, as opposed to the ICBMs they knew how to track and annihilate. Now Alison wanted us to tell them, "Trust us, we've dealt with it," without showing them the weapon itself, without letting them see how it worked, without giving them a chance to devise new defenses against it.

She wanted us to have something up our sleeves, in case the hawks

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took over the far side, and decided that Sparseland was a ghost world whose lingering, baleful presence they could do without.

Drunken Saturday-night revelers began returning to the hostel, singing off-key and puking enthusiastically. Maybe this was poetic justice for my own faux-inebriation; if so, I was being repaid a thousandfold. I started wishing I'd shelled out for classier accommodation, but since there was no employer picking up my expenses, it was going to be hard enough dealing with my lie to Kate without spending even more on the trip.

Forget the arithmetic of scones; I knew how to make digital currency reproduce like the marching brooms of the sorcerer's apprentice. It might even have been possible to milk the benefits without Sam noticing; I could try to hide my far-sider trading behind the manipulations of the border we used routinely to exchange messages.

I had no idea how to contain the side-effects, though. I had no idea what else such meddling would disrupt, how many people I might kill or maim in the process.

I buried my head beneath the pillows and tried to find a way to get to sleep through the noise. I ended up calculating powers of seven, a trick I hadn't used since childhood. I'd never been a prodigy at mental arithmetic, and the concentration required to push on past the easy cases drained me far faster than any physical labor. *Two hundred and eighty-two million, four hundred and seventy-five thousand, two hundred and forty-nine.* The numbers rose into the stratosphere like bean stalks, until they grew too high and tore themselves apart, leaving behind a cloud of digits drifting through my skull like black confetti.

"The problem is under control," I told Sam. "I've located the source, and I've taken steps to prevent a recurrence."

"Are you sure of that?" As he spoke, the three-holed torus on the screen twisted restlessly. In fact I'd chosen the icon myself, and its appearance wasn't influenced by Sam at all, but it was impossible not to project emotions onto its writhing.

I said, "I'm certain that I know who was responsible for the incursion on Wednesday. It was done without malice; in fact the person

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who did it doesn't even realize that he crossed the border. I've modified the operating system on his computer so that it won't allow him to do the same thing again; if he tries, it will simply give him the same answers as before, but this time the calculations won't actually be performed."

"That's good to hear," Sam said. "Can you describe these calculations?"

I was as invisible to Sam as he was to me, but out of habit I tried to keep my face composed. "I don't see that as part of our agreement," I replied.

Sam was silent for a few seconds. "That's true, Bruno. But it might provide us with a greater sense of reassurance if we knew what caused the breach in the first place."

I said, "I understand. But we've made a decision." We was Alison and I; Yuen was still in hospital, in no state to do anything. Alison and I, speaking for the world.

"I'll put your position to my colleagues," he said. "We're not your enemy, Bruno." His tone sounded regretful, and these nuances *were* under his control.

"I know that," I replied. "Nor are we yours. Yet you've chosen to keep most of the details of your world from us. We don't view that as evidence of hostility, so you have no grounds to complain if we keep a few secrets of our own."

"I'll contact you again soon," Sam said.

The messenger window closed. I emailed an encrypted transcript to Alison, then slumped across my desk. My head was throbbing, but the encounter really hadn't gone too badly. Of course Sam and his colleagues would have preferred to know everything; of course they were going to be disappointed and reproachful. That didn't mean they were going to abandon the benign policies of the last decade. The important thing was that my assurance would prove to be reliable: the incursion would not be repeated.

I had work to do, the kind that paid bills. Somehow I summoned up the discipline to push the whole subject aside and get on with a report on stochastic methods for resolving distributed program-

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ming bottlenecks that I was supposed to be writing for a company in Singapore.

Four hours later, when the doorbell rang, I'd left my desk to raid the kitchen. I didn't bother checking the doorstep camera; I just walked down the hall and opened the door.

Campbell said, "How are you, Bruno?"

"I'm fine. Why didn't you tell me you were coming to Sydney?"

"Aren't you going to ask me how I found your house?"

"How?"

He held up his phone. There was a text message from me, or at least from my phone; it had SMS'd its GPS coordinates to him.

"Not bad," I conceded.

"I believe they recently added 'corrupting communications devices' to the list of terrorism-related offenses in Australia. You could probably get me thrown into solitary confinement in a maximum security prison."

"Only if you know at least ten words of Arabic."

"Actually I spent a month in Egypt once, so anything's possible. But I don't think you really want to go to the police."

I said, "Why don't you come in?"

As I showed him to the living room my mind was racing. Maybe he'd found the relay behind the bookshelf, but surely not before I'd left his house. Had he managed to get a virus into my phone remotely? I'd thought my security was better than that.

Campbell said, "I'd like you to explain why you bugged my computer."

"I'm growing increasingly unsure of that myself. The correct answer might be that you wanted me to."

He snorted. "That's rich! I admit that I deliberately allowed a rumor to start about my work, because I was curious as to why you and Alison Tierney called off your search. I wanted to see if you'd come sniffing around. As you did. But that was hardly an invitation to steal all my work."

"What was the point of the whole exercise for you, then, if not a way of stealing something from Alison and me?"

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“You can hardly compare the two. I just wanted to confirm my suspicion that you actually found something.”

“And you believe that you’ve confirmed that?”

He shook his head, but it was with amusement, not denial. I said, “Why are you here? Do you think I’m going to publish your crackpot theory as my own? I’m too old to get the Fields Medal, but maybe you think it’s Nobel material.”

“Oh, I don’t think you’re interested in fame. As I said, I think you beat me to the prize a long time ago.”

I rose to my feet abruptly; I could feel myself scowling, my fists tightening. “So what’s the bottom line? You want to press charges against me for the laptop? Go ahead. We can each get a fine *in absentia*.”

Campbell said, “I want to know exactly what was so important to you that you crossed the Tasman, lied your way into my house, abused my hospitality, and stole my files. I don’t think it was simply curiosity, or jealousy. I think you found something ten years ago, and now you’re afraid my work is going to put it at risk.”

I sat down again. The rush of adrenaline I’d experienced at being cornered had dissipated. I could almost hear Alison whispering in my ear, “Either you kill him, Bruno, or you recruit him.” I had no intention of killing anyone, but I wasn’t yet certain that these were the only two choices.

I said, “And if I tell you to mind your own business?”

He shrugged. “Then I’ll work harder. I know you’ve screwed that laptop, and maybe the other computers in my house, but I’m not so broke that I can’t get a new machine.”

Which would be a hundred times faster. He’d re-run every search, probably with wider parameter ranges. The suitcase nuke from Sparseland that had started this whole mess would detonate again, and for all I knew it could be ten times, a hundred times, more powerful.

I said, “Have you ever wanted to join a secret society?”

Campbell gave an incredulous laugh. “No!”

“Neither did I. Too bad.”

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I told him everything. The discovery of the defect. Industrial Algebra's pursuit of the result. The epiphany in Shanghai. Sam establishing contact. The treaty, the ten quiet years. Then the sudden jolt of his own work, and the still-unfolding consequences.

Campbell was clearly shaken, but despite the fact that I'd confirmed his original suspicion he wasn't ready to take my word for the whole story.

I knew better than to invite him into my office for a demonstration; faking it there would have been trivial. We walked to the local shopping center, and I handed him two hundred dollars to buy a new notebook. I told him the kind of software he'd need to download, without limiting his choice to any particular package. Then I gave him some further instructions. Within half an hour, he had seen the defect for himself, and nudged the border a short distance in each direction.

We were sitting in the food hall, surrounded by boisterous teenagers who'd just got out from school. Campbell was looking at me as if I'd seized a toy machine gun from his hands, transformed it into solid metal, then bashed him over the head with it.

I said, "Cheer up. There was no war of the worlds after Shanghai; I think we're going to survive this, too." After all these years, the chance to share the burden with someone new was actually making me feel much more optimistic.

"The defect is *dynamic*," he muttered. "That changes everything."

"You don't say."

Campbell scowled. "I don't just mean the politics, the dangers. I'm talking about the underlying physical model."

"Yeah?" I hadn't come close to examining that issue seriously; it had been enough of a struggle coming to terms with his original calculations.

"All along, I've assumed that there were exact symmetries in the Planck scale physics that accounted for a stable boundary between macroscopic arithmetics. It was an artificial restriction, but I took it for granted, because anything else seemed . . ."

"Unbelievable?"

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“Yes.” He blinked and looked away, surveying the crowd of diners as if he had no idea how he’d ended up among them. “I’m flying back in a few hours.”

“Does Bridget know why you came?”

“Not exactly.”

I said, “No one else can know what I’ve told you. Not yet. The risks are too great, everything’s too fluid.”

“Yeah.” He met my gaze. He wasn’t just humoring me; he understood what people like IA might do.

“In the long term,” I said, “we’re going to have to find a way to make this safe. To make everyone safe.” I’d never quite articulated that goal before, but I was only just beginning to absorb the ramifications of Campbell’s insights.

“How?” he wondered. “Do we want to build a wall, or do we want to tear one down?”

“I don’t know. The first thing we need is a better map, a better feel for the whole territory.”

He’d hired a car at the airport in order to drive here and confront me; it was parked in a side street close to my house. I walked him to it.

We shook hands before parting. I said, “Welcome to the reluctant cabal.”

Campbell winced. “Let’s find a way to change it from reluctant to redundant.”

In the weeks that followed, Campbell worked on refinements to his theory, emailing Alison and me every few days. Alison had taken my unilateral decision to recruit Campbell with much more equanimity than I’d expected. “Better to have him inside the tent,” was all she’d said.

This proved to be an understatement. While the two of us soon caught up with him on all the technicalities, it was clear that his intuition on the subject, hard-won over many years of trial and error, was the key to his spectacular progress now. Merely stealing his notes and his algorithms would never have brought us so far.

Gradually, the dynamic version of the theory took shape. As far as

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macroscopic objects were concerned—and in this context, “macroscopic” stretched all the way down to the quantum states of subatomic particles—all traces of Platonic mathematics were banished. A “proof” concerning the integers was just a class of physical processes, and the result of that proof was neither read from, nor written to, any universal book of truths. Rather, the agreement between proofs was simply a strong, but imperfect, correlation between the different processes that counted as proofs of the same thing. Those correlations arose from the way that the primordial states of Planck-scale physics were carved up—imperfectly—into subsystems that appeared to be distinct objects.

The truths of mathematics *appeared* to be enduring and universal because they persisted with great efficiency within the states of matter and space-time. But there was a built-in flaw in the whole idealization of distinct objects, and the point where the concept finally cracked open was the defect Alison and I had found in our volunteers’ data, which appeared to any macroscopic test as the border between contradictory mathematical systems.

We’d derived a crude empirical rule which said that the border shifted when a proposition’s neighbors outvoted it. If you managed to prove that  $x+1=y+1$  and  $x-1=y-1$ , then  $x=y$  became a sitting duck, even if it hadn’t been true before. The consequences of Campbell’s search had shown that the reality was more complex, and in his new model, the old border rule became an approximation for a more subtle process, anchored in the dynamics of primordial states that knew nothing of the arithmetic of electrons and apples. The near-side arithmetic Campbell had blasted into the far side hadn’t got there by besieging the target with syllogisms; it had got there because he’d gone straight for a far deeper failure in the whole idea of “integers” than Alison and I had ever dreamed of.

Had Sam dreamed of it? I waited for his next contact, but as the weeks passed he remained silent, and the last thing I felt like doing was calling him myself. I had enough people to lie to without adding him to the list.

Kate asked me how work was going, and I waffled about the details



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of the three uninspiring contracts I'd started recently. When I stopped talking, she looked at me as if I'd just stammered my way through an unconvincing denial of some unspoken crime. I wondered how my mixture of concealed elation and fear was coming across to her. Was that how the most passionate, conflicted adulterer would appear? I didn't actually reach the brink of confession, but I pictured myself approaching it. I had less reason now to think that the secret would bring her harm than when I'd first made my decision to keep her in the dark. But then, what if I told her everything, and the next day Campbell was kidnapped and tortured? If we were all being watched, and the people doing it were good at their jobs, we'd only know about it when it was too late.

Campbell's emails dropped off for a while, and I assumed he'd hit a roadblock. Sam had offered no further complaints. Perhaps, I thought, this was the new *status quo*, the start of another quiet decade. I could live with that.

Then Campbell flung his second grenade. He reached me by IM and said, "I've started making maps."

"Of the defect?" I replied.

"Of the planets."

I stared at his image, uncomprehending.

"The far-side planets," he said. "*The physical worlds.*"

He'd bought himself some time on a geographically scattered set of processor clusters. He was no longer repeating his dangerous incursions, of course, but by playing around in the natural ebb and flow at the border, he'd made some extraordinary discoveries.

Alison and I had realized long ago that random "proofs" in the natural world would influence what happened at the border, but Campbell's theory made that notion more precise. By looking at the exact timing of changes to propositions at the border, measured in a dozen different computers world-wide, he had set up a kind of . . . radar? CT machine? Whatever you called it, it allowed him to deduce the locations where the relevant natural processes were occurring, and his model allowed him to distinguish between both near-side and far-side processes, and processes in matter and those in vacuum.

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He could measure the density of far-side matter out to a distance of several light-hours, and crudely image nearby planets.

“Not just on the far side,” he said. “I validated the technique by imaging our own planets.” He sent me a data log, with comparisons to an online almanac. For Jupiter, the farthest of the planets he’d located, the positions were out by as much as a hundred thousand kilometers; not exactly GPS quality, but that was a bit like complaining that your abacus couldn’t tell north from north-west.

“Maybe that’s how Sam found us in Shanghai?” I wondered. “The same kind of thing, only more refined?”

Campbell said, “Possibly.”

“So what about the far-side planets?”

“Well, here’s the first interesting thing. None of the planets coincide with ours. Nor does their sun with our sun.” He sent me an image of the far-side system, one star and its six planets, overlaid on our own.

“But Sam’s time lags,” I protested, “when we communicate—”

“Make no sense if he’s too far away. Exactly. So he is *not* living on any of these planets, and he’s not even in a natural orbit around their star. He’s in powered flight, moving with the Earth. Which suggests to me that they’ve known about us for much longer than Shanghai.”

“Known about us,” I said, “but maybe they still didn’t anticipate anything like Shanghai.” When we’d set Luminous on to the task of eliminating the defect—not knowing that we were threatening anyone—it had taken several minutes before the far side had responded. Computers on board a spacecraft moving with the Earth would have detected the assault quickly, but it might have taken the recruitment of larger, planet-bound machines, minutes away at lightspeed, to repel it.

Until I’d encountered Campbell’s theories, my working assumption had been that Sam’s world was like a hidden message encoded in the Earth, with the different arithmetic giving different meanings to all the air, water, and rock around us. But their matter was not bound to our matter; they didn’t need our specks of dust or molecules of air to represent the dark integers. The two worlds split apart at a much lower level; vacuum could be rock, and rock, vacuum.

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I said, "So do you want the Nobel for physics, or peace?"

Campbell smiled modestly. "Can I hold out for both?"

"That's the answer I was looking for." I couldn't get the stupid Cold War metaphors out of my brain: what would Sam's hotheaded colleagues think, if they knew that we were now flying spy planes over their territory? Saying "screw them, they were doing it first!" might have been a fair response, but it was not a particularly helpful one.

I said, "We're never going to match their Sputnik, unless you happen to know a trustworthy billionaire who wants to help us launch a space probe on a very strange trajectory. Everything we want to do has to work from Earth."

"I'll tear up my letter to Richard Branson then, shall I?"

I stared at the map of the far-side solar system. "There must be some relative motion between their star and ours. It can't have been this close for all that long."

"I don't have enough accuracy in my measurements to make a meaningful estimate of the velocity," Campbell said. "But I've done some crude estimates of the distances between their stars, and it's much smaller than ours. So it's not all that unlikely to find *some* star this close to us, even if it's unlikely to be the same one that was close a thousand years ago. Then again, there might be a selection effect at work here: the whole reason Sam's civilization managed to notice us at all was *because* we weren't shooting past them at a substantial fraction of lightspeed."

"Okay. So *maybe* this is their home system, but it could just as easily be an expeditionary base for a team that's been following our sun for thousands of years."

"Yes."

I said, "Where do we go with this?"

"I can't increase the resolution much," Campbell replied, "without buying time on a lot more clusters." It wasn't that he needed much processing power for the calculations, but there were minimum prices to be paid to do anything at all, and what would give us clearer pictures would be more computers, not more time on each one.

I said, "We can't risk asking for volunteers, like the old days. We'd

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have to lie about what the download was for, and you can be certain that somebody would reverse-engineer it and catch us out.”

“Absolutely.”

I slept on the problem, then woke with an idea at four AM and went to my office, trying to flesh out the details before Campbell responded to my email. He was bleary-eyed when the messenger window opened; it was later in Wellington than in Sydney, but it looked as if he’d had as little sleep as I had.

I said, “We use the internet.”

“I thought we decided that was too risky.”

“Not screensavers for volunteers; I’m talking about *the internet itself*. We work out a way to do the calculations using nothing but data packets and network routers. We bounce traffic all around the world, and we get the geographical resolution for free.”

“You’ve got to be joking, Bruno—”

“Why? *Any* computing circuit can be built by stringing together enough NAND gates; you think we can’t leverage packet switching into a NAND gate? But that’s just the proof that it’s possible; I expect we can actually make it a thousand times tighter.”

Campbell said, “I’m going to get some aspirin and come back.”

We roped in Alison to help, but it still took us six weeks to get a workable design, and another month to get it functioning. We ended up exploiting authentication and error-correction protocols built into the internet at several different layers; the heterogeneous approach not only helped us do all the calculations we needed, but made our gentle siphoning of computing power less likely to be detected and mistaken for anything malicious. In fact we were “stealing” far less from the routers and servers of the net than if we’d sat down for a hardcore 3D multiplayer gaming session, but security systems had their own ideas about what constituted fair use and what was suspicious. The most important thing was not the size of the burden we imposed, but the signature of our behavior.

Our new globe-spanning arithmetical telescope generated pictures far sharper than before, with kilometer-scale resolution out to a billion kilometers. This gave us crude relief-maps of the far-side planets,

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revealing mountains on four of them, and what might have been oceans on two of those four. If there were any artificial structures, they were either too small to see, or too subtle in their artificiality.

The relative motion of our sun and the star these planets orbited turned out to be about six kilometers per second. In the decade since Shanghai, the two solar systems had changed their relative location by about two billion kilometers. Wherever the computers were now that had fought with Luminous to control the border, they certainly hadn't been on any of these planets at the time. Perhaps there were two ships, with one following the Earth, and the other, heavier one saving fuel by merely following the sun.

Yuen had finally recovered his health, and the full cabal held an IM-conference to discuss these results.

"We should be showing these to geologists, xenobiologists . . . everyone," Yuen lamented. He wasn't making a serious proposal, but I shared his sense of frustration.

Alison said, "What I regret most is that we can't rub Sam's face in these pictures, just to show him that we're not as stupid as he thinks."

"I imagine his own pictures are sharper," Campbell replied.

"Which is as you'd expect," Alison retorted, "given a head start of a few centuries. If they're so brilliant on the far side, why do they need *us* to tell them what you did to jump the border?"

"They might have guessed precisely what I did," he countered, "but they could still be seeking confirmation. Perhaps what they really want is to rule out the possibility that we've discovered something different, something they've never even thought of."

I gazed at the false colors of one contoured sphere, imagining gray-blue oceans, snow-topped mountains with alien forests, strange cities, wondrous machines. Even if that was pure fantasy and this temporary neighbor was barren, there had to be a living homeworld from which the ships that pursued us had been launched.

After Shanghai, Sam and his colleagues had chosen to keep us in the dark for ten years, but it had been our own decision to cement the mistrust by holding on to the secret of our accidental weapon. If they'd already guessed its nature, then they might already have found

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a defense against it, in which case our silence bought us no advantage at all to compensate for the suspicion it engendered.

*If that assumption was wrong, though?* Then handing over the details of Campbell's work could be just what the far-side hawks were waiting for, before raising their shields and crushing us.

I said, "We need to make some plans. I want to stay hopeful, I want to keep looking for the best way forward, but we need to be prepared for the worst."

Transforming that suggestion into something concrete required far more work than I'd imagined; it was three months before the pieces started coming together. When I finally shifted my gaze back to the everyday world, I decided that I'd earned a break. Kate had a free weekend approaching; I suggested a day in the Blue Mountains.

Her initial response was sarcastic, but when I persisted she softened a little, and finally agreed.

On the drive out of the city, the chill that had developed between us slowly began to thaw. We played JJJ on the car radio—laughing with disbelief as we realized that today's cutting-edge music consisted mostly of cover versions and re-samplings of songs that had been hits when we were in our twenties—and resurrected old running jokes from the time when we'd first met.

As we wound our way into the mountains, though, it proved impossible simply to turn back the clock. Kate said, "Whoever you've been working for these last few months, can you put them on your blacklist?"

I laughed. "That will scare them." I switched to my best Brando voice. "You're on Bruno Costanzo's blacklist. You'll never run distributed software efficiently in this town again."

She said, "I'm serious. I don't know what's so stressful about the work, or the people, but it's really screwing you up."

I could have made her a promise, but it would have been hard enough to sound sincere as I spoke the words, let alone live up to them. I said, "Beggars can't be choosers."

She shook her head, her mouth tensed in frustration. "If you really

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want a heart attack, fine. But don't pretend that it's all about money. We're never that broke, and we're never that rich. Unless it's all going into your account in Zürich."

It took me a few seconds to convince myself that this was nothing more than a throwaway reference to Swiss banks. Kate knew about Alison, knew that we'd once been close, knew that we still kept in touch. She had plenty of male friends from her own past, and they all lived in Sydney; for more than five years, Alison and I hadn't even set foot on the same continent.

We parked the car, then walked along a scenic trail for an hour, mostly in silence. We found a spot by a stream, with tiered rocks smoothed by some ancient river, and ate the lunch I'd packed.

Looking out into the blue haze of the densely wooded valley below, I couldn't keep the image of the crowded skies of the far side from my mind. A dazzling richness surrounded us: alien worlds, alien life, alien culture. There had to be a way to end our mutual suspicion, and work toward a genuine exchange of knowledge.

As we started back toward the car, I turned to Kate. "I know I've neglected you," I said. "I've been through a rough patch, but everything's going to change. I'm going to make things right."

I was prepared for a withering rebuff, but for a long time she was silent. Then she nodded slightly and said, "Okay."

As she reached across and took my hand, my wrist began vibrating. I'd buckled to the pressure and bought a watch that shackled me to the net twenty-four hours a day.

I freed my hand from Kate's and lifted the watch to my face. The bandwidth reaching me out in the sticks wasn't enough for video, but a stored snapshot of Alison appeared on the screen.

"This is for *emergencies only*," I snarled.

"Check out a news feed," she replied. The acoustics were focused on my ears; Kate would get nothing but the bad-hearing-aid-at-a-party impression that made so many people want to punch their fellow commuters on trains.

"Why don't you just summarize whatever it is I'm meant to have noticed?"

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Financial computing systems were going haywire, to an extent that was already being described as terrorism. Most trading was closed for the weekend, but some experts were predicting the crash of the century, come Monday.

I wondered if the cabal itself was to blame; if we'd inadvertently corrupted the whole internet by coupling its behavior to the defect. That was nonsense, though. Half the transactions being garbled were taking place on secure, interbank networks that shared no hardware with our global computer. This was coming from the far side.

"Have you contacted Sam?" I asked her.

"I can't raise him."

"Where are you going?" Kate shouted angrily. I'd unconsciously broken into a jog; I wanted to get back to the car, back to the city, back to my office.

I stopped and turned to her. "Run with me? Please? This is important."

"You're joking! I've spent half a day hiking, I'm not running anywhere!"

I hesitated, fantasizing for a moment that I could sit beneath a gum tree and orchestrate everything with my Dick Tracy watch before its battery went flat.

I said, "You'd better call a taxi when you get to the road."

"You're taking the car?" Kate stared at me, incredulous. "You piece of shit!"

"I'm sorry." I tossed my backpack on the ground and started sprinting.

"We need to deploy," I told Alison.

"I know," she said. "We've already started."

It was the right decision, but hearing it still loosened my bowels far more than the realization that the far side were attacking us. Whatever their motives, at least they were unlikely to do more harm than they intended. I was much less confident about our own abilities.

"Keep trying to reach Sam," I insisted. "This is a thousand times more useful if they know about it."

Alison said, "I guess this isn't the time for *Dr. Strangelove* jokes."



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Over the last three months, we'd worked out a way to augment our internet "telescope" software to launch a barrage of Campbell-style attacks on far-side propositions if it saw our own mathematics being encroached upon. The software couldn't protect the whole border, but there were millions of individual trigger points, forming a randomly shifting minefield. The plan had been to buy ourselves some security, without ever reaching the point of actual retaliation. We'd been waiting to complete a final round of tests before unleashing this version live on the net, but it would only take a matter of minutes to get it up and running.

"Anything being hit besides financials?" I asked.

"Not that I'm picking up."

If the far side was deliberately targeting the markets, that was infinitely preferable to the alternative: that financial systems had simply been the most fragile objects in the path of a much broader assault. Most modern engineering and aeronautical systems were more interested in resorting to fall-backs than agonizing over their failures. A bank's computer might declare itself irretrievably compromised and shut down completely, the instant certain totals failed to reconcile; those in a chemical plant or an airliner would be designed to fail more gracefully, trying simpler alternatives and bringing all available humans into the loop.

I said, "Yuen and Tim—?"

"Both on board," Alison confirmed. "Monitoring the deployment, ready to tweak the software if necessary."

"Good. You really won't need me at all, then, will you?"

Alison's reply dissolved into digital noise, and the connection cut out. I refused to read anything sinister into that; given my location, I was lucky to have any coverage at all. I ran faster, trying not to think about the time in Shanghai when Sam had taken a mathematical scalpel to all of our brains. Luminous had been screaming out our position like a beacon; we would not be so easy to locate this time. Still, with a cruder approach, the hawks could take a hatchet to everyone's head. *Would they go that far?* Only if this was meant as much more than a threat, much more than intimidation to make us hand over

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Campbell's algorithm. Only if this was the end game: no warning, no negotiations, just Sparseland wiped off the map forever.

Fifteen minutes after Alison's call, I reached the car. Apart from the entertainment console it didn't contain a single microchip; I remembered the salesman laughing when I'd queried that twice. "What are you afraid of? Y3K?" The engine started immediately.

I had an ancient secondhand laptop in the trunk; I put it beside me on the passenger seat and started booting it up while I drove out on to the access road, heading for the highway. Alison and I had worked for a fortnight on a stripped-down operating system, as simple and robust as possible, to run on these old computers; if the far side kept reaching down from the arithmetic stratosphere, these would be like concrete bunkers compared to the glass skyscrapers of more modern machines. The four of us would also be running different versions of the OS, on CPUs with different instruction sets; our bunkers were scattered mathematically as well as geographically.

As I drove on to the highway, my watch stuttered back to life. Alison said, "Bruno? Can you hear me?"

"Go ahead."

"Three passenger jets have crashed," she said. "Poland, Indonesia, South Africa."

I was dazed. Ten years before, when I'd tried to bulldoze his whole mathematical world into the sea, Sam had spared my life. Now the far side was slaughtering innocents.

"Is our minefield up?"

"It's been up for ten minutes, but nothing's tripped it yet."

"You think they're steering through it?"

Alison hesitated. "I don't see how. There's no way to predict a safe path." We were using a quantum noise server to randomize the propositions we tested.

I said, "We should trigger it manually. One counter-strike to start with, to give them something to think about." I was still hoping that the downed jets were unintended, but we had no choice but to retaliate.

"Yeah." Alison's image was live now; I saw her reach down for her mouse. She said, "It's not responding. The net's too degraded." All the

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fancy algorithms that the routers used, and that we'd leveraged so successfully for our imaging software, were turning them into paperweights. The internet was robust against high levels of transmission noise and the loss of thousands of connections, but not against the decay of arithmetic itself.

My watch went dead. I looked to the laptop; it was still working. I reached over and hit a single hotkey, launching a program that would try to reach Alison and the others the same way we'd talked to Sam: by modulating part of the border. In theory, the hawks might have moved the whole border—in which case we were screwed—but the border was vast, and it made more sense for them to target their computing resources on the specific needs of the assault itself.

A small icon appeared on the laptop's screen, a single letter A in reversed monochrome. I said, "Is this working?"

"Yes," Alison replied. The icon blinked out, then came back again. We were doing a Hedy Lamarr, hopping rapidly over a predetermined sequence of border points to minimize the chance of detection. Some of those points would be missing, but it looked as if enough of them remained intact.

The A was joined by a Y and a T. The whole cabal was online now, whatever that was worth. What we needed was S, but S was not answering.

Campbell said grimly, "I heard about the planes. I've started an attack." The tactic we had agreed upon was to take turns running different variants of Campbell's border-jumping algorithm from our scattered machines.

I said, "The miracle is that they're not hitting us the same way we're hitting them. They're just pushing down part of the border with the old voting method, step by step. If we'd given them what they'd asked for, we'd all be dead by now."

"Maybe not," Yuen replied. "I'm only halfway through a proof, but I'm 90 percent sure that Tim's method is asymmetrical. It only works in one direction. Even if we'd told them about it, they couldn't have turned it against us."

I opened my mouth to argue, but if Yuen was right that made

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perfect sense. The far side had probably been working on the same branch of mathematics for centuries; if there had been an equivalent weapon that could be used from their vantage point, they would have discovered it long ago.

My machine had synchronized with Campbell's, and it took over the assault automatically. We had no real idea what we were hitting, except that the propositions were further from the border, describing far simpler arithmetic on the dark integers than anything of ours that the far side had yet touched. *Were we crippling machines? Taking lives?* I was torn between a triumphant vision of retribution, and a sense of shame that we'd allowed it to come to this.

Every hundred meters or so, I passed another car sitting motionless by the side of the highway. I was far from the only person still driving, but I had a feeling Kate wouldn't have much luck getting a taxi. She had water in her backpack, and there was a small shelter at the spot where we'd parked. There was little to be gained by reaching my office now; the laptop could do everything that mattered, and I could run it from the car battery if necessary. If I turned around and went back for Kate, though, I'd have so much explaining to do that there'd be no time for anything else.

I switched on the car radio, but either its digital signal processor was too sophisticated for its own good, or all the local stations were out.

"Anyone still getting news?" I asked.

"I still have radio," Campbell replied. "No TV, no internet. Landlines and mobiles here are dead." It was the same for Alison and Yuen. There'd been no more reports of disasters on the radio, but the stations were probably as isolated now as their listeners. Ham operators would still be calling each other, but journalists and newsrooms would not be in the loop. I didn't want to think about the contingency plans that might have been in place, given ten years' preparation and an informed population.

By the time I reached Penrith there were so many abandoned cars that the remaining traffic was almost gridlocked. I decided not to even try to reach home. I didn't know if Sam had literally scanned my brain in Shanghai and used that to target what he'd done to me then,

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and whether or not he could use the same neuroanatomical information against me now, wherever I was, but staying away from my usual haunts seemed like one more small advantage to cling to.

I found a gas station, and it was giving priority to customers with functioning cars over hoarders who'd appeared on foot with empty cans. Their EFTPOS wasn't working, but I had enough cash for the gas and some chocolate bars.

As dusk fell the streetlights came on; the traffic lights had never stopped working. All four laptops were holding up, hurling their grenades into the far side. The closer the attack front came to simple arithmetic, the more resistance it would face from natural processes voting at the border for near-side results. Our enemy had their supercomputers; we had every atom of the Earth, following its billion-year-old version of the truth.

We had modeled this scenario. The sheer arithmetical inertia of all that matter would buy us time, but in the long run a coherent, sustained, computational attack could still force its way through.

How would we die? Losing consciousness first, feeling no pain? Or was the brain more robust than that? Would all the cells of our bodies start committing apoptosis, once their biochemical errors mounted up beyond repair? Maybe it would be just like radiation sickness. We'd be burned by decaying arithmetic, just as if it was nuclear fire.

My laptop beeped. I swerved off the road and parked on a stretch of concrete beside a dark shopfront. A new icon had appeared on the screen: the letter S.

Sam said, "Bruno, this was not my decision."

"I believe you," I said. "But if you're just a messenger now, what's your message?"

"If you give us what we asked for, we'll stop the attack."

"We're hurting you, aren't we?"

"We know we're hurting *you*," Sam replied. Point taken: we were guessing, firing blind. He didn't have to ask about the damage we'd suffered.

I steeled myself, and followed the script the cabal had agreed upon.

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“We’ll give you the algorithm, but only if you retreat back to the old border, and then seal it.”

Sam was silent for four long heartbeats.

“Seal it?”

“I think you know what I mean.” In Shanghai, when we’d used Luminous to try to ensure that Industrial Algebra could not exploit the defect, we’d contemplated trying to seal the border rather than eliminating the defect altogether. The voting effect could only shift the border if it was crinkled in such a way that propositions on one side could be outnumbered by those on the other side. It was possible—given enough time and computing power—to smooth the border, to iron it flat. Once that was done, everywhere, the whole thing would become immovable. No force in the universe could shift it again.

Sam said, “You want to leave us with no weapon against you, while you still have the power to harm us.”

“We won’t have that power for long. Once you know exactly what we’re using, you’ll find a way to block it.”

There was a long pause. Then, “Stop your attacks on us, and we’ll consider your proposal.”

“We’ll stop our attacks when you pull the border back to the point where our lives are no longer at risk.”

“How would you even know that we’ve done that?” Sam replied. I wasn’t sure if the condescension was in his tone or just his words, but either way I welcomed it. The lower the far side’s opinion of our abilities, the more attractive the deal became for them.

I said, “Then you’d better back up far enough for all our communications systems to recover. When I can get news reports and see that there are no more planes going down, no power plants exploding, then we’ll start the ceasefire.”

Silence again, stretching out beyond mere hesitancy. His icon was still there, though, the S unblinking. I clutched at my shoulder, hoping that the burning pain was just tension in the muscle.

Finally: “All right. We agree. We’ll start shifting the border.”

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I drove around looking for an all-night convenience store that might have had an old analog TV sitting in a corner to keep the cashier awake—that seemed like a good bet to start working long before the wireless connection to my laptop—but Campbell beat me to it. New Zealand radio and TV were reporting that the “digital blackout” appeared to be lifting, and ten minutes later Alison announced that she had internet access. A lot of the major servers were still down, or their sites weirdly garbled, but Reuters was starting to post updates on the crisis.

Sam had kept his word, so we halted the counter-strikes. Alison read from the Reuters site as the news came in. Seventeen planes had crashed, and four trains. There’d been fatalities at an oil refinery, and half a dozen manufacturing plants. One analyst put the global death toll at five thousand and rising.

I muted the microphone on my laptop and spent thirty seconds shouting obscenities and punching the dashboard. Then I rejoined the cabal.

Yuen said, “I’ve been reviewing my notes. If my instinct is worth anything, the theorem I mentioned before is correct: if the border is sealed, they’ll have no way to touch us.”

“What about the upside for them?” Alison asked. “Do you think they can protect themselves against Tim’s algorithm, once they understand it?”

Yuen hesitated. “Yes and no. Any cluster of near-side truth values it injects into the far side will have a non-smooth border, so they’ll be able to remove it with sheer computing power. In that sense, they’ll never be defenseless. But I don’t see how there’s anything they can do to prevent the attacks in the first place.”

“Short of wiping us out,” Campbell said.

I heard an infant sobbing. Alison said, “That’s Laura. I’m alone here. Give me five minutes.”

I buried my head in my arms. I still had no idea what the right course would have been. If we’d handed over Campbell’s algorithm immediately, might the good will that bought us have averted the war?

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Or would the same attack merely have come sooner? What criminal vanity had ever made the three of us think we could shoulder this responsibility on our own? Five thousand people were dead. The hawks who had taken over on the far side would weigh up our offer, and decide that they had no choice but to fight on.

And if the reluctant cabal had passed its burden to Canberra, to Zürich, to Beijing? Would there really have been peace? Or was I just wishing that there had been more hands steeped in the same blood, to share the guilt around?

The idea came from nowhere, sweeping away every other thought. I said, “Is there any reason why the far side has to stay *connected*?”

“Connected to what?” Campbell asked.

“Connected to itself. Connected topologically. They should be able to send down a spike, then withdraw it, but leave behind a bubble of altered truth values: a kind of outpost, sitting within the near side, with a perfect, smooth border making it impregnable. Right?”

Yuen said, “Perhaps. With both sides collaborating on the construction, that might be possible.”

“Then the question is, can we find a place where we can do that so that it kills off the chance to use Tim’s method completely—without crippling any process that we need just to survive?”

“*Fuck you, Bruno!*” Campbell exclaimed happily. “We give them one small Achilles tendon to slice . . . and then they’ve got nothing to fear from us!”

Yuen said, “A watertight proof of something like that is going to take weeks, months.”

“Then we’d better start work. And we’d better feed Sam the first plausible conjecture we get, so they can use their own resources to help us with the proof.”

Alison came back online and greeted the suggestion with cautious approval. I drove around until I found a quiet coffee shop. Electronic banking still wasn’t working, and I had no cash left, but the waiter agreed to take my credit card number and a signed authority for a deduction of one hundred dollars; whatever I didn’t eat and drink would be his tip.



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I sat in the café, blanking out the world, steeping myself in the mathematics. Sometimes the four of us worked on separate tasks; sometimes we paired up, dragging each other out of dead ends and ruts. There were an infinite number of variations that could be made to Campbell's algorithm, but hour by hour we whittled away at the concept, finding the common ground that no version of the weapon could do without.

By four in the morning, we had a strong conjecture. I called Sam, and explained what we were hoping to achieve.

He said, "This is a good idea. We'll consider it."

The café closed. I sat in the car for a while, drained and numb, then I called Kate to find out where she was. A couple had given her a lift almost as far as Penrith, and when their car failed she'd walked the rest of the way home.

For close to four days, I spent most of my waking hours just sitting at my desk, watching as a wave of red inched its way across a map of the defect. The change of hue was not being rendered lightly; before each pixel turned red, twelve separate computers needed to confirm that the region of the border it represented was flat.

On the fifth day, Sam shut off his computers and allowed us to mount an attack from our side on the narrow corridor linking the bulk of the far side with the small enclave that now surrounded our Achilles' Heel. We wouldn't have suffered any real loss of essential arithmetic if this slender thread had remained, but keeping the corridor both small and impregnable had turned out to be impossible. The original plan was the only route to finality: to seal the border perfectly, the far side proper could not remain linked to its offshoot.

In the next stage, the two sides worked together to seal the enclave completely, polishing the scar where its umbilical had been sheared away. When that task was complete, the map showed it as a single burnished ruby. No known process could reshape it now. Campbell's method could have breached its border without touching it, reaching inside to reclaim it from within—but Campbell's method was exactly what this jewel ruled out.

## DARK INTEGERS

At the other end of the vanished umbilical, Sam's machines set to work smoothing away the blemish. By early evening that, too, was done.

Only one tiny flaw in the border remained now: the handful of propositions that enabled communication between the two sides. The cabal had debated the fate of this for hours. So long as this small wrinkle persisted, in principle it could be used to unravel everything, to mobilize the entire border again. It was true that, compared to the border as a whole, it would be relatively easy to monitor and defend such a small site, but a sustained burst of brute-force computing from either side could still overpower any resistance and exploit it.

In the end, Sam's political masters had made the decision for us. What they had always aspired to was certainty, and even if their strength favored them, this wasn't a gamble they were prepared to take.

I said, "Good luck with the future."

"Good luck to Sparseland," Sam replied. I believed he'd tried to hold out against the hawks, but I'd never been certain of his friendship. When his icon faded from my screen, I felt more relief than regret.

I'd learned the hard way not to assume that anything was permanent. Perhaps in a thousand years, someone would discover that Campbell's model was just an approximation to something deeper, and find a way to fracture these allegedly perfect walls. With any luck, by then both sides might also be better prepared to find a way to co-exist.

I found Kate sitting in the kitchen. I said, "I can answer your questions now, if that's what you want." On the morning after the disaster, I'd promised her this time would come—within weeks, not months—and she'd agreed to stay with me until it did.

She thought for a while.

"Did you have something to do with what happened last week?"

"Yes."

"Are you saying you unleashed the virus? You're the terrorist they're looking for?" To my great relief, she asked this in roughly the tone she might have used if I'd claimed to be Genghis Khan.

"No, I'm not the cause of what happened. It was my job to try and stop it, and I failed. But it wasn't any kind of computer virus."

**GREG EGAN**

She searched my face. "What was it, then? Can you explain that to me?"

"It's a long story."

"I don't care. We've got all night."

I said, "It started in university. With an idea of Alison's. One brilliant, beautiful, crazy idea."

Kate looked away, her face flushing, as if I'd said something deliberately humiliating. She knew I was not a mass murderer. But there were other things about me of which she was less sure.

"The story starts with Alison," I said. "But it ends here, with you."

## A PLAIN TALE FROM OUR HILLS

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*Bruce Sterling*

Little Flora ate straw as other children eat bread.

No matter how poor our harvests, we never lacked for straw. So Flora feasted every day, and outgrew every boy and girl her age. In summer, when the dust-storms off the plains scourge our hills, the children sicken. Flora thrived. Always munching, the tot was as round as a barrel and scarcely seemed to sweat.

It was Captain Kusak and his young wife Baratiya who had volunteered to breed her. Baratiya was as proud of her little prodigy as if she had given birth to the moon. Bold strokes of this kind are frequently discussed in Government, yet rarely crowned with success. No one should have resented Baratiya's excellent luck in the venture. Still, certain women in our Hill Station took her attitude badly.

Kusak should have done something useful and tactful about the matter, because he had also hoped and planned for a new kind of child, one fit to live more lightly on our stricken Earth. Captain Kusak tried to speak some common-sense to his wife, I think; but he was clumsy, so this made her stubborn. Baratiya lost friends and her social prospects darkened. She obsessed so single-mindedly about the child that even her husband grew estranged from her.

Baratiya is more sensible now that other such children have been born to us. At the time, though, this woman was the talk of our Station.

You see, though motherhood is the golden key to humanity's future, it can be a leaden burden in the present day. And as for the

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past—well! Many of us scarcely understand that a mere half-century ago, this world was crowded.

Certain grand people existed in those greater, louder, richer days. These moguls knew that a general ruin was coming to the Earth—for they were clever people. They feared our planet's great calamity, and they schemed to avert it, or at least to adapt to the changes. They failed at both efforts, of course. The heat rose so suddenly that the rains dwindled and the mass of mankind starved in a space of years.

Rich or poor, the ancients perished quickly, but some few of that elite had a fierce appetite for living. Among them was a certain grand lady, a pioneer founder of our own Hill Station. Privately, we call this persistent woman "Stormcrow."

I myself have nothing to say against her ladyship—if not for her, I would have no post within Government. However: if a little girl who eats straw differs from the rest of womankind, then a woman who never seems to age is even more remarkable.

Our Stormcrow is black-eyed, black-haired, slender, brown, clever, learned and elegant, and, taken all in all, a dazzling creature. Stormcrow sleeps a great deal. She pecks at her food like a bird. She lives with her servants in a large and silent compound with shuttered blinds. Yet Stormcrow takes a knowing hand in all we do here.

That old woman has no more morality than a rabbit. You had only to mention her name over the tea-and-oatmeal for every younger woman in the room to pull a sari over her head straightaway. Yet Stormcrow was witty and bright, and astoundingly well-informed—for Stormcrow, despite the world's many vicissitudes, owned a computer. She invoked her frail machine only once a day, using sunlight and a sheet of black glass.

That machine was and is our Station's greatest marvel. Its archives are vast. Even if her own past glories had vanished, Stormcrow still possessed the virtual shadow of that lost world.

They knew a great many fine things, back then. They never did our world much good through the sophisticated things that they knew, but they learned astonishing skills: especially just toward the end. So: given her strange means and assets, Stormcrow was a pillar of our

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community. I once saw Stormcrow take a teenage girl, just a ragged, starving, wild-eyed, savage girl from off the plains, and turn her into something like a demi-goddess—but that story is not this one.

We therefore return to Captain Kusak, a brusque man with a simple need of some undivided female attention. Kusak's gifted baby had overwhelmed his wife. So Kusak's male eye wandered: and Stormcrow took note of this, and annexed Kusak. Captain Kusak was one of our best soldiers, an earnest and capable man who had won the respect of his peers. When Stormcrow appeared publicly on Kusak's sturdy arm, it was as if she were annexing, not just him, but our whole society.

Being the creature she was, Stormcrow was quite incapable of concealing this affair. Quite the opposite: she publicly doted on Kusak. She walked with him openly, called him pet names, tempted him with special delicacies, dressed him in past ways. . . . Stormcrow was clawing herself from her world of screen-phantoms into the simpler, honest light of our present day.

Decent people were of course appalled by this. Appalled and titillated. It does not reflect entirely well on us that we spoke so much about the scandal. But we did.

Baratiya seemed at first indifferent to developments. The absence of her tactless husband allowed her to surrender completely to her child-obsession. Baratiya favored everyone she knew with every scrap of news about the child's digestion and growth rates. However, even if the child of a woman's loins is a technical masterpiece, that is not the end of the world. Not even raw apocalypse can end this world, which is something we hill folk understand that our forebears did not.

Blinded with motherly pride, Baratiya overlooked her husband's infatuation, but some eight lady friends took pains to fully explain the situation to her. Proud Baratiya was not entirely lost to sense and reason. She saw the truth plainly: she was in a war. A war between heritage and possibility.

When Kusak returned home to Baratiya, an event increasingly rare, he was much too kind and considerate to her, and he spoke far too much about incomprehensible things. He had seen visions

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in Stormcrow's ancient screens: ideas and concepts which were once of the utmost consequence, but which no longer constitute the world. Baratiya could never compete with Stormcrow in such arcane matters. Still, Baratiya understood her husband much better than Kusak understood her. In fact, Baratiya knew Captain Kusak better than Kusak knew anything.

So she nerved herself for the fight.

Certain consequential and outstanding people run our Government. If they send a captain's wife a nicely printed invitation to eat, drink, dance, sing, and to "mingle with society," then it behooves her to attend.

The singing and the dancing are veneers for the issue of real consequence: the "mingling with society," in other words, reproduction. Our gentleman soldiers are frequently absent, guarding the caravans. Our ladies are often widowed through illness and misfortune. Government regards our grimly modest population, and Government does its duty.

So, if the Palace sets-to in a public celebration, there will reliably be pleasant music for a dance, special food, many people—and many private rooms.

"I can't attend this fine ball at the capital," said Baratiya to her husband, "the dust and heat are still too much for little Florrie. But that shouldn't stop you from venturing."

Captain Kusak said that he would go for the sake of civic duty. He then saw to the fancy clothes he had begun to affect. Baratiya knew then that he was feigning dislike and eager to go to the ball. Kusak planned to go to the capital to revel in the eerie charms of Stormcrow—shamefully wasting his vigor on a relic who could not bear children.

If one of our Hill women dresses in her finest garments, that generally means a patchwork dress. Certain fabrics of the past are brightly dyed and nearly indestructible. They were also loomed and stitched by machines instead of human hands, so they have qualities we cannot match. Whenever a salvage caravan comes from a dead city during the cooler months, there is general excitement. Robbing the dead is always a great thrill, though never a healthy one.

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In daily life, our hill women mostly favor saris, a simple unstitched length of cloth. Saris are practical garments, fit for our own time. Still, our women do boast one kind of fine dress which the ancients never had: women's hard-weather gear.

Stiffened and hooded and polished, tucked and rucked, our hard-weather gear will shed rain, dust, high wind, mud, mosquitoes—it would shed snow, if we ever had snow. Baratiya was young, but she was not a soldier's wife for nothing: she knew how to dress.

When Baratiya was through stitching her new ball-gown, it was more than simply strong and practical: it was a true creation. Its stern and hardy look was exactly the opposite of the frail, outdated finery that Stormcrow always wore.

The road to the capital is likely our safest road. Just past the famous ravine bridge—a place of legendary floods and ambushes—the capital road becomes an iron railway. So if the new monsoons are not too heavy, a lone woman in a sturdy ox cart can reach the railhead and travel on in nigh-perfect security.

Baratiya took this bold course of action, and arrived at the Palace ball. She wore her awesome new riding habit. She arrived in high time to find her husband drinking fortified wine, with Stormcrow languishing on his arm and pecking at a plate of rice. This sight made Baratiya flush, so that she looked even more gorgeous.

Baratiya deposited her invitation, opened an appointment card and loudly demanded meat.

The Palace is a place of strict etiquette. If a man and a woman at a Palace ball fill their appointment card and retire to a private niche, they are expected to do their duty to the future of mankind. In order to mate with a proper gusto, the volunteers are given our richest food-stuffs: pork, beef.

Much more often than you think, after gorging on that flesh, a man and woman will simply talk together in their private room. It is hard work to breed with a stranger. The fact that this conduct is Government-approved does not make it more appealing. Mankind is indeed a crooked timber, and no Government has ever built us quite straight.



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Stormcrow instantly caught the challenging eye of Baratiya, and Stormcrow knew that Baratiya's shouted demand for a feast was a purposeful gesture—aimed not so much at the men, who crowded toward the loud new arrival—but a gesture aimed at herself. Stormcrow was caught at disadvantage, not only by the suddenness of the wife's appearance, but by the stark fact that Captain Kusak seemed to lack much appetite for her.

The old woman's overstated eagerness to enter a private Palace room with Kusak had dented his confidence. Kusak too had been drinking too much—for he was shy, and troubled by what he was about to do. He was a decent man at heart, and he somehow sensed the inadequacy of his paramour.

More to the point, Kusak had never seen his young wife so attractive. Those fact that other men were so visibly eager for her company made Kusak stare, and, staring, he found himself fascinated. He could scarcely believe that this startling orgiast, shouting for meat and wine in her thunderous gown, was his threadbare little homebody.

Stormcrow smiled in the face of her misfortune and redoubled her efforts to charm. But Stormcrow had overplayed her position. She could not hold Kusak's eye, much less his hand.

Kusak shouldered his way through the throng around his wife.

"I fear that you come too late, Captain Kusak," said Baratiya, swilling from her wine-cup. Kusak, his voice trembling, asked her to grant him a private meeting. In response, she showed him her engagement card, already signed with the names of four sturdy male volunteers.

Kusak begged her to reconsider these appointments.

Then she replied: "Then show me your own program, dear!"

Kusak handed his engagement card to her, with his mustached face impassive but his shoulders slumping like a thief's. Baratiya said nothing, but she smiled cruelly, dipped a feather pen in the public inkwell and overwrote Stormcrow's famous name. She defaced it coolly and deliberately, leaving only her ladyship's time-tattered initials. . . . which are "R" and "K."

Man and wife then linked arms and advanced to a private

### A PLAIN TALE FROM OUR HILLS

verandah. They emerged from it only to eat. They publicly demanded and ate the most forbidden meat of all, the awesome fare the pioneers ate when they first founded our Hill Station. It is not pork, neither is it beef. But a man and woman will eat that meat when there is no other choice but death: when their future survival together means more to them than any inhibition from their past. In the plain, honest life of our Hills, it is our ultimate pledge.

A man and woman with a child are of one flesh. When they take a step so grave and public as eating human meat, even Government sees fit to respect that. So wife and husband ate from their own special platter, with their faces burning and their hands trembling with rekindled passion. They ate together with a single mind, like two people stirring the same flame.

Then Stormcrow, who will never again gorge herself in such a way, turned toward me in the lamplight. She confessed to me that she knew herself well and truly beaten.

Then she looked me in the eye and confided: "In the very first days of Creation, a woman could just hand a man an apple and make him perfectly happy. Now this is a twice-fallen world. We women have truly been kicked out of Paradise—and as for the men, they've learned nothing."

I thought otherwise, as is common with me, but I had nothing to say to console her. So I simply stroked the pretty henna patterns on her hands.

## AN EYE FOR AN EYE

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*Charles Coleman Finlay*

So we're getting at a table in a Starbucks, and the beefy guy in the Hawaiian shirt says to me, "Yeah, after the colostomy, I had them put an eyeball in my anus—seemed like a good idea at the time."

I think about saying, "Why, 'cause you wanted hindsight?"

But because I don't know him or his sense of humor, but mostly because I really need the job, whatever the job is, what I end up doing is taking a long sip of coffee, then saying, "So how'd that work out?"

"Not so well, you know!" He's surprisingly intense about it, so I slouch forward and rub the stubble on my chin as though I care. Here I am, wearing serious bling, a hand-crafted jewel-covered globe on a chain around my neck, best thing I own, worth a small fortune. The last client I dealt with, some lawyer, made a big deal about it, had all kinds of questions. Now it's this guy, who's wearing an ugly shirt and telling me about the eyeball in his ass. And *I* have to take *him* seriously.

"See," he's saying, "I figured I could stick my ass in my windshield and drive down the highway mooning people."

I decide I don't care so much whether this guy ends up being my client or not, because, hey, he's whack. So I say, "See anything worth seeing?"

He laughs. "It didn't work out. The optical nerve they ran up my anus to my spine was more like telegraph wire than DSL. I couldn't see shit—I know! Don't say it. But no depth perception, not much color, just a lot of blurry movement. I tried to drive like this, holding the steering wheel between my legs." He leans over out of his seat, and

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reaches down between his legs, miming the action. “Ran off the road on the first curve. Sprained my neck, was lucky I didn’t roll the car. You ever have the mocha frappuccino?”

He’s drinking some deluxe frothy thing full of sugar and topped with whipped cream. It must take a college degree to prepare it because the girl behind the counter was telling us about her years as an English major for the three hours it took her to fix the drink. Me, I have my coffee plain. I used to joke that I liked my coffee like I liked my women—strong, hot, and black. But the truth is, I just like it cheap and easy. Which is how I like my women these days too. But it’s better if I don’t think much about that.

What I answer is, “No.”

He takes the lid off to slurp it, and says, “It’s like slushie heaven.”

“What happened to the eyeball?” I ask, ’cause I gotta know.

“I had it removed when they grew the new intestine and took off the colostomy. Like I said, not my best idea ever. So are you interested or not? In the job?”

“What job?” I say. “We haven’t talked about anything except your surgeries.”

He says, “Oh, I’m sorry. Guess I’m not sure how this is supposed to work. But what I mentioned in my e-mail. I was engaged to be married and it turned out badly, now I want to get my jewels back.”

“Jewels?” I ask. Perking up some.

He shifts in his seat. The animated parrots on his Hawaiian shirt flutter nervously to new branches. “Yeah.”

Because I’m impatient and want to know what I’m going after, I say, “Like your grandmother’s diamonds? What?”

“No,” he says. “They’re my family jewels.”

I must stare at him like I’m stupid or something, because he tilts his head back and holds up his chunky hands in open supplication, and finally I say, “What?”

With a look of exasperation, he leans forward and whispers. “My testicles. She’s got my testicles.”

“Dude,” I say, reaching down to check my own package and make sure it’s intact. “Whoa.”

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Tilting his chair back, with a glance at the girl who made our drinks, he says, “I gave them to her for an engagement present. She said she wanted them because she wanted kids and all that. You know, I was in love, I thought, hey, kids, cool. But after we broke it off she wouldn’t give them back.”

And I know if he’s telling the truth, I’m in. I’m thinking, if he’s telling the truth I’m crazy if I’m not in.

Of course, he’s not telling the whole truth. No one ever does. But is he telling enough truth to make it worth my while to get involved? That’s what I need to find out.

You have to understand that I got into burglary the way some women get into prostitution. First I did it for fun, then I did it for some friends, now I do it for money.

That’s what I tell myself anyways. It’s my way up.

Maybe I should tell you about it, so you can understand why I do what I do. When I do it later.

It started out a few years ago. I had a roommate who had a drug habit. He was a Have, like the guy I was meeting here in the Starbucks, and I was—am—a Have-not. I was born a borderline Have, my mom being a corporate lawyer and all, but when she divorced my dad for her trophy husband, Corwin, about the time I started middle school, Dad and I plummeted pretty quickly into Have-not territory. I’ve been trying to climb my way out ever since.

So my roommate, like I said, turns out he was a gasm addict, a dryhead, hooked on moneyshots, those inhalers that make a guy have orgasms. I tried that stuff once, but let’s face it, it doesn’t compare to the real thing, not least because where I live you can get the real thing cheaper.

Anyway, I found out roomie had a habit when he started pawning my stuff to make his dealer rich. I gave him one day to move out, which he did. When I came home from work, he had moved out all right—and taken all my stuff with him.

I couldn’t afford the rates the contract cops charge these days. Oh, sure, I could’ve taken him to small claims court for nothing, but then

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I didn't really want to wait until we were scheduled for our TV slot to get satisfaction. That can take months. Instead I found out where he moved, broke in, and stole my stuff back. Since he'd already sold some of it, I had to visit him several more times, over six months and a couple addresses, until the checkbook balanced out.

The last time I robbed him, it was just for the thrill. The freak had gone straight, borrowed money from his folks, put up cameras and bought a guard ferret, one of those genetically engineered ferret hybrids smalltime dope dealers keep around. But sneaky low-tech beats stupid high-tech. I spraypainted the cameras and drugged the ferret with Nyquil-marinated chicken livers, broke in and took what I wanted. Then nature called at an opportune moment, so I left a king-size dump in the middle of his queen-size bed, wiped my ass on his pillowcases, and called it even.

I left off that last part when I told my friend Diane about it. Which ended up being lucky, because she'd just found out her boyfriend Joe was cheating on her. Diane was, is, a Euro-Chinese kickboxing brainiac, with big dark eyes and great taste in jewelry. It wasn't like her to get all emotional, but she'd been in love with Joe and had her life planned out right down to the brood of children. That was going to be her whole life. So she took it pretty hard, especially when Joe kept a bunch of things that mattered to her, including her earpod with maybe her ten thousand favorite songs on it, her collection of Generation Mutant action figures, and the celery-colored Fiestaware.

There we were, drinking away her sorrow, and she started telling me how Joe ruined her world, how he took something away from her she could never have replaced. She was cold-hearted that night, swearing she'd have him killed. I said she didn't need to go that far to get her stuff back. I could do it for her. Trying to impress her, be the nice guy rebound after that jerk. She took me up on it.

I got her most of her stuff back, but it wasn't enough to make her happy and I didn't get to be the rebound. Truth is, she's always been cold-hearted since that time. Joe died in a motorcycle accident a couple months later, casting a weird pall over the whole thing. She called me up to take her to the funeral, said I was the only one who

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could understand her true feelings about him. She finished law school after that, found a job at a big criminal firm, and crossed the border into Have-land. And that was that.

I crossed the border into Crooksville. My plan was to do a few big jobs, salt away the money, and start over. Finish college, go to law school maybe, something like that. Only the jobs were never big enough to give me that chance, even though I keep trying to move up into the big leagues.

Diane did me a favor here and there, telling some of her more discreet colleagues about my special talents. If their clients didn't have enough money for legal fees to resolve property disputes, they referred their clients to me. Over the past couple years, I've built up a steady business. It's a better gig than smash-and-grabs. I get some inside tip, a key or passcode, plus the people who are robbed are usually not eager to involve the cops. I make way more than I could on my own.

It was one of Diane's sleazier friends who contacted me about the beefy guy sitting across from me in Starbuck's. In an odd way, everything I have now I owe to Diane.

I try not to think about the fact that I don't have what I really wanted.

What I say next to the guy in the Hawaiian shirt is, "Wow. That took some balls for her to do."

He frowns at me like he's already heard all those jokes, which probably he has, so I jump to the next question.

"Why not just take her to court?"

After another drink of frothy coffee, he leans forward and says, "Look, I depend on a trust fund and my mother administers it like a fucking food stamp program. She tolerates a lot but if she ever found out that I lost all of her future grandchildren, she'd go off like a missile."

"I'll do it," I tell him.

Because I'm in the moment I hear him say "trust fund." I name a price that's twice my usual fee and he says yes so fast I figure I'd lowballed him.

## AN EYE FOR AN EYE

But that's what happens when you move up into the next league. You make a few mistakes, and you learn.

I won't sign any affidavits for accuracy, but here's the story he told me, the way he told it to me, only with the boring stuff edited out.

Said his name was Casto Beckett, and waited for a response like that was supposed to mean something to me. Okay, so later I looked it up, and he's one of the Becketts who own all the rental properties and retail space and the old nostalgia malls they have out by the exurbs. At the time, I had no idea who he was and just waved him on impatiently. He wandered a lot, talking about boarding school, hospitals, his controlling mother. Said he spent a lot of time and money on "business projects"—by which I gather he meant travel, clubs, and drugs—before his mother clamped down on him.

His ex-fiancée's name is Patrina Solove. They met at a club or a party, somewhere on the scene, he can't remember. But she was an insecure, evil, controlling bitch just like his mother, which is why he fell for her so hard according to his therapist. He'd been in a self-destructive phase then—he didn't do anything harder than the mocha frappuccino these days, honest—and he'd made a lot of bad decisions. One of them was buying Ms. Solove an engagement ring with a five carat diamond in it.

Interjection here by me, saying I'd never seen a five carat diamond, and him impatiently saying it was big enough it could choke a dog, and maybe she'd choke on it. But he didn't care anymore. That wasn't the point.

Being she was from a family similar to his, only construction and data infrastructure—this time I nodded like I knew the name—the two of them got lawyers involved and drew up prenups before they even told their parents or let word leak to the gossip-web. She was set on having children, so as a condition of the engagement she got possession of his testicles.

"I've been in and out of hospitals," he says, stroking the patchy beard on his chin, "so I figured what the hell, no big deal, and went and had it done."

"And then the relationship went bad?" I prompt.



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“Like takeout you forget in the backseat on a hot day.”

More rambling here, but the short version is the woman’s crazy, the kind who says one thing and does another, wants control of every facet of his life, always has to know where he’s been, who he’s been with, like she hasn’t got his balls already and that isn’t enough.

“She’s totally freaked,” he says. “She had my testicles dolled up like those easter eggs.”

“The plastic kind?” I ask, thinking about my grandma putting quarters and hard candy in those pastel eggshells and hiding them in her garden.

“No, like the kind they have in museums. All gold and shit.”

“Fabergé eggs?”

“Yeah, I don’t know, something like that,” he says, and it’s another one of the injustices of the world that I know this and he doesn’t. “She keeps the pair of them on a shelf in her living room, or did when we were still talking to each other. Last time we talked, she told me I’d never get them from her, and she had her security guy, Sean, throw me out of the house. I went into rehab after that . . . .”

More rambling here, but the way it ends up is he gives me her addresses, everything he knows about her, and transfers a few token bucks into one of my bank accounts as a deposit. I have it set up so it looks like he bought something from me on eBay, so we can explain it away if it ever gets traced.

And that’s how we become business partners.

Truth is, I feel a little bit of sympathy for Beckett. Not that I lost my balls or anything, but I had exactly one piece of bodmod done and it was for Diane.

I figured I’d never have a real chance with her, being short as I was, a couple inches shorter than her anyway, and her going for tall guys. So I cleaned out my dad’s bank accounts, what he had left, all for his retirement, and spent it getting four inches added to my legs. Pretty tame stuff, compared to what people do these days. Hurt like hell. Hell, it still hurts sometimes, and I’ve never quite gotten used to my new height. Center of balance is all off and shit.

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It was the last time I ever spoke to my dad. Once he quit calling me up and cussing me out, that is. Served him right for getting fat and screwing things up with mom.

Diane didn't even notice. When I saw her after the surgery, she paused for a second, looking up into my face instead of down, then kept on talking and didn't say a word about it.

There's no way for me to get back my money or give back the pain. So I have to live without the one and with the other. But it's no big deal anymore.

Beckett's job looks it will be a big one, so I break it down into parts. Problem with that is the more parts there are, the more parts there are to go wrong. First part, the hardest part, is finding out where she has his balls. I can't steal them if I can't find them.

But the information he gave me is good. His ex lives in one of those old gated communities on the cliffs along the river, the kind where they took down the gates a long time ago and now just have these big decorative entryways. It's quaint, if twenty thousand square feet with a six-car garage can be called quaint.

I put on a shirt with a nametag—"Elizabeth," which cracks me up—and a ballcap, and carry around a meter-reader that I stole from a van that was unlocked after I busted out the window and reached in to flip the handle. That's the thing about Have neighborhoods—the Have-nots that make them run are pretty much invisible. Look like you're there doing a job that nobody who lives there would ever be caught dead doing and they never give you a second glance.

The first floor of her house is all windows and no window coverings, in order to show off her possessions to the neighbors. The security systems in these houses, with their live-in guards, make hiding stuff superfluous anyway. Walking by, I see a pair of golden somethings sitting on a shelf in the living room like a pair of fancy Hummel figurines. "Humpty," I mumble, "If that's you and Dumpty, don't fall before I get there, okay?"

I know it's not all going to be this easy. When I see somebody walking around inside, I take the next step on impulse and go knock

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on the door. I'm looking down at the meter, clicking buttons, when the door opens.

"Yeah?" the guy says.

Whatever I was going to say, I forget it for a second when I see his face. He's obviously one of those old ultimate-fighting guys. His nose has been made flat so it can't be broken, flaps hang down over his ears, and he's got thick leathery pads on his jaws like protective headgear. Makes him look like a bulldog. For a second, I'm ready to ask him if he wants to sniff my ass to make sure I'm okay.

Instead, what I say is, "Says here the meter's behind the garage. Didn't see it there. Maybe it's down in the basement?"

I look up and meet his eyes challengingly, but bored. Like a guy who gets paid by the hour and has seen it all before, including JoJo the dog-faced houseboy. Then I look past him, like I'm trying to find the meter on the wall, like he's not even there, that's how bored I am, how much I want to get my job done and move on.

"I dunno," he says, starting to be angry, then catching the name on my shirt and wondering if he should make something of it. "Gotta be outside, 'cause we been here three years and nobody ever knocked on the door 'bout it before."

"So show me where it is then."

We troop around the house, and he leads me toward the garage where I said it should be, but as we walk around the side of the house I spot it behind the spirea bushes, and tell him thanks for the help while I'm typing numbers into my meter, then walk off to the next house without looking back. Because I already saw exactly what I needed to see: yes, those were the eggs sitting right there on a shelf by the windows. It's the ego thing, gets in the way. People who steal stuff, they always show off the bling and it catches up with them. Trust me, I know. Those two golden eggs gotta be the ones I'm looking for, look like Fabergé, just like Beckett described them.

Knowing where they are doesn't make me any happier, even though finding them was easy. First off, she's got JoJo the security guy living in the house. Maybe she lets him out in the yard to shit, but I'm betting he doesn't go much farther than that. Second, the windows

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are all shatterproof glass and hooked up to an alarm system. So, even if I dodge her guard dog, I can't do a smash-and-grab, because the windows won't smash and if they did the cops'd be on me even before I could grab. The extra bonuses they pay cops in these neighborhoods are quaint too—private industry at its best.

I sit on that for a couple weeks, making plans and discarding them, watching the neighborhood. In the end, because I'm dead broke and need the payday fast, I decide to try the invisibility trick again. I see work vans bringing Have-nots from the suburb apartment complexes into the neighborhood to work—landscapers, maids, carpet-cleaners. A regular one-stop shop, every Wednesday, contracted out by the homeowners association. There's one supervisor who walks around between several houses all subscribed to the same service.

Dressed up in drab colors, a little dirty, and carrying a keypad, I wait until the supervisor has hit Beckett's ex's house already and is down at the other end of the block in the cul-de-sac. The door to the ex's house is open while the vacuum guys—all bonded and carrying headcams—shoot through the rooms. JoJo the dog-faced bodyguard is out back in his doghouse with his head under his food bowl hiding from the sound. I walk in studying my keypad and when I notice nobody noticing me, I scoop the eggs into a pocket I've got hidden in the front of my work shirt. Usually I look around and filch a little something for myself on jobs like this one, but there's really no time and I don't want to end up on any of the headcams. I notice, however, some blown-glass unicorn sitting on the shelf beneath the eggs—I pick it up, snap its neck, and lay it down. Then I waltz out.

I stop on the front steps, tapping furiously into my keypad. One of the lawncare guys looks up from where he's raking mulch into the bushes and I say, "We're behind schedule. Pick it up or you won't be home in time for dinner."

Guy mutters a curse word or two, but makes a big show of putting his back into the mulch-spreading. I hardly even see it because I'm walking down the street, shedding my hat, tearing the nametag off my shirt. Then I'm in the car, and out through the gates.

The two eggs weigh more than I expected. I don't know how much

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sperm weighs, but I don't worry about it. I figure Beckett will plug them back in, they'll go back to work, and that's that.

In the end, it's one of the easiest jobs I've ever done.

At home, I spend the whole evening studying these eggs. They're gorgeous—heavy, gold-enamelled spheres, one decorated with dancing cabana boys or whatever they're called, the other with naked nymphs, look like porn stars, all in silver filigree and ornamented with tiny gems. I figure even if it's all fake, it's still worth a bundle.

It reminds me of the gold globe I was wearing when I went to meet Beckett. I go back to my bedroom and pull it out of my sock drawer and hold it up to the light. It's a tiny world on a gold chain, a present from Diane to Joe. It had been on the list of things she wanted back from him.

Had been on the top of the list, actually. But since it had been a gift, I figured she didn't really have a right to it and I kept it for myself. A little something for ignoring the surgery I went through to be taller for her. Maybe I even planned to return it once she dated me, only then she never did.

The world twirls at the end of the chain, throwing reflections off the silver surface between the porcelain-enamel continents. It's elegant and looks like it should screw in half to hide something inside, but I've never been able to take it apart and after Diane moved on, I lost interest in trying. It sat in a drawer for a couple years until I needed to impress people with money.

I lay it on the table, coiling the chain around it like a nest, and go back to the eggs. The read-sockets are hidden underneath. I try plugging in my computers but it's security locked, and all I get are tiny flashing red lights that go away when I unplug. I figure if there's any kind of tracer in them that I've activated, it's best to turn them over to Beckett. So I call him and tell him we need to meet right away.

Beckett is grinning and chuckling when I hand the eggs to him at an Opie's Family Restaurant. We're in the booth at the end of the counter that's lined by barber chairs—they look great but they're not so comfortable to sit in, so they stay empty most of the time.

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“You’re amazing,” he says, drinking a big malted shake. “How’d you do it?”

I tell him it’s a professional secret and ask him to show me the cash. I like cash because it’s harder to trace. He hands over a duffle. I drop it beside me on the seat and count the money out under the table. When I’m satisfied it’s all there, I say, “It’s been a pleasure doing business with you. Keep me in mind for any future needs you may have.”

He chuckles again, like this is the greatest thing ever, and I’m thinking that Haves are different than the rest of us, because they have more money. But now I’ve got a piece of that for myself. “How you gonna spend that?” he says, grinning.

Since it’s none of his business, I smile and say, “Dunno. I’ll come up with something.”

He laughs and tells me not to spend it all in one place, then we shake hands, promise to keep in touch, part friends.

I hate that downhome Opie crap, so I go through a drive-through Thai King to get some tom ka gai on the way back to my place. I pay them with one of the small bills Beckett gave me.

Alarms go off as soon as it hits the cash drawer. The money is fake. Counterfeit. The lady in the food window is old as my grandmother, and she’s staring at me with that old lady mixture of disappointment and contempt while the tire spikes pop up in front and back of my car.

I lean my head forward against the steering wheel to wait for the private cops to show up. I’m hoping they take a while so I can figure out how to get even with Beckett.

Turns out, I get out of the drive-through situation by pretending to be stupid. Way I feel right then, there’s not a lot of pretending involved. The money isn’t marked or tied to any other crime. When I hear that, I feed them some bull about getting it for change at a Chopstick Charlie’s crosstown. While they badmouth their competitors, I dig up enough clean cash from my pocket to pay Thai King again for the meal. I also talk to the manager and pay upfront for the drop-in call

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from the coptractors. Of course, they keep the counterfeit bill. We all know one of them is going to spend it somewhere else, which is how the stuff stays in circulation. Everybody's happy. Even the grandma in the pickup window favors me with a complimentary smile and everything is forgiven.

By the time it's over, I'm not as mad at Beckett either. Thing is, I realize how lucky I am to get caught spending the counterfeit for small change. If I dropped a roll of it at a dealer for a new car or something, they'd have to cart me off to jail. So the big question is, is it all fake, or was that just one bad bill? Is it an accident, or have I been set up?

I'm hoping it's the former, because once I've calmed down I still want to like Beckett. It's hardly the first time I've been bagged with a bad bill. Everyone gets one now and then.

When I get home, I check out the rest of the finder's fee in the bag.

It's all fake.

Every bill.

I know, because after a few random ones turn out fake, I get methodical, like a freaking bank teller, and check every bill.

Which means Beckett is fake too. He's fooled me better than I thought.

I'm sitting here, on my futon, planning ways to get even with him, trying to figure out how I'm going to pay my bills, when the phone rings. I don't even bother to see who it is before I answer.

"Yeah, what?" is what I say.

"Still the charmer, I see," says a voice on the other end that I don't quite recognize anymore and also can never forget. When I'm completely silent, she says, "Hey, this is Diane. You still in your old line of work?"

"No," I say. "I retired recently. Apparently I'm too stupid to do it anymore." But what I'm thinking is, Diane? What the hell? I can't really concentrate on anything else.

"Well, get back into it. I need a serious favor and I can't turn to anyone but you to do it."

And I'm thinking, I can't possibly rip my heart out and leave it on

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your doorstep again because I've already done that once, and it was one time too many. "What is it?"

"A friend of mine had something incredibly valuable stolen. She needs somebody she can trust completely to get it back again."

"Look, Diane, I don't really do that anymore."

"This is a special situation," she says. "Some asshole stole her ovaries."

I shut up. I already know the next line before she says it.

"She had them stored for safekeeping in a couple of jeweled eggs, like Fabergé—"

"And her name's Patrina Solove."

That shuts her up. And gives me time to think.

Of course they were eggs. Beckett lied to me about the whole thing. If they'd been his testicles, they'd have been a couple golden nuts. He played me twice.

"How'd you know that?" she asks finally.

"Word gets around."

"It gets around fast then! I knew you were the right person to call. You know who has them?"

"Maybe," I say, thinking I don't really know much about Beckett at all, and whether he even is who he said he was. I'm thinking this whole thing is seriously screwed up and I'm better off if I don't have anything to do with it. What I want to say to her is, hey, listen, there's not enough money in the world to pay me to be part of this mess. But she gets tired of waiting for me to speak.

"That's fantastic," she says. "Look, if you do this as a favor for me, I'd be very grateful."

"I don't know, Diane. I'm out of that line of work. I'm back in school, trying to finish my degree."

"That's great. God, you've got so much determination."

"I've got my mom's role model to follow," I say. "She worked really hard all her life. I'm just trying to, you know, do something I can be proud of." I don't even think of it as a lie, when I'm saying it to her. I believe it. It's the chance I should have had, the chance I still deserve to have.



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“That’s really great,” she says. “Look, if you’ve changed and you don’t do that stuff anymore, I understand that completely.”

“I didn’t say that, exactly.”

“It’s just that it would mean a lot to me. For my friend’s sake. That’s something this guy took from her that can’t ever be replaced. It’s like taking her whole world away. Do you have any idea how that feels?”

“Why would she do something like that anyway?” I ask, trying to change the subject away from me and Diane, because I don’t want to think about us, and about all the stuff I deserve that I don’t have.

“I know,” she says. “It’s a terrible idea because something just like this can happen. I told her it was a bad idea, but she wouldn’t listen. She’s completely devastated. Are you sure you can’t do anything to help her?”

“I don’t know. Maybe I could talk to her.” I don’t know what makes me say that, but as soon as I do, Diane’s all over it.

“Oh, I knew I could count on you. Maybe after you talk to her, we could get together for dinner or something. Catch up on old times.”

“What old times are those?” I mumble, frowning at the bitterness I hear in my own voice.

But she says, “No, I should’ve done it a long time ago. I owe you payback. More than you know.”

“No problem, Diane,” I hear myself blurting out loud enough for her to hear. “Anything you ever need from me, you know all you have to do is ask.”

After that we trade a couple pleasantries and she sets up a meeting with her friend Patrina right there while I’m waiting on the phone, and then we promise to talk to each other soon, and that’s that.

I’m totally over Diane, okay. But like she said, she owes me and maybe finally I’ll get to collect. If I can get even at the same time with Beckett for cheating me, even better.

Get this: Beckett wanted to meet at Starbuck’s; his ex takes me out to lunch at Eleni’s. Eleni’s is the best restaurant in town, a place where you have to book reservations a month in advance. I meet Patrina there the *next* day.

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When I arrive, the maitre d' looks me over like I'm a bum off the street, until I tell him who I'm having lunch with, and then the whole staff suddenly treats me like I'm the guest of royalty, which tells me Patrina's a big spender, because in this part of the city, money is king.

They take me over to the table where she's already sitting and I can see why Beckett was willing to give up his testicles.

Not that she's my type. But she's the kind of almost-anorexic brunette that a lot of guys go for, looks like she lives on a diet of coffee, cigarettes, and pills. And that's fine, because she's built like a Jaguar convertible, all muscle and lean curves, everything waxed to a high gloss. She's wearing rainforest-green lip gloss, leaf-pattern eyeshadow, and a dark dress with a sheen on it like dew. Her mouth is a bit too wide for her face, which makes it just wide enough.

"Please sit down, I'm so glad to see you," she says, waving me into the seat and launching into a nervous account of the restaurant's specials, more like she waited tables than sat at them. We get interrupted once by a call to her cell phone and a second time when she remembers she needs to make a quick call. When we finally get waited on, I order the tofu curry, just because I think meat will upset her, and I smile a lot while she sips her wine and gives the preternaturally androgynous waitperson three sets of conflicting instructions.

When she finally settles down, I say, "So you're a friend of Diane's?"

She shrugs it off and then shoots right into a story about how they met at this party on one of the riverboats, and it turns out her best friend knew Diane's boss, and they started talking and became best friends, after which she adds a couple anecdotes about seeing Diane at a wedding and calling her another time for help with the police—a complete misunderstanding, but Diane knows how to talk to people so they do *stuff*, plus she's discreet, and anyway, that was all water burning the bridge, and then she laughs and says or whatever that phrase is, that's what I mean, and don't you and Diane go way back too?

"We've known each other a few years," I admit. "So what's your problem, exactly?"

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“Didn’t she tell you?” At this point I notice that her makeup is covering some possibly bad surgery around her mouth. She’s playing with it the same way Beckett played with his chin, only there’s a tiny bump of a scar in the divot under her nose. Maybe it’s a mole. Either way, she flicks her finger over and over it when she gets nervous.

“Yes, she did,” I say. “But professionally, I figure it’s better to hear the whole story from you so I have all the facts straight.”

“Well, there’s not too much to say,” she says, leaning forward across the table to whisper to me, giving me a good look at the cylinders in her engine when she does it. “I had my ovaries removed, you know, for safekeeping, so they wouldn’t be exposed to anything that might damage them. It’s really the best birth control there is, you know. I had them stored in some replica Fabergé eggs, the kind made by Seibert’s—have you ever seen any of them?”

I have, in fact, just recently. But I give a shake of my head for a no, and she goes into a long description that doesn’t really do them justice, adding that I ought to see her friend Christiana’s, gorgeous, a real work of art, ought to be in a museum, although Jazmin has hers in a Betty Boop doll, which is kind of cute too, and Sigourney keeps hers in a golf ball—they can store them in something that small but it costs a lot more—even though they kicked her off the LPGA for cheating. She tells me a lot about how the storage process works, and how they can be ruined without regular maintenance, but I don’t care much, so I don’t listen.

She’s as impatient as she is talkative, and she stops the waitperson several times to check on the status of our meal.

During one of these interruptions, I get impatient too and ask her what happened to her eggs.

“Cas stole them—he told me he would.”

“Who’s Cas?” I ask, even though I can safely guess that Cas is Casto Beckett, my previous employer. She tells me his full name and I feel glad to have gotten one thing right.

“It’s kind of embarrassing,” she goes on saying and there’s a flinch in her eyes, and at that point I can see her more as my type. For all her polished exterior, she’s vulnerable. “I did some crazy things,” she says.

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“I got engaged to him, even drew up the prenups. That’s when I promised him my eggs—before I knew what he wanted to do with them! This was back when I was still running with the oddbod addicts.”

She says the last with a bit of a blush, and while I want to know what he wanted her eggs for, I don’t know anything about oddbod addicts and I say so.

“It’s a subculture thing, mostly about sex. You go into a spa at the beginning of the week and they give you any mod you want. End of the week, they turn you back to normal, whatever normal is for you. Anyway, the one we met at was just outside Naples—”

“Italy?” I ask, getting a quick vision of tracking this down across the ocean like a real jewel thief. I ought to be eating in restaurants like this every day, traveling to places like Italy too.

But she says, “No—Naples, Florida. There’s a scene there—it’s too many drugs for me, all supposedly painkillers ‘for the surgery.’” She makes the little quote-marks gesture with her fingers, and I wait for a jab of her nail to signal the period but it’s not coming.

“Help me out a little more, paint a picture for me,” I say, licking my lips, and leaning forward on my elbows just as the waitthing arrives with our plates. There’s a bit of a delay while the three of us talk about the food and the waitperson grates a dusting of parmesan over Patrina’s dry greens.

“Cas liked to have an extra”—she lifts her eyebrows, glances around, and mimes a penis with her hands: modesty incarnate, that’s this girl—“attached to his chin.”

I try not to spit out my mouthful of tofu. I suddenly have a whole different memory of that patchy spot on his chin and him rubbing it. And I’m automatically thinking about the little bump on her upper lip too.

“It was kind of fun,” she says. “You can imagine what he did with it. You know, not all the stuff the mod addicts do is *wrong*. It can be okay if you’re not obsessed with it. So, yeah, I wanted to experiment with that kind of thing, but then I got sucked into the scene for a while. Cas is a total addict though! He blew through his whole fortune for weekend after weekend of it. I saw pictures,” she says, and

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then she describes graphically some of the modifications he had and I lose most of my appetite. Meanwhile I'm wondering what kinds of oddmod she had done at the spas. I must be staring at her too intently because she stops talking suddenly and starts rubbing that little bump above her lip until she relaxes again.

"We all make mistakes," I say, trying not to make one here myself. "So let's assume Beckett has your eggs now. Why not go after them with cops and lawyers?"

"It'll take too long," she says. "He was totally in love with me, obsessed. He always said one of me would never be enough. I think he has a plan to clone a whole bunch of me to be like his sex slaves. He kept talking about having a harem of love, a harem of Solove, crap like that." She shudders, her wide mouth pressed into a tight green line. "He wanted to have, like, massive oddbod done and then have a harem of me please all of him at once. It creeps me out just thinking about it."

I mumble something sympathetic. I think about telling her that she can't be cloned with just her eggs, but if she doesn't know that, why should I correct her?

She's still talking. "Plus the whole thing's too embarrassing. You can imagine the effect on my grandmother if this got out in public. She'd have another heart attack. Diane told me you'd solved a problem for her once, not the same, but close enough. She said you'd take care of it quietly."

That's my cue to give her the sales pitch, with the price list, which I do. To her credit, she doesn't flinch at all, and she opens her wallet right there at the table and does a transfer to my account for the deposit. Normally, I prefer cash because it can't be traced to clients, but after my recent experience, I'm happy to take the transfer and let's face it, I need any cash I can get. And, money aside, the best part of this job will be getting back at Beckett for ripping me off.

"I'll need some help," I say, and I describe what I need—addresses, keycards, passcodes—the sort of work that makes my job easy. She says no problem and then gets distracted and sends off a text message on her phone, and we talk to the waitthing about the dessert menu

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and she can't possibly have a dessert but do I get to Eleni's often, and I don't, so she insists I try the raspberry custard, which is not really my thing at all, but I let her talk me into it.

Eventually she gets back on topic. "Cas called me to gloat, so I know he has the eggs, and I know where he has them. But we need to act fast before he flies out of town to one of the spas. There's dozens of them, and since I dropped out of the scene, I don't know them all anymore and I have no idea which one he's going to now." While I'm trying to find out more details about the spas, she stands and, smoothing her dress over her impossibly tight tummy, says, "Can you excuse me for a moment?"

Before I can give her an answer, she walks off toward the restrooms in back, pausing a moment to chat with one of the head servers, and I'm watching her, daydreaming about my good luck, about all the stuff I'm going to take from his apartment besides the eggs, when I feel a hand on my shoulder.

I look up and it's JoJo the dogfaced houseboy. He's a bit flushed, has got a faint smell of fight-sweat on him, like he's just been in one, or more like he's ready to start one.

"Hey, I recognize you," he says.

I admit my heart stops for a moment. The last guy I wanted to run into here is JoJo.

But then JoJo says, "So you're not doing the meter thing anymore? Good. That seems like a hell of a job."

I'm thinking can he be that stupid? But then I look at his face, and with the evidence of how stupid he really is staring back at me, I decide to play it straight. "Yeah, I do this other stuff on the side, for an old friend, happens to be a friend of Patrina too. Weird how that works out, huh?"

He says, "No kidding."

I notice his sweat again, and figure maybe it's heavy exercise for him to put two thoughts together, and he must be just about worn out by now. "So is there something—?"

"Patrina asked me to bring you these," he says, and he starts shoving things into my jacket pocket. "Here's the address for her

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ex-fiancé's place, a keycard to his building that she didn't give back when they broke up, and here's the passcode to his place."

I'm jumpy because I didn't expect to see JoJo here and also because I don't like doing certain kinds of business in public. But JoJo knows his stuff, because he's using his body to block the view from nearby tables, and I tell myself the rules are different when you move up to the big leagues. When I don't get this kind of stuff from my clients, the jobs are so much harder. This one is going to be easy and I can concentrate on ripping off Beckett for everything he's worth.

I make some small talk with JoJo, but it ends with me telling him thanks, and he says no problem. While I'm looking around, wondering where Patrina's gone, he excuses himself and leaves. About that same moment, our androgynous waitperson brings the bill and asks how I'd like to pay it.

Pisses me off. Typical Have attitude, probably how they get to be Haves. But since I've got Patrina's money in my account and I've got Beckett's counterfeit cash at home and I've got Diane waiting to see me when all this is done, I'm in a good mood overall, so I pay it. Although I leave a shitty tip.

Beckett lives in an older apartment complex downtown, with minimal security. I've got nowhere else to go after lunch, so I sit outside for a while watching people come and go from the building until I decide to do a quick reconnoiter. His cardkey gets me in, and I go up to his landing and knock on his door, saying "Pizza! Hey, your pizza's here!" I stand away from the peephole and figure I can duck down the stairwell before he gets out the door if I hear it open.

When there's no answer, I try his passcode, just to see if it works. I slip on some latex gloves first, because I'm working, and it's just in case.

The door swings open and I see his dead body face down on the floor. He's naked like he just got out of the shower, and there's blood all around his head, and the back of his skull is smashed in like JoJo was hiding there waiting for him. The main thing I notice, and it

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freezes me in fascination for a moment, are all the faint scars on his body, odd shapes in odd places, for who knows what.

There's more to it though. I'm looking at the abuse his body has taken, self-inflicted and otherwise, and I realize that the rich aren't like the rest of us at all. They do whatever they want and get away with it.

The chime of the elevator out in the hallway scares me and I shut the door. While I hear the voices out in the hall, I do a quick look-around for the eggs, just out of habit. They're not here. Neither is anything else of value. He's got a third-rate home theater and fourth-rate furniture. It looks like anything he could pawn has already been pawned. Stepping over to his desk, I don't even see a laptop, just a stack of unopened bills, none more than a couple months old.

I know Patrina's played me too, but most lies contain a peppering of truth. I find myself standing next to Beckett's dead body, thinking that since there were two eggs, maybe the one with the dancing boys was his testicles and the one with the nymphs was her ovaries. Like it matters.

I'm shaking like I've had nothing but coffee for three days. Then a door shuts somewhere out in the hall, and the voices are gone, and I'm in a hurry to leave. Might be the first job I don't take anything with me on the way out. I'd wanted to get even with Beckett, but that seems kind of pointless now.

I should be getting rid of his counterfeit money first thing when I get home, but I find the funds that Patrina transferred to my account have been frozen. I haven't made any real cash in over a month and I've got bills of my own to pay so I hold onto the bad cash because I'm going to need to pass it.

Then I take a drink to calm my shakes, and a second drink when that doesn't work, and pretty soon I'm getting blind drunk so I can forget the sight of Beckett's body. I try to pack, because I know I need to go away for a while. There comes a point where I can barely stand up and I go hunting for the globe, the one that looks like Beckett's eggs. There's a thought in my head, that maybe it's the same kind of thing after all. I can't find it, but then I'm so gone I can't find my ass with both hands either and I pass out drunk soon after.



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The cops come to pick me up around ten the next day.

I'm still sleeping when they start banging on the door and knock it open 'cause I'm too slow to answer. One of them has a nose like a Collie, makes me think of JoJo, and he starts sniffing around while I try to shake off the hangover fog and get them the hell out of my place.

They're polite about everything, but it's clear they've got warrants and probable cause and somebody who paid them enough money to make searching my place a priority. I'm hoping it's about some simple burglary, but when they start asking questions about Beckett and how long I've known him and what my business with him was, I know I'm screwed.

They turn up the counterfeit money. And blood on my shoe.

About that time they put the handcuffs on me and read me my rights. We all know it's a joke. The truth is we only have a right to the justice we can afford. And I'm bust.

I call Diane from jail, ask her for her help, and, thinking it will give her a reason to get involved, blurt out that I still have the world pendant she gave Joe.

She says, "It's too late for that."

That's when I realize, for the first time, what she kept in that necklace. I mean, no wonder she was angry, right. But I didn't know, and before I can say anything to her, tell her I'm sorry, I didn't know what it was, she hangs up.

Like I said, cold-hearted.

That's how I ended up here in this cell on death row. You know the story the prosecutor told in court. They said I'm a petty thief who went into partnership with Casto Beckett, who got himself in financial trouble and wanted to move some counterfeit money to get out. I killed him and took the money. Then I used his stolen credit card to make a huge transfer to my own account from the restaurant, where I was trying to blackmail Patrina Solove before her bodyguard rescued her.

### AN EYE FOR AN EYE

I'm telling you the real story, the whole thing, even the stuff I did wrong, because you're here to help me. Right? They talk about taking an eye for an eye, that's justice. Well, I know I did some wrong things, and I'm sorry for them. But I didn't do the murder they're going to kill me for.

Listen, talk to Diane for me—she's got to be behind all this. There was just no way to know her ovaries were in that globe. Tell her how sorry I am, tell her I didn't mean to ruin them. She can't blame me for that, you have to tell her.

Dude! Don't laugh—I could end up dying!

Yeah, what do you mean I didn't need an eyeball in my ass to see that coming?

## ALWAYS

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*Karen Joy Fowler*

How I Got Here:

I was seventeen years old when I heard the good news from Wilt Loomis who had it straight from Brother Porter himself. Wilt was so excited he was ready to drive to the city of Always that very night. Back then I just wanted to be anywhere Wilt was. So we packed up.

Always had two openings and these were going for five thousand apiece, but Wilt had already talked to Brother Porter who said, seeing as it was Wilt, who was good with cars, he'd take twenty-five hundred down and give us another three years to come up with the other twenty-five, and let that money cover us both. You average that five thousand, Wilt told me, over the infinite length of your life and it worked out to almost nothing a year. Not exactly nothing, but as close to nothing as you could get without getting to nothing. It was too good a deal to pass up. They were practically paying us.

My stepfather was drinking again and it looked less and less like I was going to graduate high school. Mother was just as glad to have me out of the house and harm's way. She did give me some advice. You can always tell a cult from a religion, she said, because a cult is just a set of rules that lets certain men get laid.

And then she told me not to get pregnant, which I could have taken as a shot across the bow, her new way of saying her life would have been so much better without me, but I chose not to. Already I was taking the long view.

The city of Always was a lively place then—this was back in 1938—part commune and part roadside attraction, set down in the Santa Cruz mountains with the redwoods all around. It used to rain all

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winter and be damp all summer, too. Slug weather for those big yellow slugs you never saw anywhere but Santa Cruz. Out in the woods it smelled like bay leaves.

The old Santa Cruz Highway snaked through and the two blocks right on the road were the part open to the public. People would stop there for a soda—Brother Porter used to brag that he'd invented Hawaiian Punch, though the recipe had been stolen by some gang in Fresno who took the credit for it—and to look us over, whisper about us on their way to the beach. We offered penny peep shows for the adults, because Brother Porter said you ought to know what sin was before you abjured it, and a row of wooden Santa Claus statues for the kids. In our heyday we had fourteen gas pumps to take care of all the gawkers.

Brother Porter founded Always in the early twenties, and most of the other residents were already old when I arrived. That made sense, I guess, that they'd be the ones to feel the urgency, but I didn't expect it and I wasn't pleased. Wilt was twenty-five when we first went to Always. Of course, that too seemed old to me then.

The bed I got had just been vacated by a thirty-two-year-old woman named Maddie Beckinger. Maddie was real pretty. She'd just filed a suit against Brother Porter alleging that he'd promised to star her in a movie called *The Perfect Woman*, and when it opened she was supposed to fly to Rome in a replica of *The Spirit of St. Louis*, only this plane would be called *The Spirit of Love*. She said in her suit that she'd always been more interested in being a movie star than in living forever. Who, she asked, was more immortal than Marlene Dietrich? Brother Porter hated it when we got dragged into the courts, but, as I was to learn, it did keep happening. Lawyers are forever, Brother Porter used to say.

He'd gotten as far as building a sound stage for the movie, which he hoped he might be able to rent out from time to time, and Smitty LeRoy and the Watsonville Wranglers recorded there, but mainly we used it as a dormitory.

Maddie's case went on for two whole years. During this time she came by occasionally to pick up her mail and tell us all she'd never seen such a collection of suckers as we were. Then one day we heard

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she'd been picked up in Nevada for passing bad checks, which turned out not to be her first offense. So off she went to the San Quentin instead of to Rome. It seemed like a parable to me, but Brother Porter wasn't the sort who resorted to parables.

Lots of the residents had come in twos like Wilt and me, like animals to the ark, only to learn that there was a men's dormitory and a women's, with Brother Porter living up the hill in his own big house, all by himself and closer to the women's dorm than to the men's. Brother Porter told us right after we got there (though not a second before) that even the married couples weren't to sleep together.

There you go, Mother, was my first thought. Not a cult. Only later it was clarified to me that I *would* be having sex with Brother Porter and so, not a religion, after all.

Frankie Frye and Eleanor Pillser were the ones who told me. I'd been there just about a week and, then, one morning, while we were straightening up our cots and brushing our teeth and what not, they just came right out with it. At dinner the night before there'd been a card by my plate, the queen of hearts, which was Brother Porter's signal, only I didn't know that so I didn't go.

Frankie Frye, yes, that Frankie Frye, I'll get to all that, had the cot on one side of me and Eleanor the cot on the other. The dormitory was as dim in the morning as at night on account of also being a sound stage and having no windows. There was just one light dangling from the ceiling, with a chain that didn't reach down far enough so about a foot of string had been added to it. "The thing the men don't get," Frankie said to me, snapping her pillowcase smooth . . . "The thing the men mustn't get," Eleanor added on . . . "is that sleeping with Brother Porter is no hardship," said Frankie.

Frankie was thirty-five then and the postmistress. Eleanor was in her early forties and had come to Always with her husband Rog. I can't tell you how old Brother Porter was, because he always said he wouldn't give an irrelevant number the power of being spoken out loud. He was a fine-looking man though. A man in his prime.

Wilt and I had done nothing but dry runs so far and he'd brought me to Always and paid my way into eternity with certain expecta-

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tions. He was a fine-looking man, too, and I won't say I wasn't disappointed, just that I took the news better than he did. "I can't lie to you," he told me in those few days after he learned he wouldn't be having sex, but before he learned that I would be. "This is not the way I pictured it. I sort of thought with all that extra time, I'd get to be with more people, not less."

And when he did hear about me and Brother Porter, he pointed out that the rest of the world only had to be faithful until death did them part. "I don't care how good he is," Wilt said. "You won't want to be with him and no one else forever." Which I suspected he would turn out to be right about and he was. But in those early days, Brother Porter could make my pulse dance like a snake in a basket. In those early days, Brother Porter never failed to bring the goods.

We had a lot of tourists back then, especially in the summer. They would sidle up to us in their beach gear, ten cent barbecue in one hand and skepticism in the other, to ask how we could really be sure Brother Porter had made us immortal. At first I tried to explain that it took two things to be immortal: it took Brother Porter and it took faith in Brother Porter. If I started asking the question, then I was already missing one of the two things it took.

But this in no way ended the matter. You think about hearing the same question a couple hundred times, and then add to that the knowledge that you'll be hearing it forever, because the way some people see it, you could be two hundred and five and then suddenly die when you're two hundred and six. The world is full of people who couldn't be convinced of cold in a snowstorm.

I was made the Always zookeeper. We had a petting zoo, three goats, one llama, a parrot named Parody, a dog named Chowder, and a monkey named Monkeyshines, but Monkeyshines bit and couldn't be let loose among the tourists no matter how much simple pleasure it would have given me to do so.

We immortals didn't leave Always much. We didn't have to; we grew our own food, had our own laundry, tailor, barber (though the lousy haircuts figured prominently in Maddie's suit), and someone to fix our shoes. At first, Brother Porter discouraged field trips, and then

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later we just found we had less and less in common with people who were going to die. When I complained about how old everyone else at Always was, Wilt pointed out that I was actually closer in age to some seventy-year-old who, like me, was going to live forever, than to some eighteen-year-old with only fifty or so years left. Wilt was as good with numbers as he was with cars and he was as right about that as everything else. Though some might go and others with five thousand to slap down might arrive, we were a tight community then, and I felt as comfortable in Always as I'd felt anywhere.

The Starkes were the first I ever saw leave. They were a married couple in their mid-forties. (Evelyn Barton and Harry Capps were in their forties, too. Rog and Eleanor, as I've said. Frankie a bit younger. The rest, and there were about thirty of us all told, were too old to guess at, in my opinion.)

The Starkes had managed our radio station, KFQU (which looks nasty, but was really just sequential) until the FRC shut us down, claiming we deviated from our frequency. No one outside Always wanted to hear Brother Porter sermonizing, because no one outside Always thought life was long enough.

The Starkes quit on eternity when Brother Porter took their silver Packard and crashed it on the fishhook turn just outside Los Gatos. Bill Starkes loved that Packard and, even though Brother Porter walked away with hardly a scratch, something about the accident made Bill lose his faith. For someone with all the time in the world, he told us while he waited for his wife to fetch her things, Brother Porter surely does drive fast. (In his defense, Brother Porter did tell the police he wasn't speeding and he stuck to that. He was just in the wrong lane, he said, for the direction in which he was driving.) (He later said that the Starkes hadn't quit over the crash, after all. They'd been planted as fifth columnists in Always and left because we were all such patriots, they saw there was no point to it. Or else they were about to be exposed. I forget which.)

The next to go were Joseph Fitton and Cleveland March. The men just woke up one morning to find Joe and Cleveland's cots stripped

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bare and Cleveland's cactus missing from the windowsill, without a word said, but Wilt told me they'd been caught doing something they didn't think was sex, but Brother Porter did.

I couldn't see leaving myself. The thing I'd already learned was that when you remove death from your life, you change everything that's left. Take the petting zoo. Parrots are pretty long-lived compared to dogs and goats, but even they die. I'd been there less than two years when Chowder, our little foxhound, had to be put down because his kidneys failed. He wasn't the first dog I'd ever lost; he was just the first I'd lost since I wasn't dying myself. I saw my life stretching forward, all counted out in dead dogs, and I saw I couldn't manage that.

I saw that my pets from now on would have to be turtles or trees or nothing. Turtles and trees don't engage the way dogs do, but you can only have your heart broken so many times until it just won't mend again. I sat with Chowder and pulled him into my lap as he died and I was crying so hard for all the Chowder-less years ahead that I understood then and there that immortality was going to bring a certain coldness, a remoteness into my life. I hadn't expected that, but I didn't see a way out of it.

Here's another thing that changes: your investment strategies. As Wilt would say, we were all about T-bills now. Wilt said that often. I got real tired of Wilt saying that.

### How It Went On:

Time passed and I felt pretty good about my situation. No one at Always died, and this was a powerful persuasion given how very old some of them were. Not that I needed persuading. I wasn't the youngest woman anymore, that was Kitty Strauss, and I didn't get the queen of hearts so often, but that was okay with me. Only the parrot was left from the petting zoo, so you couldn't really call it a zoo now, and I didn't see as much of the tourists and that was okay with me, too.

Three years in, Wilt had decided he'd gone for immortality prematurely. It had occurred to him that the older residents lived their full lives first, and only arrived in Always when they were tired of the



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flesh. Not that he wanted to wait as long as some. Winnifred spent every meal detailing the sufferings her arthritis caused her, as if we women weren't already listening to her toss and turn and hack and snore all night long.

Also, he hadn't managed to scrape up the second twenty-five hundred dollars we owed and it wasn't likely he would, since Brother Porter collected all our paychecks as a matter of course.

So Wilt told me that he wouldn't ante up again for eternity until he'd slept with at least twenty-five women, but no sooner did he move into San Jose than he was on his way to the Pacific Theater as a mechanic on the *USS Aquarius*. For awhile I got postcards from the Gilberts, Marshalls, Marianas, and Carolines. It would have been a real good time for Wilt to be immortal, but if he was thinking that too, he never said it.

In fact, the postcards didn't say much of anything. Maybe this was navy policy or maybe Wilt remembered that Brother Porter vetted all our mail first. Whichever, Brother Porter handed Wilt's postcards to me without comment, but he read Mother's letters aloud in the dining hall after dinner, especially if someone was in the hospital and not expected to recover or was cheating on her husband or her ration card. I listened just like everyone else, only mildly interested, as if these weren't mostly people I'd once known.

Brother Porter said Mother's letters were almost as good as the *Captain Midnight* radio show, which I guess meant that up in the big house, he had a radio and listened to it. Lots of Mother's friends were being neglected by their children. You might say this was a theme. No one ever needed a secret decoder ring to figure Mother out.

It didn't seem to me that the war lasted all that long, though Wilt felt otherwise. When he got back, I'd meet him from time to time in San Jose and we'd have a drink. The city of Always was dry, except for once when a bunch of reporters in the Fill Your Hole club rented out our dining space, invited us to join them, and spiked the punch so as to get a story from it. It ended in a lot of singing and Winnifred Allington fell off Brother Porter's porch, and Jeb Porter, Brother Porter's teenage son, punched out Harry Capps as a refuta-

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tion of positive thinking, but the reporters had left by then so they missed it all.

Anyway Brother Porter never explicitly made abstention a condition and I never asked him about it in case he would. I still got my age checked whenever we went to a bar, so that was good. It renewed my faith every time it happened. Not that my faith needed renewing.

Now that Wilt was dying again, our interests had diverged. He was caught up in politics, local corruptions, national scandals. He read the newspapers. He belonged to the auto mechanics' union and he told me he didn't care that the war had ended so much as I might think. The dead were still dead and he'd seen way too many of them. He said that war served the purposes of corporations and politicians so exactly that there would always be another one, and then another, until the day some president or prime minister figured out how to declare a war that lasted forever. He said he hoped he'd die before that day came. I wonder sometimes if that worked out for him.

Once while he was still at Always, Wilt took me to the ocean so that we could stand on the edge and imagine eternity. Now when Wilt talked politics, I'd fill my ears with the sound of the ocean instead. Corporate puppet masters and congressional witch-hunts and union payola—they all drowned together in the pounding of the sea.

Still I went out with Wilt every time he asked. Mostly this was gratitude because he'd bought me eternity. Love had gone the way of the petting zoo for me. Sex was a good thing and there were plenty of times I couldn't sleep for wanting it. But even if sleeping with Wilt wouldn't have cost my life, I wouldn't have. *There was a match found for me at last. I fell in love with a shrub oak*, I read once in high school in a book about Thoreau, who died more than a hundred years ago and left that shrub oak a grieving widow.

When I first came to Always, there were six Erle Stanley Gardner mysteries in the women's dormitory that used to belong to Maddie. I read them all several times. But I wasn't reading anymore and certainly not murder mysteries. I'd even stopped liking music. I'd always supposed that art was about beauty and that beauty was forever. Now I saw that that music was all about time. You take a photograph

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and it's all about that moment and how that moment will never come again. You go into a library and every book on the shelves is all about death, even the ones pretending to be about birth or rebirth or resurrection or reincarnation.

Only the natural world is rendered eternal. Always was surrounded by the Santa Cruz Mountains, which meant tree trunks across streams, ghostly bear prints deep inside the forest, wild berries, tumbles of rocks, mosses, earthquakes and storms. Out behind the post office was a glade where Brother Porter gave his sermons, had sex, and renewed our lifespans. It was one of those rings of redwoods made when the primary tree in the center dies. Brother Porter had us brick a wall in a half circle behind the trees so it would be more church-like and the trees grew straight as candles; you could follow along their trunks all the way to the stars. The first time Brother Porter took me there and I lay smelling the loam and the bay (and also Brother Porter) and looking up, I thought to myself that no matter how long I lived, this place would always be beautiful to me.

I talked less and less. At first, my brain tried to make up the loss, dredging up random flashes from my past—advertising slogans, old songs, glimpses of shoes I'd worn, my mother's jewelry, the taste of an ant I'd once eaten. A dream I'd had in which I was surrounded by food that was bigger than me, bread slices the size of mattresses, which seems like it should have been a good dream, but it wasn't. Memories fast and scattershot. It pleased me to think my last experience of mortality would be a toothpaste commercial. Good-bye to all that.

Then I smoothed out and days would go by when it seemed I hardly thought at all. Tree time.

So it wasn't just Wilt, I was finding it harder to relate to people in general, and, no, this is not a complaint. I never minded having so little in common with those outside Always and their revved-up, streaming-by lives.

While inside Always, I already knew what everyone was going to say.

- 1) Winnifred was going to complain about her arthritis.
- 2) John was going to tell us that we were in for a cold winter. He'd

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make it sound like he was just reading the signs, like he had all this *lore*, the fuzzy caterpillars coming early or being especially fuzzy or some such thing. He was going to remind us that he hadn't always lived in California so he knew what a cold winter really was. He was going to say that Californians didn't know cold weather from their asses.

3) Frankie was going to say that it wasn't her job to tape our mail shut for us and she wasn't doing it anymore, we needed to bring it already taped.

4) Anna was going to complain that her children wouldn't talk to her just because she'd spent their inheritance on immortality. That their refusal to be happy for her was evidence that they'd never loved her.

5) Harry was going to tell us to let a smile be our umbrella.

6) Brother Porter was going to wonder why the arcade wasn't bringing in more money. He was going to add that he wasn't accusing any of us of pocketing, but that it did make you wonder how all those tourists could stop and spend so little money.

7) Kitty was going to tell us how many boys in the arcade had come onto her that day. Her personal best was seventeen. She would make this sound like a problem.

8) Harry would tell us to use those lemons and make lemonade.

9) Vincent was going to say that he thought his watch was fast and make everyone else still wearing a watch tell him what time they had. The fact that the times would vary minutely never ceased to interest him and was good for at least another hour of conversation.

10) Frankie was going to say that no one ever listened to her.

It was a kind of conversation that required nothing in response. On and on it rolled, like the ocean.

Wilt always made me laugh and that never changed either, only it took me so much longer to get the joke. Sometimes I'd be back at Always before I noticed how witty he'd been.

What Happened Next:

Here's the part you already know. One day one spring—one day when the Canada geese were passing overhead yet again, and we were

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out at the arcades, taking money from tourists, and I was thrilling for the umpteenth time to the sight of the migration, the chevron, the honking, the sense of a wild, wild spirit in the air—Brother Porter took Kitty out to the cathedral ring and he died there.

At first Kitty thought she'd killed him by making the sex so exciting, though anyone else would have been tipped off by the frothing and the screaming. The police came and they shermanned their way through Always. Eventually they found a plastic bag of rat poison stuffed inside one of the unused post office boxes and a half drunk cup of Hawaiian Punch on the mail scale that tested positive for it.

Inside Always, we all got why it wasn't murder. Frankie Frye reminded us that she had no way of suspecting it would kill him. She was so worked up and righteous, she made the rest of us feel we hadn't ever had the same faith in Brother Porter she'd had or we would have poisoned him ourselves years ago.

But no one outside of Always could see this. Frankie's lawyers refused to plead it out that way; they went with insanity and made all the inner workings of Always part of their case. They dredged up the old string of arsons as if they were relevant, as if they hadn't stopped entirely the day Brother Porter finally threw his son out on his ear. Jeb was a witness for the prosecution and a more angelic face you never saw. In retrospect, it was a great mistake to have given immortality to a fourteen-year-old boy. When he had it, he was a jerk, and I could plainly see that not having it had only made him an older jerk.

Frankie's own lawyers made such a point of her obesity that they reduced her to tears. It was a shameful performance and showed how little they understood us. If Frankie ever wished to lose weight, she had all the time in the world to do so. There was nothing relevant or even interesting in her weight.

The difficult issue for the defense was whether Frankie was insane all by herself or along with all the rest of us. Sometimes they seemed to be arguing the one and sometimes the other, so when they chose not to call me to the stand I didn't know if this was because I'd make us all look more crazy or less so. Kitty testified nicely. She charmed them all and the press dubbed her the Queen of Hearts at her own suggestion.

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Wilt was able to sell his three years among the immortals to a magazine and recoup every cent of that twenty-five hundred he put up for me. There wasn't much I was happy about right then, but I was happy about that. I didn't even blame him for the way I came off in the article. I expect coquettish was the least I deserved. I'd long ago stopped noticing how I was behaving at any given moment.

I would have thought the trial would be just Mother's cup of tea, even without me on the witness stand, so I was surprised not to hear from her. It made me stop and think back, try to remember when her last letter had come. Could have been five years, could have been ten. Could have been twenty, could have been two. I figured she must be dead, which was bound to happen sooner or later, though I did think she was young to go, but that might only have been because I'd lost track of how old she was. I never heard from her again so I think I had it right. I wonder if it was the cigarettes. She always said that smoking killed germs.

Not one of the immortals left Always during the trial. Partly we were in shock and huddled up as a result. Partly there was so much to be done, so much money to be made.

The arcade crawled with tourists and reporters, too. Looking for a story, but also, as always, trying to make one. "Now that Brother Porter is dead," they would ask, exact wording to change, but point always the same, "don't you have some doubts? And if you have some doubts, well, then, isn't the game already over?" They were tiresome, but they paid for their Hawaiian punch just like everyone else and we all knew Brother Porter wouldn't have wanted them kept away.

Frankie was let off by reason of insanity. Exactly two days later Harry Capps walked into breakfast just when Winnifred Allington was telling us how badly she'd slept the night before on account of her arthritis. By the time he ran out of bullets, four more immortals were dead.

Harry's defense was no defense. "Not one of them ever got a good night's sleep," he said. "Someone had to show them what a good night's sleep was."

The politicians blamed the overly-lenient Frankie Frye verdict for

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the four new deaths and swore the same mistake would not be made twice. Harry got life.

Why I'm Still Here:

Everyone else either died or left and now I'm the whole of it. The last of the immortals; City of Always, population one. I moved up to the big house and I'm the postmistress now, along with anything else I care to keep going. I get a salary from the government with benefits and a pension they'll regret if I live forever. They have a powerful faith I won't.

The arcade is closed except for the peep shows, which cost a quarter now and don't need me to do anything to run them but collect the coins after. People don't come through so much since they built the 17, but I still get customers from time to time. They buy a postcard and they want the Always postmark on it.

Wilt came to fetch me after the noise died down. "I brought you here," he said. "Seems like I should take you away." He never did understand why I wouldn't leave. He hadn't lived here long enough to understand it.

I tried the easy answer first. I got shot by Harry Capps, I said. Right through the heart. Was supposed to die. Didn't.

But then I tried again, because that wasn't the real answer and if I'd ever loved anyone, I'd loved Wilt. Who'll take care of the redwoods if I go? I asked him. Who'll take care of the mountains? He still didn't get it, though he said he did. I wouldn't have known how to leave even if I'd wanted to. What I was and what he was—they weren't the same thing at all anymore. There was no way back to what I'd been. The actual living forever part? That was always, always the least of it.

Which is the last thing I'm going to say on the subject. There is no question you can ask I haven't already answered and answered and answered again. Time without end.

## AN OCEAN IS A SNOWFLAKE, FOUR BILLION MILES AWAY

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*John Barnes*

Thorby had kept up his resistance training, but he'd been on Boreas for most of a year so he'd worried about agravitic muscular dystrophy. You could never quite trust a gym centrifuge, or the record-keeping software, or most of all your own laziness. You might set things too low, lie to the records, anything to not be quite so sore and stiff for just a couple days, or to have a few days of no aches, and before you knew it you hadn't actually worked out in a month, and you'd be falling down weak at your next port. He'd missed recording the first calcium bombardment of Venus from ground level for that very reason, not working out while he'd been in the orbital station for three months before.

People always said you could make it back by working out in the high gravity on the ships between the worlds, but the ships boosted at a gee and a half until they started braking at four gee, so you spent all your time lying down or doing gentle stretches at best, and most trips weren't long enough anyway. And besides this had been less of a voyage and more of a hop; Boreas was very close to Mars now.

The comfortable grip of his feet on the train station platform, confirming that he was truly ready for Mars's real gravity, was as acute a pleasure as the clean thinness of bioprocessed air lightly stained with smells of coffee, frying meat, lubricant, and fresh plastic, as much as the pink late afternoon light flooding the train station, as much as the restless waves and murmurs of crowd noise.

He could have laughed out loud at how good it felt to be in his



## JOHN BARNES

skin, standing on the platform at Olympus Station, a throng of eager hikers, sailplaners, and mountaineers all around him, the whole scene turned warm and sentimental by the pink light pouring in through the immense dome that arched above them.

It had been a decade since he'd been on Mars, a planet like the rest of the solar system: a place he always came back to, because he never went home.

"Thorby!" Léoa emerged from the crowd, saw him, and waved; he walked toward her slowly, still relishing the feel of having good ground legs.

"So do I look like me?" she asked. "Did you know that back in the protomedia days, when they had recording tech but things hadn't fused yet, that it was a cliché that people always looked better than their pictures?"

"I've mined protomedia for images and sounds too. My theory about that is that you couldn't get laid by telling the picture that it was the better-looking one."

"You're an evil cynic. Pbbbt." Even sticking her tongue out, she was beautiful.

So was he. All documentarians had to be, the market insisted.

"I never used pixel edit on myself," she said. He wasn't sure if she sounded proud or they were just having a professional discussion. "So screen-me does look unusually like real-me. I'll do a docu about the way people react to that, someday. Want to get a drink, maybe a meal? It's hours till our train." Without waiting for him to say anything, she turned and walked away.

Hurrying to catch up beside her, he called, "Baggins, follow," over his shoulder. His porter robot trailed after them, carrying Thorby's stack of packed boxes. Everything physical he owned still fit into a cube with sides shorter than his height. "Did you have a good trip in?" he asked her.

"For me it's always a great one. I've been here for six Martian seasons, three Earth years, and I'll never be one of the ones that shuts the window to concentrate on work. I came in from Airy Zero City via the APK&T."

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“Uh, it’s been a long time since I’ve been on Mars, is that a railroad?”

“Oh, it’s a railroad—the grandest on the planet. The Airy Zero City-Polar Cap-Korolev-and-Tharsis. The one that tourists take if they only have one day on Mars. Also the one we’ll be taking up to Crater Korolev for jump-off. Among many other things it runs around the edge of the northern ice cap. Strange to think it won’t be long before it stops running. They’re just going to leave it for the divers, you know, and maybe as a spread path for some of the seabed fauna. More to be lost.”

“If we’re going to start bickering,” Thorby said, smiling, “shouldn’t we be recording it? Or will that draw too much attention?”

“Not on Mars. It’s a tourist planet—pretending celebs aren’t there is de rigueur. And you don’t look much like your teenaged pictures anymore.”

“They were mostly in a spacesuit where you couldn’t see my face anyway,” he pointed out. “And I don’t use my face in my docus. I was thinking mainly about you.”

“Pbbbt. I never *was* much of a celeb. There won’t be fifty people in all these hundreds who have ever seen any of my work. So the short answer is, if anything, it might be some worthwhile free publicity to do the interview while we walk through here. I’ll bring out my stalkers.” She whistled, a soft high-pitched *phweet!—tooooo . . . wheep*.

A hatch opened on the porter humming along at her heels. A metal head on a single stalk popped up. The stalker hopped out and raced ahead of them to get a front view. Four more stalkers leaped out like toy mouse heads roller-skating on pogo sticks, zipping and bounding to form a rough, open semicircle around Thorby and Léoa, pointing their recording cameras back at the two people, and using their forward sensing to zigzag swiftly and silently around everything else.

“I intend to look sincere and charming,” Léoa said. “Do your best to look philosophical and profound.”

“I’ll try. It might come out bewildered and constipated.”

She was nice enough to laugh, which was nicer than he was expecting. They descended the wide steps onto the broad terrace, far

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down the low, northwest side of the dome, and took a table near the dome surface, looking northwestward from Mount Olympus across the flat, ancient lava lake and into the broken, volcanic badlands called sulci beyond it. "Our ancestors would have found a lot of what we do utterly mad," Léoa said, "so I suppose it's comforting that we can find one thing they did explicable."

"You're trying to get me to say something for the documentary."

"You're spoiling the spontaneity. Of course I notice you do that all the time in your own documentaries."

"I do. Spontaneity is overrated when you're covering big explosions and collisions. They only happen once, so you have to get them right, and that means looking in the right place at the right time, and that means a ton of prep."

"All right, well, have you had enough time to prepare to talk about something the ancestors would consider insane? What do you think about putting a train station on top of the highest mountain in the solar system?"

"Where else would you put it? People who want to climb the mountain still can, and then they can take the train home. People who just want the view just take the train both ways. And once it starts to snow seriously around here, the skiing is going to be amazing. So of course there's a train station here. They put it here to attract trains, the way Earth people put out birdfeeders to attract birds."

She nodded solemnly and he realized she was doing a reaction shot on him, showing her sincerity and trust. He looked away, out through the dome.

"You're getting lost in the sky," Léoa said.

"I like the pink skies here."

"Doesn't it bother you that there will probably only be a thousand or so more of those?"

"Not any more than it bothers me that I've missed billions of them before I was born."

"What about the people who will never see it?"

"They'll get to surf the new ocean, and stretch out on the beaches that all the dust washing out of the sulci and down the canyons will

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form. They'll love that, in *their* moments. In *my* moment, I'm relishing a late afternoon pink sky."

The stalker in the center was spinning back and forth, pointing its camera at each of them in turn; so now it was a ping-pong match. They did more verbal sparring and genned more quotes and reactions, ensuring they'd both have plenty to work with when the coproject went to edit. After a while they ordered dinner, and she stopped fishing for him to confess to imperialism or vandalism or whatever she was going to call it.

She told her Stalker Number Three to silhouette him against the darkening sky and the landscape far below. The little robot leaped up, extended its pencil-thin support to a bit over two meters, and silently crept around to shoot slightly down on Thorby and get the horizon into the picture.

When Boreas rose in the northwest, covering much of the sky, they both said "more profounder versions of what we already said," as Léoa put it, while the stalkers recorded them with their back to the dome wall. Léoa had her stalkers stand tall, extending till they were about three meters high, to catch the brilliant white light that the huge comet cast into the sulci below; Thorby positioned his low, to silhouette them against the comet head itself. The huge station mezzanine around them, in the brilliant bluish-white light, looked like some harsh early photograph with artificial lighting.

Over coffee and dessert, they watched the fast-rising comet swim through the northern constellations like a vast snake coiling around Cepheus and the Bears before diving over the northeast horizon, making a vivid arc different from that of anything else in the heavens. Finally it was late and they went to their rooms at the station hotel for the night. Thorby managed not to say anything about liking to see stuff smashed up, and she avoided saying she really preferred bare, dead rock and sand to forests and meadows, so the first day was a tie.

They got off at Korolev Station, on the south side of the crater, pulled on Mars suits, loaded the porters, and walked out past the stupa that was another of the most-photographed places in the solar system.

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Crater Korolev was as far north on Mars as Novaya Zemlya on Earth, nearly circular, about seventy kilometers across, with sharply reared crater walls all around. It was a natural snow trap, gathering both water ice and dry ice in mixtures and layers.

In a midmorning of Martian spring, the crater floor far below them had its own weather, gas geysers spraying snow, explosive sublimations that sent ground blizzards shooting out radially from suddenly exposed snowfields, and an occasional booming flash-and-crack between the whorls of fog that slithered just above the snow, almost a kilometer below the observation point behind the stupa. Monks in orange Mars suits, on their way to and from the long staircases that zigzagged from the stupa down to another stupa on the crater floor, passed between their stalkers, even less interested in the stalkers than the stalkers were in them.

“This place makes a lot of lists of scenic wonders,” Léoa said. She knelt at the meter-high shrine that interrupted the rails of the observation platform, palms together in the ancient prayer gesture. The stalkers closed in on her.

He did the same, to avoid her stalkers’ recording him being disrespectful.

When Thorby and Léoa stood, and looked again across the stormy snowfields of Korolev Crater, the stalkers leaped up on the railing like an abstract sculpture of birds on a wire, balancing easily with their gyros. Thorby and Léoa de-opaqued their helmets completely and turned on collar lights. “It doesn’t bother you,” she asked, “that these snow fields were here before the first human wandered across the African plain?”

“No,” he said. “After all, the protons and electrons in the snow were probably in existence shortly after the Big Bang. Everything is made of bits of something older. Everything that begins means something ends. I like to take pictures of the moment when that happens. A day will come when we walk by Lake Korolev and admire the slow waves rolling across its deep blue surface, and then another day will come when this stupa stands on one of the islands that ring Korolev Atoll, and very much within our lifetime, unless we are unlucky, this

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will be an interesting structure at the bottom of the Boreal Ocean. I hope to see them all; life is potential and possibility.”

“That was very preachy,” she said, “and you kind of intoned. Do you want to try it again?”

“Not really. Intoning feels right when I’m serious. *I like* things that will happen once, then never again. That’s what my problem is with the animators that make their perfect simulations; they never take a chance on not getting what they’re after. Be *sure* to use *that*. Let’s get some animators good and angry.”

“They don’t get angry,” she said sadly. “Nothing’s real to them.”

He shrugged. “Reality is just a marketing trophy anyway. Twenty thousand years from now, if people want to walk around on a dry, thin-aired, cold Mars, they’ll be able to do it, and it will look so much like this that even a trained areologist won’t see the difference. Or if they want to watch the disassembly of Boreas a hundred times, and have every time be as subtly different as two different Tuesdays, they’ll be able to. Your recording of what was, and my recording of how it changed, will just be two more versions, the ones with that odd word ‘real’ attached.”

“Attached *validly*. If reality doesn’t matter, why do animators try to fake their way into having their work labeled ‘real’ all the time? It’s the only thing they do that makes me really angry.”

“Me too.” He could think of nothing else to add. “Catch the gliderail?”

In the half-hour zip around to the north side viewing station, they sat on the top, outside deck. Their stalkers shot them with the crater in the background. It was noon now, and the early spring sun was still low in the sky to the south.

On firm ground, in a Mars suit with robot porters to do all the carrying, a human being can cover about a hundred kilometers in a day without difficulty. Since the country they were crossing was ancient sea bottom (that was the point of everything, really), it would be flat and hard for the next couple of hundred kilometers before the Sand Sea. They could have just taken a hop-rocket to some point in the vast plain, claimed to have walked there, recorded their conversa-

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tion, and then hopped another hundred kilometers or so to the edge of the Sand Sea, but they were the two most prominent documentarians of the realist movement.

Visually it was monotonous. They had planned to use the long walk to spar for quotes, but there was little to say to each other. Léoa documented places that were about to be destroyed in the Great Blooming; Thorby recorded the BEREs, Big Energy Release Events, the vast crashes and explosions that marked humanity's project of turning the solar system into a park and zoo. They were realist-purists, using only what a camera or a mike could record from the real world. Unable to do anything except disagree or agree completely, they tried arguing about whether a terraformed planet can have wilderness, since the life on it was brought there and the world shaped for it, and about whether it was masculine to like to see things smashed and feminine to like to see things protected, and they agreed that animation had no place in docu, all in the first hour.

For a while she fished for him to tell stories about his brief moment of fame, as the teenager who rode his bicycle around a comet, but he didn't feel like telling that story during that hike, though he did promise to tell it eventually. It wasn't that he minded, it was only that the good-parts version came down to no more than four or five sentences for anyone else, and to inchoate, averbal images for Thorby.

By noon the first day, there was nothing to do but walk and look for something worth recording, or an argument worth having. They walked two more days.

The Sand Sea was no more conversational, but it was beautiful: an erg that stretched to the horizon, dune after dune in interlocking serpentine stretching for hundreds of kilometers in all directions. From orbit the regularity of the pattern of dune crests was remarkable, but from the dune crests, where they skied, it was busy and confusing like a choppy sea. Down between the dunes it was just piles of sand reaching to the sky on all sides.

They hadn't spoken in hours. Léoa didn't even ask him if he felt sad that all this would be converted to a mud flat and then drowned

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under three kilometers of water. He couldn't work up the energy to needle her about protecting a pile of dust the size of France, so that future generations could also visit a pile of dust the size of France.

They went slowly for the last day, as Léoa got visuals of the Sand Sea. She had built her reputation on doomed landscapes; this would be the biggest to date.

Thorby was sitting on top of one of the immense dunes, watching the sunset and talking his notes to one of his stalkers, planning the shooting of the Boreas-pass above the North Pole. He felt a low vibration, and his suit exmike, which had only supplied a soft whisper for days, reverberated with deep bass notes, something between a tuba and a bell, or a choir of mountains.

The dune under him heaved like an ocean wave waking from a long sleep, and he tumbled over, rolling and sliding in a bewildering blur of dust and sky, halfway down the western, windward face before sliding to a halt. The slipping dust piled around him, starting to pin him to the ground.

He pushed up to his feet, and stepping high, climbed back up the dune. It was more than a minute, while the pure tones of the bass notes in his exmike became a continuous thunder of tympani, before he struggled back to the top. The sun was less than a finger-width above the short horizon, and the light would disappear in minutes, the smaller solar disk and short horizon of Mars reducing twilight to an instant.

The thunder was still loud, so he clicked up the volume on his radio. "Are you all right?"

"Far as I can tell. It buried me to my waist but I got out." He picked out Léoa, climbing the leeward slope far below. "Booming sands," she said. "One of the last times they'll ever do it. The resonance trips off more distant dunes, one dune triggering another by the sounds, till all the dunes with those frequencies have avalanched and added to the din. There's a scientist I met who sowed microphones all over the polar sea and he could show you maps of how the booming would spread from dune to dune, all over the Sand Sea in a couple of hours. And all that will be silent forever."



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“Silent as the Boreal Ocean is now,” he said, mindful that their recording mikes were still on and so was the sparring match. All round them, stalkers were finding their way back to the surface, usually stalk first so that they rose like slim reeds from the ground until they suddenly flipped over, spun to clear the dust from their scoop shaped audio pickups, and resumed hopping through the sand like mouse heads on pogo sticks, normal as ever. “There was a time to hear the sands, and there will be a time to hear the waves. And in between there’s going to be some of the grandest smashing you ever saw.”

She must not have had a good reply, or perhaps she just didn’t want to reply to his intoning again, because she got back to her setup, and he got back to his.

The Mars suits shed the fine dust constantly, so that Léoa seemed to smolder and then to trail long streaks as the wind shifted during the few seconds of twilight. They finished under the stalkers’ work lights, and lay down to wait on the soft lee of the dune, safe now because it had just avalanched.

“Thorby,” she said, “this is not turning into anything that will make either of us famous.”

He hunched his shoulders, shaping the fine sand under him. “You’re right,” he said. “It’s not.”

“You’ve already been famous.”

“It’s one of those things you can’t experience while it’s happening,” he said, “like seeing yourself across a crowded room. Not all that it’s cracked up to be. I like making docus and I like selling them, so that kind of ‘where is he now’ fame doesn’t hurt, and it’s far enough in the past so I mostly get left alone.” He watched Phobos, far south in the sky; from these far northern latitudes you never saw it full, always as a lumpy sort of half-moon.

“If a model or a musician had taken a tumble in booming sands it would sell systemwide, but if we got stranded out here and you killed and ate me to survive, it would barely show up. Docus are what, half a percent of the market? There’s not even a market in pirating them.” Léoa sighed. “I was just thinking that the mainstream celeb channels haven’t even mentioned that the two leading documentarians of

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the realist-purist movement are here to record the biggest event of the next few hundred years of the Great Blooming, the re-creation of the Boreal Ocean. Not even to mention that we've always feuded and we purportedly hate each other. Not even to do one of those 'Will they reconcile and have sex?' stories they like so much. Not even to mention that one of us is the teenager who took the longest bicycle ride in history. Yet two years ago they covered the fad for learning to hand-read, and a couple guys in the retro movement that produced written books—can you believe it, written books, just code, that stuff people used to hand-read—and they covered a *blacksmith* last year, but docus are so dead, they didn't bother with us."

"We're not dead *enough*. Gone but not long enough or completely enough to be a novelty." He tried to decide whether he could actually see Phobos crawling along eastward, down by the equator, and decided he could. "Maybe we should have the blacksmith build us chariots, and race each other, and do a documentary about that."

"Maybe." The scratchy sound in her radio puzzled him till he saw her rolling over; she was looking for a comfortable position on the dune, and he was hearing her Mars suit pushing dust away.

"Hey," he said. "Since you've been trying to get me to miss something, I just noticed something I will miss. Phobos. I like the way it looks from this far north."

"Well, I'm glad *something* can touch your heart. I'd have thought you were excited about getting to see it fall."

"It won't be much of a show. Phobos'll be busted to gravel from all the impacts as it comes down through the rings, so it won't really be a BERE, just a month-long high point in the spectacular meteor shower that will go on for fifteen Mars-years or so. I wasn't even going to bother to shoot it. But what it is right now—I never realized it's always a half-moon up here in the far north, because it's so close to the equator and so low in orbit, and besides, it's fun just to watch it, because it's so low it orbits really fast, and I'm thinking I can see it move."

"I think I can too." She commanded her stalkers to set up and record the view of Phobos, and then to get the two of them with Phobos behind them as they sat on a dune. "Those shots will be beautiful;

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so sad though that stories about Great Blooming projects are about as popular as public comment requests by the Global Desalination Authority.”

He shrugged, hoping it would show up on the stalker’s cameras. “Post scarcity economy, very long life spans, all that. Everything to do and nothing matters. Story of everyone’s life. Have you thought about doing anything other than docus?”

“I try not to. I want to get the Great Blooming recorded, even if I call it the Great Vandalism or Bio-Stuff Imperialism. Somebody has to stand up for rocks, ice, and vacuum.”

“Rocks make okay friends. They’re dependable and loyal.”

“I wish somebody wanted to watch us talking to each other,” Léoa said. “About all this. About Mars and about the Blooming and all that stuff. I almost wouldn’t care what we had to say, or how things came out, if somebody would just find us interesting enough to listen. You know what I mean.”

“Yeah.” Thorby didn’t really feel that way himself but he often didn’t know what he felt at all, so he might as well agree.

They began final checkout just a few minutes before Boreas’s first aerobraking pass. The stalkers were self-maintaining, and they were already in place, but it felt wrong to just assume everything would work.

“This will be one of your last views of your home,” Léoa said. “How do you feel about that?”

He turned toward her, flipped the opaquing on his helmet to zero, and turned up the collar lights, so that his face would be as visible as possible, since this was an answer he knew he needed to get right. Already the northern horizon was glowing with Boreas-dawn. “Boreas is where I grew up, as much as I ever did, but that doesn’t make it home,” he said. “First of all when I lived there you couldn’t walk on most of it, anyway, and they weren’t going to let a little boy put on a suit and go play outside. When I went back four weeks ago, all that melting and vaporizing that went on while Boreas worked its way down to the lower system had erased even the little bit of landscape I did know; I couldn’t even find Cookie Crumb Hill on radar

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and thermal imaging, and anyway if I'd found it, it's so dark down there now, with all the fog and grit flying around, that I doubt I could have gotten pictures that penetrated more than twenty meters into the mess. The Boreas I knew when I was a kid, way out beyond Neptune, is more than a decade gone; it's nothing like it was. Nothing at all."

He was crabbier in his tone than he had meant to be, irritated by her question because he'd blown half his share of the budget to buy passage to Boreas so that he could come back with the seven scientists who were the last evacuated from the iceball's surface, and what he'd gotten had been some lackluster interviews that he could as easily have done a year before or a year after. Furthermore, since the station had not had windows, he could have done them somewhere more pleasant. He had also acquired some pictures of the fog-and-grit mix that now shrouded what was left of the old surface. (Most of the old surface, of course, now *was* fog and grit).

As Boreas came in over the North Pole, it would swing low enough for atmospheric drag, which, combined with the gravitational drag from coming in an "inverse slingshot" trajectory, should put it into a very eccentric, long orbit around Mars. Doing this with a big natural ball of mixed water ice, carbon dioxide, and frozen methane, with a silica-grit center, was so uncertain a process that the major goals for the project began with "1. avoid impact by Boreas, 2. avoid escape by Boreas."

But if all went well, nudgers and roasters would then be installed on Mars's new huge artificial moon, with the objective of parking it in a nearly circular retrograde orbit below Phobos, well inside Mars's Roche limit, so that over a few years, Boreas would break up and form a complex of rings. The billions of bits of it, dragged and shredded by the planet's rotation, would then gradually spiral in across twenty years, creating a spectacular continual meteor shower in the plane of the ring, a carbon dioxide/methane atmosphere at about a bar of pressure, and, as water vapor snowed down, then melted, then rained and ran to the lower parts of the planet, a new ocean in the bed of the dry-for-a-billion-years Boreal Ocean.

The comet's pass would light the sky for many hours, but its actual

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brush with the atmosphere would last less than three minutes. Thorby and Léoa intended to be directly underneath it when that happened.

“Did you leave anything on Boreas, a memento to be vaporized onto Mars?” she asked.

He started to say, “No.”

She picked up her walking stick and knocked off the head of one of his stalkers.

Startled speechless for an instant, he didn’t speak or move till she whacked the second one so hard that its head flew in pieces into the sand.

“What are you—”

“Destroying your stalkers.” Her voice was perfectly calm and pleasant as she whacked another stalker hard enough to break its stem in half, then drove the tip of her stick down on its head. “You won’t have a record of this. And mine will only be recording your face and appearance. You’ve lost.”

He thought *lost what?* for an instant, and then he wanted to rush to see if Number Four stalker, which had been with him for twenty-five years, was all right because it was crushed and he couldn’t help thinking of it as “hurt,” and then he wanted to scream *why?*

The landscape became brighter than day, brighter than Earth lightning, not at all like the Boreas-dawn they had been expecting. A great light flashed out of the north, and a breath later a white, glowing pillar pushed up into the sky. They froze, staring, for some indefinite time; his surviving stalkers, and all of hers, rotated to face the light, like clockwork sunflowers.

Thorby heard his voice saying, “We’ll need to run, south, now, as fast as we can, I don’t think we’ll make it.”

“Must have been a big fragment far out from the main body,” Léoa said. “How far away do you think—”

“Maybe up close to the pole if we’re lucky. Come on,” he said, “whistle everything into the porters. Skis on. *Run.*”

Two of his stalkers had not been destroyed, and they leaped into his porter at his emergency call. “Skis and poles,” he told the porter, and it ejected them; he stepped onto the skis, free-heelers designed

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for covering ground and moving on the slick dust, and hoped his few hours practice at a comfortable pace in the last day would be enough to let him go fast now.

“Baggins, follow, absolute.” Now his porter would try to stay within two meters of his transponder, catching up when it fell behind, until it ran out of power or was destroyed. If he lost it, he might have to walk hungry for a while, but the northern stations were only a couple of days to reach. His Mars suit batteries were good for a week or more; the suit extracted water and air; he just had to hope he wouldn’t need the first aid kit, but it was too heavy to strap onto the suit.

The great blue-white welding-arc pillar had cooled to orange-white, and the main body of Boreas, rising right on schedule, stood behind it as a reflector. The light at Thorby’s back was brighter than noonday equatorial sun on Earth, much brighter than any sun Mars had ever seen, and the blazing face of Boreas, a quarter of the sky, spread the light with eerie evenness, as if the whole world were under too-bright fluorescent light.

He hurled himself along the windward side of the south-tending dune crest, using the skating technique he’d learned on Earth snow and practiced on frozen methane beds on Triton; his pushing ski flew out behind him, turning behind the lead ski to give extra push, then reach as far in front of him as possible, kicking and reaching as far as he could. On the slick, small-round-particle sand of the ridge top, in the low gravity, he might have been averaging as much as twenty kilometers per hour.

But the blast front from the impact was coming at them at the local speed of sound, 755 kilometers per hour, and though that was only  $2/3$  as fast as Mach 1 in warm, thick, breathable air, it was more than fast enough to overtake them in a half hour or less. At best the impact might have been four hundred kilometers away, but it was almost surely closer.

He glanced back. Léoa skied swiftly after him, perhaps even gaining ground. The light of the blazing pillar was dimmer, turning orange, and his long shadow, racing in front of him, was mostly cast by the dirt-filtered light of the Boreas-dawn. He wasn’t sure whether

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Boreas would stay in the sky till the sun came up, but by then it would all be decided anyway.

“Thorby.”

“Yeah.”

“I’ve had it look for shelter, read me some directions, and project a sim so I’m sure, and there’s a spot that’s probably safe close to here. This dune crest will fork in about a kilometer. Take the left fork, two more kilometers, and we’ll be behind a crater wall from the blast.”

“Good thinking, thanks.” He pushed harder, clicking his tongue control for an oxy boost. His Mars suit increased the pressure and switched to pure oxygen; his pace was far above sustainable, but either he made this next three kilometers or he didn’t.

Léoa had destroyed his recording setup. He’d known she deplored his entire career of recording BEREs—Big Energy Release Events—at least as much as she disliked the whole idea of the Great Blooming, but he’d had no idea she would actually hash the joint project just to stop him from doing it. So his judgment about people was even worse than he’d thought it was. They had been colleagues and (he’d thought) friendly rivals for decades, and he hadn’t seen it coming.

He kept pushing hard, remembering that he was pouring so much oxygen into his bloodstream that he had to keep his muscles working hard, or hyperventilate. His skis flew around him, reached out to the front, whipped back, turned, lifted, flew out around him, and he concentrated on picking his path in the shifting light and staying comfortably level and in control; in the low Martian gravity, with the close horizon that didn’t reveal parallax motion very well to eyes evolved for Earth, it was far too easy to start to bounce; your hips and knees could easily eat a third of your energy in useless vertical motion.

The leeward side of a dune crest is the one that avalanches, so he stayed to the right, windward side, but he couldn’t afford to miss the saddle-and-fork when it came, so he had to keep his head above the crest. He heard only the hiss of his breath and the squeal of his skis on the sand; the boiling column from the impact, now a dull angry red, and the quarter-of-the-sky circle of the comet now

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almost directly overhead were eerie in their silence. He kept his gaze level and straight out to the horizon, let his legs and gut swing him forward, kept the swinging as vertical as he could, turning only the ski, never the hip, hoping this was right and he was remembering how to do it, unable to know if he was moving fast enough through the apparently endless erg.

He had just found the fork and made the left turn, glancing back to check on Léoa. She seemed to be struggling and falling a little behind, so he slowed, wondering if it would be all right to tell her she was bouncing and burning unnecessary energy.

The whole top five meters of the dune crest under her slid down to the leeward in one vast avalanche. For one instant he thought, *but how can that be, I just skied it myself and I'm heavier*. The ground fell away beneath him in shattering thunder as the whole dune slumped leeward.

*Of course, how did I miss that?* In the Martian atmosphere, a cold thin scatter of heavy CO<sub>2</sub> molecules, sound is much slower than it is in anything human beings can breathe; anyone learns that after the first few times a hiking buddy's radio has exmike sound in the background, and it seems to be forever before your own exmike picks it up. But the basalts of the old Martian sea floor are solid, dense, cold, and rigid to a great depth; seismic waves are faster than they are elsewhere.

He thought that as he flipped over once, as if he were working up the voiceover for his last docu. Definitely for his *last* docu.

In the low gravity, it was a long way to the bottom of the dune. Sand poured and rumbled all around him, and his exmike choked back the terrible din of thousands of dunes, as the booming erg was all shaken at once by the S-waves running through the rock below it, setting up countless resonances, triggering more avalanches and more resonances, until nearly the whole potential energy of the Sand Sea released at once.

Maybe just to annoy Léoa, he intoned a voiceover, deliberately his corniest ever, as he tumbled down the slope and wondered how the sand would kill him. "It is as if the vast erg knows what Boreas is, that this great light in the sky is the angel of death for the Sand Sea,



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which shouts its blind black stony defiance to the indifferent glaring ice overhead.”

He rolled again, cutting off his intoning with an *oof!* and released his skis. Rolling again, he plowed deep into the speeding current of sand. Something hard hit the back of his helmet. He tumbled faster and faster, then flopped and slid on his belly headfirst.

In darkness, he heard only the grinding of fine sand against his exmike.

The damp in Thorby’s undersuit and his muzzy head told him he’d just done the most embarrassing thing of his life, fainted from fear. Now it felt like his worst hangover; he took a sip of water. Bruised all over, but no acute pain anywhere; slipped out of his urine tube, that seemed to be all that was wrong. If Baggins caught up with him, Thorby would like to get into the shelter, readjust things in the undersuit, sponge off a bit, but he didn’t absolutely have to.

His clock didn’t seem to be working—it didn’t keep its own time, just reported overhead signal—but the wetness in his undersuit meant he couldn’t have been out more than fifteen minutes or so. He’d be dry in another few minutes as the Mars suit system found the moisture and recycled it.

He was lying on his face, head slightly downward. He tried to push up and discovered he couldn’t move his arms, though he could wriggle his fingers a bit, and after doing that for a while, he began to turn his wrists, scooping more sand away, getting leverage to push up more. An eternity later he was moving his forearms, and then his shoulders, half shaking the sand off, half swimming to the top. At last he got some leverage and movement in his hips and thighs, and heaved himself up to the surface, sitting upright in the silvery light of the darkened sky.

There was a pittering noise he couldn’t quite place, until he realized it was sand and grit falling like light sleet around him. The blast wave that had carried it must have passed over while Thorby was unconscious; the tops of the dunes had an odd curl to them, and he realized that the top few meters had been rotated ninety degrees from their

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usual west-windward, east-leeward, to north-windward, south-leeward, and all the dunes were much lower and broader. Probably being down in the bowl had saved his life; maybe it had saved Léoa too.

He clicked over to direct voice. "Léoa?"

No answer, and her voice channel hadn't sent an acknowledge, so she wasn't anywhere in radio range, or she was buried too deep for him to reach her.

He tried the distress channel and got a message saying that if he was above thirty degrees north latitude and wasn't bleeding to death within ten kilometers of a hospital, he was on his own. Navigation channel was out as well, but if he had to he could just walk with the Bears and Cassiopeia to his back while they got the navigation system back on, and still get himself to somewhere much safer and closer to other people, though getting out of the dunes might take a week without his skis.

When the crest had avalanched under Léoa she'd been at least 150 meters behind him, and he wasn't sure she'd gone down into this bowl. He tried her on direct voice again, and still had nothing, so he tried phone and was informed that overhead satellite service was temporarily suspended. He guessed that the impact had thrown enough junk around to take down some of the high-ellipse polar satellites that supplied communication and navigation.

If he knew he was alone, the thing to do would be to start walking south, but he couldn't leave Léoa here if there was any chance of finding her. The first aid kit in Baggins had directional gear for checking her transponder, but Baggins was probably buried or crushed, and even if the porter was still rolling it might be a while before it found its way to him.

He would wait a few hours for Baggins anyway; the porter not only had the food, but could also track the tags on his skis and poles, and had a power shovel. A lot better to begin with a shelter, food, and skis than to get one or two kilometers further and a lot more tired. And he did owe Léoa a search.

The best thing he could think of to do—which was probably useless—was to climb to the top of the slope he'd rolled down. The

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pre-dawn west wind was rising, and the sand swirled around his boots; it was hard going all the way up, and it was dawn before he reached the top. The small bloody red sun rising far to the southeast, barely penetrating the dense dust clouds, gave little light. He clicked his visor for magnification and light amplification, and turned around slowly, making himself look at each slope and into each bowl he could see into, since with the wind already erasing his boot prints, he knew that once he walked any distance he'd have little chance of finding even the bowl into which he'd fallen.

There was something small and dark moving and slipping down the side of the next bowl north; he took a few steps, and used the distance gauge. It estimated the object to be about a meter across and two kilometers away.

He moved toward it slowly until he realized it was Léoa's porter, headed roughly for the bottom of the bowl, so it must be getting signal from her transponder. He descended to meet it and found it patiently digging with its small scoop and plow, rocking back and forth on its outsize dune wheels to get more leverage.

Thorby helped as much as he could—which wasn't much—with his hands. He didn't know whether the porter would try to dig her out if the med transponder showed she was dead, and of course it would ignore him, so he didn't have any way to ask it about anything. The suits usually ran with a couple of hours of stored air as a buffer, and made fresh air continually, but if she'd switched to pure direct oxygen as he had, there might not have been much in her tank, and if the intake was buried and filled with sand, she could suffocate.

Presently he felt a hard object; an instant later the porter reached forward with a claw, took a grip, and pulled one of Léoa's skis from the sand, putting it into its storage compartment, before rolling forward. Thorby stared at it for a long moment, and started to laugh as he followed the porter up the hill, to where it plucked out a pole. Presumably it would get around to Léoa, sooner or later; nobody had thought to make life-saving a priority for a baggage cart.

The roiling sky was the color of an old bruise and his tempera-

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ture gauge showed that it was cold enough for CO2 snow to fall. He followed Léoa's porter and tried the phone again. This time he got her voicemail, and left a message telling her what was going on, just in case she was wandering around on a hill nearby and out of line of sight from the satellite.

Five minutes later his phone rang. "Thorby?"

"Yeah, Léoa, are you okay?"

"No. Buried to my mid chest, I think I have a broken back and something's really wrong with my leg, and I can see your porter from where I am but I can't get its attention." Her voice was tense with pain. "Can't tell you where I am, either. And you wouldn't believe what your porter just did."

"It dug up one of my skis. That's what yours is doing over here. All right, to be able to see it you must be in the same bowl I landed in, one to the south, I'm on my way. I'm climbing without skis, so I'm afraid this is going to be slow."

After a while as he climbed, the wind picked up. "Léoa?" he called, on the phone again because radio still wasn't connecting them.

"I'm here. Your porter found your other ski. Do you think it will be okay for me to have some water? I've been afraid to drink."

"I *think* that's okay, but first aid class was a while ago. I was calling because I was afraid sand might be piling up on you."

"Well, it is. I'm trying to clear it with my arms but it's not easy, and I can't sit up."

"I don't think you should try to sit up."

They talked while he climbed; it was less lonely. "Your porter is digging about three hundred meters behind me," he told her. "It must be finding your other ski."

"Can't be, if it's already found one, because the other one is bent under me."

"Well, it's getting your pole then. If your ski is jammed under you, it sounds like it hurts."

"Oh yeah, the release must have jammed and it twisted my leg around pretty badly, and walloped me in the spine. So the porter must be finding my pole. Or maybe I dropped a ration pack or something.

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They've got so much spare processing power, why didn't anyone tell them people first, then gear?"

"Because there probably aren't a hundred million people, out of sixteen billion, that ever go off pavement, or to any planet they weren't born on," he said. "The porters are doing what they'd do in a train station—making sure our stuff is all together and not stolen, then catching up with us."

"Yours just found a pole and it's heading up the hill, so I guess it's on its way to you now."

He topped the rise a few minutes later, just as Baggins rolled up to him and waited obediently for orders. "Skis and poles," he said to his loyal idiot friend, and the machine laid them out for him.

He couldn't see Léoa, still, but there was so much sand blowing around on the surface that this might not mean anything. He tried direct voice. "Léoa, wave or something if you can."

An arm flopped upward from a stream of red dust halfway down the slope before him, and he glided down to her carefully, swinging far out around her to approach from below, making sure he didn't bump her or push sand onto her. He had to wait for Baggins to bring all the gear along, and tell it to approach carefully, but while the porter picked its way down the slope, he put the first aid and rescue gear manuals into his audio channel, asked it to script the right things to do, and listened until he could recite it back. This was one of those times that reminded him he'd always wanted to learn to hand-read.

Meanwhile he kept brushing sand off Léoa; she was crying quietly now, because it still hurt, and she had been afraid she would be buried alive, and now that he was there to keep her intakes clear, she was safe.

Late that afternoon, he had completed digging her out, tying her to the various supports, putting the drugs into her liquids intakes, and equipping Baggins to carry her. She was lying flat on a cross-shaped support as if she'd been crucified. Voice-commanding Baggins, he slowly raised her, got the porter under her, and balanced her on top. With Baggins's outrigger wheels extended as far as they would go, she would be stable on slopes less than ten degrees from the hori-

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zontal, and at speeds below three kilometers per hour. Thorby figured that hauling her would be something to do for a couple of days until rescue craft were available for less urgent cases.

Com channels were coming back up gradually, and the navigation channel was open again, but there was still little news, except a brief announcement that the impact had not been an early breakup of the comet, but apparently been caused by an undetected stony satellite of Boreas, about a half kilometer across. Splashback from the impact, as Thorby had guessed, had destroyed most of the satellites passing over the pole in the hours following. The dust storm it had kicked up had been impressive but brief and localized, so that only a half dozen stations and towns in the far north had taken severe damage, and tourist trade was expected to increase as people flocked to see the new crater blasted through the polar ice and into the Martian soil before the Boreal Ocean drowned it.

Authorities were confirming that the pass over the South Pole in seventeen days, to be followed with an equatorial airbrake nine days after that, was still on schedule. Thorby figured he'd be able to cover those, easily, so Léoa's little political action would mean very little.

He wanted to ask her about that but he didn't quite see how to do it.

Shortly after Baggins began to carry the cruciform Léoa in a slow spiral up the inside of the bowl, gaining just a couple of meters on each circuit, her porter appeared over the top of the dune. It had apparently found the last ski pole, or whatever it was digging for, and now followed her transponder like a faithful dog, behind Baggins, around and around the sandy bowl.

Léoa insisted that he get visual recordings of that silly parade, but he quietly killed the audio on it, because all that was really audible was her hysterical laughter. He attributed that to the painkillers.

About dawn he sat up, drank more water and swallowed some food, and skied easily to the top of the dune crest, where Baggins had just managed to carry Léoa after toiling in that slow spiral around the bowl all night. The monitor said she was fast asleep, and Thorby thought that was the best possible thing. Through most of the morning

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and into the afternoon, he skied along the newly reorganized dune crests, working a little ahead of Baggins and then sitting down to wait for it to catch up, listening to the slow spitting of sand against his suit, and watching the low red dust clouds gather and darken, with only his thoughts for company.

When Léoa finally awoke, she said, “I’m hungry.” It startled Thorby; he was about sixty meters ahead, using his two remaining stalkers to shoot the dunes through the red dust that was still settling.

“Be right there,” he said, and skied back, the stalkers hopping after him. Her mouth, throat, and digestive system were basically okay, according to the medical sensors, though they wanted her to eat mostly clear broth till she could be looked at properly in a hospital. This time she chose chicken broth, and he hooked it up so she could sip it. All the diagnostics from the rescue frame said she was more or less normal, and as far as he could tell the broken leg and spine were the major damage.

After a while she said, “If I call out my stalkers, will you tell the story about the bicycle ride around the comet, and all those things about becoming famous?”

“Sure,” he said, “if it will make the time pass better for you. But I warn you it’s very dull.”

So he sketched out the basics, in his best “I am being interviewed” voice, as the red dusty sky grew darker. When he was fourteen he had been sent to live with his grandmother because his mother had a promising career going as an actress and his being visibly a teenager would have spoiled her image as a sex object for teenage boys. His grandmother had been part of the earliest team for the first Great Bloom projects, so he had found himself dispatched to Boreas with her, forty-five AU from the sun—so far out that the sun was just a bright star. He had been bored and unhappy, spending most of his time playing games in VR and bored even there because he was so far from the rest of the solar system that radio signals from anywhere else, even Triton Station, took most of a day for a round trip.

“So on the day of the first fire-off—”

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“Fire-off? You mean the atom bomb?”

“Well, sort of atom bomb. Laser initiated fusion explosive, but nobody wanted to call a bomb LIFE. Yeah, the thing that started Boreas falling down into the lower solar system.” He skied back to look at her life support indicators; they were all green so as far as he knew, she was fine. “On that day, Grandma insisted that I suit up, which I didn’t want to do, and go outside with her, which I really didn’t want to do, to sit and watch the sky—the gadget was going to be blowing off over the horizon. They put it in an ellipsoidal super-reflecting balloon, at one focus, and then put the other focus of the ellipsoidal at the focus of a great big parabolic parasol—”

“None of this means a thing to me.”

“They had these really thin plastic reflectors to organize it into a beam about a kilometer across, so all that light, X-rays, heat, everything pretty much hit one square kilometer and blew off a lot of ice and snow in one direction.”

“That’s better. So, you got to see one big explosion and you liked it so much you decided to see them for the rest of your life?”

“My helmet’s opaqued—did you want a reaction shot to that?”

“I’ll make one up,” she said. “Or use stock. I’m not *that* purist anymore. Anyway, I’ve heard you mention it two or three times, so what *was* Cookie Crumb Hill?”

“Home. It was where the base was. Basically a pile of sand cemented together with water ice, it was the boat for the base.”

“The *boat*?”

“It floated on what was around it, and if anything had gone wrong it would have ejected as a whole, so we thought of it as a boat. But we called it Cookie Crumb Hill because it was a pile of meter-or-bigger ice clods. The stuff in the core was mostly silica, so the robots spun that into glass fibers, stirred that into melted water, and added enough vacuum beads to make it float on the frost, because otherwise anything we built would have been under twenty-five kilometers of frost.”

A virgin Kuiper Belt Object begins as a bit of dust accumulating frost. It accretes water, ammonia, methane, hydrogen sulfide, all the



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abundant things in the universe, a molecule at a time. Every so often it adds more dust, and as it grows bigger and bigger, the dust sinks through the loose vacuum frost to the center. At Kuiper Belt velocities, hardly anything ever hits hard enough to cause vaporization, and anyway it's too cold for anything to stay vapor for long. So over billions of years, the frost at the center packs slowly around the dust, and all of it sinks and compacts into a kind of sandy glacier. Frost on top of that sandy glacier packs in to form "fizzy glacier"—water ice mixed with methane and carbon dioxide ice. And always the surface at a few kelvins, where the slight mass and the low gravity are not enough to compact the crystalline structures, grows as thick frost; at the bottom of twenty-five kilometers of frost, on a world as small and light as Boreas, the total pressure was less than the air pressure of Mars. Time alone made Boreas large and its center hard.

"So before people got there," Léoa said, "you could say it was one big snowflake. Fractally elaborated fine structures of ice crystals, organized around a dust center—just that it was over seven hundred kilometers across."

"Small dust center, big compacted ice center," he said. "More like a snowball with a lot of frost on it. But I guess you're right, in a sense. So we called it Cookie Crumb Hill because with the fiber and beads in them, the ice boulders looked sort of like cookie crumbs, and we built it up in a big flat pyramid with sort of a keel underneath to keep it from turning over, so it was also a boat on a fluffy snowball, or if you would rather call it that, a snowflake. . . Anyway, I was a complete jerk as a teenage boy."

"I had twin teenage boys a couple decades ago," Léoa said, "and I might have the reversal and have more babies, but only if I can drown them or mail them away at age twelve."

Thorby skied alongside Baggins to check her indicators; she was farther into the green range, probably feeling better, and that was good.

"Well," he said, "I was unusually unpleasant even for a teenager, at least until the bicycle ride. Though being bad wasn't why Mom got rid of me; more like the opposite, actually." It came out more bitter than

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he had expected it to; he sometimes thought the only time he'd really been emotionally alive was between the ages of thirteen and eighteen, because everything after seemed so gray by comparison. "Anyway, I sat up there with Gran, and then there was a great light in the sky over the horizon, and about ten minutes of there being an atmosphere—I felt wind on my suit and for just a moment there was a sky instead of stars—and then, poof-click, all this new spiky frost forming everywhere. That was when the idea started, that it would be wonderful to be outside for a long period of time, especially if I could control what I did and how I spent my time.

"So for physics class, I figured out the gadget and had the fabricators make it. That kilometer-across loop of spinning superconductor that was basically a big flywheel I could spin up to orbital velocity by doing shifts pedaling the treadmill, so over about a month I got in shape. Bicycle that I could ride around the inside of the loop as a maglev, picking up speed and momentum for the loop. That was trivial stuff, any lab could build that now, and our local robots didn't have much to do once the base was done. So I built my loop and my bicycle, or rather the robots did, and pedaled the loop for a few hours a day. In a frictionless very low g environment, the momentum adds up, and eventually that loop was moving at close to six hundred kilometers per hour, more than orbital velocity. With controllable superconduction on my bike tires, I could gradually increase the coupling, so I didn't get yanked off the bike when I first got on, and just ride my relative speed up high enough before getting off the loop and into orbit.

"Then I just needed the right timing, enough air, food, and water, and a way to come down when I got bored. The timing was done by a computer, so that I pulled out of the loop right at the top, while I was riding parallel to the ground, and I just had a one time program to do that, it took over and steered when it needed to, since my launch window was about three meters long and at that speed, that went by in about a sixtieth of a second. A recycling suit took care of the air and water. The food was in the big container I was towing. And the container, when it was empty, could be given a hard shove, and dragged through the frost below, as an anchor to get down to about a

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hundred kilometers per hour, when I'd inflate the immense balloon tires around the superconducting rims, and skim along the frost back to Cookie Crumb Hill.

"I just put the camera on the handlebars, facing backward, so that I'd have a record when I turned the project in for a grade, and then since I had to take a documentation class the next term, I used the footage. I had no idea people would get all excited about the image of me on that bicycle, food hamper towing behind me, with all that Boreas in the background."

"You looked like you were riding over it like a witch on a broomstick," she reminded him, "because the producer that bought it made it consistent that your head was upright in the picture, and the way a body in a gravitational field positions itself, the bike ended up toward Boreas."

" 'It matters not what happened or how it was shot, the editor will decide what it was,' " he quoted, and skied forward a bit to stretch his tired legs and enjoy some exercise in the little daylight there was. Probably it would be another day or two before there was a rescue.

When he came back, and found her still rolling along on the rescue frame (which, to his eyes, kept looking more and more like a cross) on top of Baggins, she was still awake and wanted some more soup, so he set that up for her. "This probably is a good sign for your quick recovery," he pointed out. "The rescue people say they'll pick us up sometime tomorrow, so we could just camp here, but if we cover another fifteen kilometers tonight and tomorrow morning, we can officially say we got out of the Sand Sea all by ourselves. Which is more comfortable for you, stationary or rolling?"

"With my eyes closed I can't tell the difference; your porter is pretty good at carrying a delicate object. I can't get out of the suit anyway, so you're the one who setting up a shelter might make a difference to. So let's keep moving till you want to do that, and then move again in the morning when you're ready."

"That'll work." It was almost dark now, and though he could steer and avoid hazards all right by light amps and infrared, and find his way by the same navigation system that Baggins used, it was a sort of

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scary way to proceed and he didn't like the idea of risking something going wrong with Léoa. "I guess I'll make camp here."

The shelter took a few minutes to inflate, and then Baggins carried her inside and set her on cargo supports, so he could at least remove her helmet and let her breathe air that came from the shelter's generator, and eat a little bit of food she could chew, mostly just pastelike stuff from tubes that the medical advisor said she could have. When he had made her comfortable, and eaten a sitting-up meal himself, he stretched out on a pad himself, naked but feeling much better after a sponge bath. He told the shelter to make it dark, and didn't worry about setting an alarm time.

"Thorby?"

"Need something?"

"Just an answer to the last part of the question. So how did orbiting Boreas for a month, living on suit food and watching the frost form on the surface as a lot of the evaporated stuff snowed back in—I mean, basically, it was a novelty act, you were just orbiting a snowball on a bicycle—how did that launch everything for you?"

"My big secret is it didn't," he said, not sure whether telling her could change anything. "For most of the ride I played VR games on my visor and caught up on sleep and writing to pen pals. I shot less than five hours of camera work across that whole month. Sure, orbiting a kilometer up from a KBO's surface is interesting for a few minutes at a time. The frost spires and the big lacy ground patterns can be kind of pretty, but you know, a teenage boy doesn't appreciate much that his glands don't react to. I finally decided that I could stand company again, tossed the food container downward on the stretch-winch, slowed down to about a forty kilometers per hour across a few hundred kilometers of frost—the rooster tail from that was actually the best visual of the trip, I thought, with a line down from my bicycle to the surface, and then snow spraying everywhere from the end of the line—came in, got a shower, put it together, and forgot about it till it made me famous. At which point it also made it famous that Mom had a teenage son, which was badly blowing the ingénue image, so she filed repudiation papers with Image Control, and I've never seen or

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heard from her since. The biggest thing I learned, I'm afraid, was that I like having a lot of time to myself, and people bug me."

"What about big explosions?"

"I like them, I always did. And I liked watching frost re-form after moving Boreas around, and I just like to see stuff change. I know you're looking for something deeper, but you know, that's about it. Things end, new things form, new things end, newer things form. I just like to be there."

She didn't ask again, and he heard her breathing grow slower and deeper. He thought about the visuals he had, and about a couple things he wanted to make sure to do when Boreas did its South Pole pass, and was asleep almost at once in the perfect dark and silence of the Martian wilderness.

"All right," she said, "I'll tell you as much as I can, since you are going to ask." He was sitting beside her reconstructor tank in the hospital. "That's why you came back, right, to ask why I would do such a thing?"

"I don't really know if that is why I came here," he said. "I wanted to see how you were, I had some days before I go down to the South Pole, and since I put some effort into having you be alive, I guess I just wanted to see the results. I'm not planning to work with you again, so I don't really have to know why you wrecked my stalkers just before some key shots, only that you might, to avoid you."

"I suppose after what I did there's no question of your ever liking me."

"I'm a loner, I don't like people much anyway."

"Some people might guess that's why you like BEREs. The people who used to love the place the way it was are gone, and the people who are going to love the place it will be aren't there yet. For just that instant it's just you and the universe, eh?"

She must be recording this. It was the sort of thing you asked an interviewee, and her audience in particular would just gobble this down. Perhaps he should spoil it, and pay her back for having spoiled the first Boreas-pass for him?

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Except she hadn't spoiled it. He'd be getting plenty of shots of the later passes and anyway good old Stalker Two had gotten most of what he wanted, including the fiery column from the surprise impact. And even if she hadn't done that, they'd have missed most of it through having to grab the stalkers and flee for their lives.

So it mattered, but not a lot; he just didn't want her around when he was shooting anything important. As for rescuing Léoa, well, what else could a guy do? That didn't create a bond for him and he couldn't imagine why it might for her. It was just something he did because it was something people did at a time like that.

"You're looking like you've never had that thought before," Léoa said.

He thought, *what thought?* and said, "I guess, yeah."

"You see? We're not so different from each other. You like to see the moment when something beautiful changes into something new. And you don't care that things get all smashed when that happens. In fact you enjoy the smash, the beautiful death of something natural and beautiful, and the birth of a beautiful human achievement."

He thought, *what?* and was afraid he would have to say something.

But by now she was rolling. "Thorby, *that* was what I wanted to capture. Thorby, Lonely Thorby, Thorby the Last Mountain Man, finds out he can be betrayed by people he thought were his friends. The change of your expression as it happened. The way your body recoiled. The whole—my idea is, I'm going to overlay all that and interact it, touchlinked back and forth everywhere, with the changes on Mars, show Mars becoming a new living world artificially, and show Thorby engaging and rejoining the human race, artificially, in a dialogue. Show you becoming someone who can hate and maybe even eventually love. Someone who can see that the rest of us are here. The way Mars can learn to respond to life on its surface, in a way that it hasn't in the three centuries we've been there."

At least he knew about this. People had been trying to change Thorby his whole life. He'd never been any good at being changed. "So you wanted to get the moment when I changed, for your docu?"

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It was a stupid question, she'd told him, but interviewers have to ask stupid questions now and then, if they want to get decent quotes, and habits die harder than passions.

"That's it, that's it exactly. Exactly. I'm giving up on the whole purist-realist movement. You can have it to yourself. It not only isn't making me famous, it's not even *keeping* you famous. I've got an idea for a different kind of docu altogether, one where the human change in celebs, and the Blooming change in the solar system, echo and describe each other in sort of a dialogue. If you're interested, and I bet you're not, I've recorded sort of a manifesto of the new movement. I've put it out already. I told them what I did to you and why and showed your face, which wasn't as expressive as it could be, by the way. Too bad you never want to do another take. And even though in the manifesto I explain it will be at least twenty years before my next docu, instead of the usual five or six, because I want to get at least that much of the Mars changes into it, the manifesto is *still* getting the most attention I've *ever* gotten. I've got a bigger audience than ever, even pulling in some of my backlist. I'm going to have an *impact*."

It all made sense of a sort, as much as people stuff ever did, so Thorby said, "Well, if that's what you want most, I'm glad you're finally having an impact. I hope it's the impact you want." To him it seemed to come out stiff and formal and unbelievable.

But she smiled very warmly and said, "Thorby, that's so beautiful I'd never dream of asking for a second take."

"You're welcome." He brushed her forehead with his hand, and added, "Happy impacts."

Because she looked like she was trying to think of a perfect reply, he left. He needed to get new gear purchased and checked out, then catch a hop-rocket; Boreas-pass over the South Pole was just three days away.

He wondered why he was smiling.

Right on Mars's Arctic Circle, just at 66 N, at winter solstice, the sun at noon should just bounce over the southern horizon, and Thorby had an idea that that might look especially impressive with the big

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new ring arcing so high across the sky. But to his annoyance, here he was, waiting for that momentary noon-dawn, and the new, thick Martian clouds had socked in every point around the Arctic Circle. Above the clouds, he knew, the new rings were vivid with light, a great arc sweeping halfway up the sky; but down here, nothing, and even the constant meteor shower under the rings was invisible, or showed only as flashes in the clouds indistinguishable from distant lightning.

He waited but it never cleared, and the time for the midwinter sun passed, so he turned on the ground lights on his hop rocket to pack up.

Thorby blinked for a moment. It was snowing, big, thick, heavy slow flakes, tumbling down gently everywhere, not many just yet, but some everywhere he looked. It was so fine, and so perfect, that he shot it for twenty minutes, using three stalkers to record the snowfall in big slow pans, and two just to record the lacy flakes as they landed on dark soil and lay exposed for just an instant to his view before the stalker's lights melted them, working at maximum magnification to catch each unique one, wondering if it was even possible for a Martian snowflake shape to fall elsewhere.

He stayed there shooting till the wind rose and the snowfall thickened enough so that he had to worry about getting the hop rocket off the ground. He was laughing as Baggins swallowed up the stalkers and rumbled up the ramp, and he looked around one more time before climbing the ramp and turning off his ground lights. He indulged in a small spiteful pleasure: he knew that his normally expressionless face was cracking wide open with pure joy, and Léoa and her cameras were in some city or on some ship somewhere, farther from him than anyone had ever been.



## VIRUS CHANGES SKIN

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*Ekaterina Sedia*

Willow Robertson smoothed the skirt over her thighs and perched on the examination table. Her hands gripped the edge, and she spent some time studying them—pale, with the slightest yellow tinge. Like nicotine. Jaundice. Old T-shirt.

She chased the thought away and instead rehearsed her words for Dr. Margulis. She arranged them carefully in her mind, fearful that the moment she started talking they would scatter like pearls, the string of resolve that tied them together broken.

She looked out of the window at what used to be tundra just a few decades back and now became the pale scrub of pines and oaks. The sun beat down on the tarmac roads and the haggard town of hastily erected houses, shops, hangars, but people stayed indoors. Not safe. Even the farmers had to work in full protective gear.

Dr. Margulis entered the examination room, and as she walked she flipped through Willow's chart, skimming every childhood hurt (appendectomy at six, a leg broken on the monkey bars at ten), every adolescent embarrassment (laser removal of acne scars at fifteen, corrective eye surgery at seventeen), and every adult self-denial (tubal ligation at twenty-four, breast reduction at twenty-eight).

"What can I do for you?" Dr. Margulis said.

Willow gripped the edge of the table harder, watching the half moons on her nails pale into white. "My mother died last week."

"I am sorry to hear that." Dr. Margulis's face folded along the well-worn lines into a habitual grimace of sympathy. Every doctor Willow had ever seen had that prefab expression, and these days

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their faces assumed it almost automatically. Too much cancer. Too much sun.

"It's all right," Willow said. "I mean, she was in her eighties." And answered the unspoken question, "I was a late child. Anyway, since my parents are gone now, I would like my alterations reversed."

"Your skin?" The doctor did not hide her surprise.

"Yes. And hair. I understand why my parents did it to me, they wanted me to have a better shot at getting ahead, but now I can do what I want. Right?"

"Of course. It's just . . . what are your coworkers going to say?"

Willow shrugged. She did not have an answer to that. People's opinions mattered less to her with each passing year.

"Don't you like being the way you are?"

"I don't hate it," Willow said. "But my parents did not ask me about it. They just had it done. And when I was little, I could not understand why I was a different color than they, and why they wouldn't come to my school plays. And I was angry that they didn't ask me. And they said that they didn't want me to change color when I was grown up—people would wonder, they said. You'd never pass then; someone will always remember that you used to be black."

Dr. Margulis raised her eyebrows and gave a sigh of resignation. I'm not going to argue with that, her demeanor said, I have better things to worry about. "Fine. The receptionist will schedule you for some time next week. I'll prepare your inoculation."

"Oral?"

The doctor nodded. "A very simple one. A single gene that will release the suppressors on your melanin genes."

"And hair," Willow reminded softly.

"And hair. You'll have to shave your head, of course, and your new hair will grow with your original keratin structure. Anything else?"

"How long will it take?"

"For hair, a few weeks. For skin—it will be gradual. As your old cells slough off, the new ones will have a heavy pigmentation. The virus will target the skin cells only." The doctor spoke with obvious

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pride in her ability to communicate complex information in simple terms.

“Thanks,” Willow said. As she was leaving the examination room, she heard Dr. Margulis say, “What are you trying to achieve?”

“I don’t know,” Willow said and closed the door behind her.

It was true, she didn’t. Color did not equal culture, and that was one thing that she had lost and could never reclaim. She still would be a white person, even if her skin turned the deepest shade of sienna. But she owed it to her mother to at least look like her.

Willow was growing impatient—two weeks after she took the viral pill, her skin tone deepened only a little. Still, people noticed. She saw heads turn as she walked from her apartment complex—a new ugly building made even uglier by the massive solar panels on the roof—to work.

“You really shouldn’t be out in the sun,” Andre, her coworker at the Corn Institute, said. “Skin cancer is no joke.”

Willow rolled her eyes. “If you’re done stating the obvious, do you mind looking over these data with me?” She spread the sequencer printout on the lab bench and rifled through the reference library of plant genomes. “Does this look right to you?”

Andre tugged on his upper lip. “Nope,” he said. “Which strain is it from?”

“IC5. The dwarf.”

Andre’s face lit up. “I love that strain. They’re so *cute*.”

Willow smiled too. Everyone at the Institute anthropomorphized corn; Willow used to find it ridiculous when she first started here, but now it seemed natural. And this corn was cute—tiny plants, no taller than wheat, with a spray of succulent leaves and thick robust stems, burdened by ears bigger than the rest of the plant.

“Anyway,” Andre continued. “They’re not stable yet, so shit like this is to be expected. Did you find this mutation in the library?”

“Uh huh, only it’s not from corn. It’s a cauliflower gene.”

“You’re shitting me.”

“See for yourself.” Willow moved the sheaf of papers toward Andre.

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“See? This is all corn, but this little bugger is cauliflower. Except for this G and that A.”

Andre nodded. “Don’t tell me. We used the cauliflower mosaic virus as a vector for this one.”

Willow did not comment on stating the obvious. Instead, she thought of the viruses—always multiplying, always mutating—especially in Alaska, so close to the polar ozone hole. The rest of the country was even worse off, with its scorched land and tepid oceans, with its heat and dust storms, but here . . . Willow shook her head. Not even glass and cement of the Institute could keep them contained.

“What?” Andre said.

“Do you ever think that viruses made us bring them here?”

He stared at her, unsure whether she was joking. “Made us bring them here how?”

“By making us smart. Too smart for our own good, so we messed up everything, and the viruses are our only hope, and we put them into every living thing, we give them new genes to carry around from organism to organism, we make UV radiation so high that they mutate like there’s no tomorrow.” She bit her tongue.

“Viruses made us smart?”

“Why not? We use them to make things better, to shuffle genes about. They could’ve done it on their own. The unseen force of evolution.”

He sat down, rubbing the bridge of his nose with two fingers. “It’s possible, I guess. But what do we do with the dwarf?”

“Start over.”

Andre made a face. “You sure we can’t fix this one?”

Fix virus with virus, Willow thought. And why wouldn’t they? She was doing the same thing—she introduced a virus into her body to counteract the effects of the one her parents put in her. She imagined that virus when she was a kid. In her mind, she pictured it taking her melanin genes and twisting them into little black coils, tight like braids of her old neighborhood friends, so they would lie dormant and not betray her blackness to the world. Now, quite grown up, she imagined the virus untwisting them, she imagined the pigment

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seeping through her cells, reaching the surface of her skin, coloring her—like a letter written in milk, she was just waiting for the right stimulus to reveal her hidden meaning. She was white paper, and the black viral letters would soon become bright enough to read.

“Willow?”

“I suppose,” she said. “Maybe. ‘Fire with fire’ is our motto, right?”

Andre looked puzzled. “I don’t think you’re having a good day.”

“I’m having a great day,” Willow said, and stood. “I’m going to the greenhouse.”

“Grab me a tray of EB-A seedlings, will you?” It was Andre’s pet strain; he called the seedlings ‘babies.’

“Sure thing. How’re your babies doing, by the way?”

Andre sighed. “Tumorously. If that’s a word.”

“It should be.”

In the greenhouse Willow walked along the aluminum benches with rows of trays housing green sprouts. Each tray bore a label indicating its strain and growing conditions—with traditional agricultural soils gone to dust or underwater, everyone at the institute worked hard to create corn that would grow in the peat and sand of Alaska.

Willow sighed as she ran her fingers along the tender stems. Poor plants, she thought, they don’t know what they are and don’t remember what they’re supposed to be. The only choice they have is to grow blindly in every direction, whipped by viruses that changed them with their alien will. Tumorously.

Willow caressed the fabric of the caftan, gingerly tracing the pattern of blue and orange stripes. It seemed too loud, too boisterous. Expensive, too, ever since all cotton had to be imported from Canada. Nonetheless, she put it on.

“It looks good,” said the store clerk the moment Willow stepped from behind the curtain of the dressing room.

The woman in the mirror seemed as foreign as the caftan that slithered along her body, shifting and shimmering with every breath. The woman with dark glossy skin. Willow did not belong inside either

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of them; she could not take off her skin, and so it was the dress that had to go.

“Didn’t like it?” said the store clerk when Willow, back in her white blouse and blue slacks, handed her the caftan. “Too bad; it looked really good on you.” She smiled wistfully, a pale freckled girl. “I wish I could pull off wearing something like that.” She clamped her hand over the startled ‘o’ of her mouth. “I didn’t mean it in a bad way.”

“I know,” Willow said, smoothing her short hair. “Don’t apologize. And it’s a nice dress, but I couldn’t wear it for work. And I don’t go anywhere else.”

The store clerk nodded. “I understand. And I’m sorry.”

Willow bought a white blouse and a pair of long, jangly earrings to combat her guilt. She felt fake, undeserving.

She walked home. In these high latitudes, darkness all but disappeared in the summer. Nine PM, and the sun still shone through the thick haze surrounding it. Even at night there was no respite from the radiation.

Willow hated to imagine what happened to the rest of the country. With Florida submerged and Pennsylvania a thirsty, cracked desert, with dustbowls and tornadoes, they were lucky to have a place to go. After Alaska, there would be nothing left. They had to make do.

Science can fix everything; didn’t they promise her that? Didn’t she become a scientist because she believed that scientists solved problems? Survival, she reminded herself. They had to feed what was left of the population—twenty million? Ten? The government didn’t publish the latest census data. They had trouble enough keeping the trains running between Alaska and Canada, and trading what remained of the oil in the former ANWR for goods and research funding. Suddenly, science wasn’t a search for truth; it became a search for food and for continuing life. What could be more important than that?

When she got home, she tried her new earrings on and cried. Her tearstained eyes glanced at her hand, and she contemplated it a while—deeper dark around the fingernails and in the creases of the joints, lightening at the phalanxes, and pink at the palm. Tiny moons

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of her fingernails seemed to hover above the darkness of her fingers. She cried for herself and for her poor corn plants, which she could not make better. The plants whose soul was eaten away by the viruses, and nothing could restore it to them, not even viruses themselves. They died because there was nothing for them to be; she feared to continue this thought and played with her earrings instead.

The next day she came to work early and ran the labyrinth of glass corridors and elevators to the safety of her lab like a gauntlet. She wanted to be in the comfort of her equipment, in the shared misery of her plants. Before she could turn the thermocycler on, someone knocked at the door.

Willow jolted upright and fought a sudden urge to cover her face with her hands. Through the glass door, she saw the smiling face of Emari from the transposon lab down the hall.

“Come in,” Willow said.

Emari grinned and entered. “Going to the conference in Anchorage next week?”

Willow shook her head. “I have nothing to present. The dwarves wouldn’t stabilize. What about you?”

“I’m going,” Emari said. “We found some freaky stuff with Mu21. It just loves that UV light. Loves it. And I think if we move to transposable mutagenesis, we might be able to dispense with viral vectors altogether.”

“Trying to put me out of work?”

Emari laughed. “Of course not; we’d never lose such a good gene jockey as you. What do you care about the vector? Just make us new mutations, and our little Mu will take care of them.” She grew serious. “Besides, Andre tells me that you’ve had some thoughts about viruses that were . . . let’s say, not very flattering.”

“Uh huh.”

“Want to get some tea?”

“Okay. But let’s go outside.”

Emari glanced at the window. Heavy clouds rendered the world grey—low enough UV to venture outside for a few minutes. “Sure.”

The two women strolled along one of the paths that transected

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the institute's garden. Initially, it was meant as an enticement for the visitors and the advertisement for the donors, showcasing all of the Institute's achievements; now, Willow and Emari exchanged a sad smile at the sight of these monstrous plants, violet and bronze, their leaves leathery, their stems bulbous, ill. There was no funding to maintain the garden, and only the ugliest and the most resilient plants persisted, UV light be damned.

The women sipped their tea tasting of grass—the best they grew in Alaska.

“Look at those colors.” Willow pointed out an especially brilliant plant, streaked in florid bronze and dark purple.

“Yeah,” Emari said. “Wild transposons are turning on. I wonder if they would do a better job than us.” She drained her cup and turned to Willow. “So what's with you and viruses?”

Willow wasn't sure if she was asking about her skin and shrugged. “Well. Human history was run by viruses. We wouldn't even be in the Americas if the Spaniards' viruses didn't kill off the locals. They wouldn't need so many slaves, too, so there would be no African Diaspora. The influenza epidemics helped the Allies to defeat Germany in the WWI, so without it . . . who knows? And if it wasn't for AIDS and Ebola, we wouldn't all fit in Alaska.”

“And?”

“And it's the same with evolution, I think. How many genes were translocated by viruses? Even your transposons are just viruses without anything but the DNA.”

“That's why I love them,” Emari said. “Transposon is a perfectly abstract parasite.”

“Well. They are good at it, you know? I can't help but think that we're just their tools, letting them do what they do best. Bringing them wherever they want to go.”

“So evolution and human history are just a massive viral conspiracy.” Emari was not laughing anymore and looked at Willow with worry in her green eyes.

Willow shrugged. “Do you really feel that in your relationship with transposons you're the one in control?”



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Emari shook her head. “It’s a battle, no doubt. But may I ask why you’re helping them?”

“This?” Willow raised her hand. “I’m just reversing the treatment I had after I was born.”

“Oh. It is quite smart, actually; I hear that melanin offers some protection against UV. Soon, everyone will be doing it.”

Willow cringed. If Emari was right, soon everyone would be like Willow, the color of their skin divorced from meaning or history. It would be just an adaptive trait. Like the violet streaks on the corn.

Willow woke up in the middle of the night, her hair damp with sweat, her thoughts more lucid than ever, the skin on her hands and feet burning. She sat up and stared at the billowing of the white curtains on the windows. The answer came to her in her fevered sleep, and for a while she wasn’t able to accept it.

The cancer, the dying corn, her own misery; it all happened because they had forgotten who was the master in this relationship and who was the servant. Things went bad because people decided to manipulate the viruses without understanding them. From the very first pox-infected blanket, things went wrong. Viruses did not take kindly to their rightful place being usurped.

Her legs wobbled under her as she stood and threw on some clothes. She was going to set things right, to let the viruses roam free like they were meant to, to paint their unfathomable designs in skin and leaves, without interference from human meddlers.

The Institute was empty, except for a security guard who gave her an indifferent look. No doubt, he was used to wild-haired scientists experiencing breakthroughs and running for their sequencers at any hour of the night. Willow waved at him and stumbled for the elevator.

She stopped by the lab to load up a cart with cell cultures that harbored viruses of every stripe with every imaginable corn gene inserted into them, and pushed it to the greenhouse, often stopping to wipe the sweat that ran down her face. She tried not to think about whether it was the virus inside of her that pushed her on, getting

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giddy at the impending freedom of its brethren . . . she chased such thoughts away.

In the greenhouse, she flicked on the daylights, illuminating the experimental plants in all their sickly, tumorous nudity. If she didn't do something, they would never get it right. People would starve. People would burn to the crisp and die. They would poison what remained of the air and the water. It wasn't their fault; they were just not equipped to do the viruses' job. She had to trust the viruses to make it better.

Willow emptied the dishes over the plants, smearing thick translucent cellular jelly over leaves and stems. She pushed apart the heavy glass panels that protected the plants from the ravages of the outside air and gulped the night and the coolness with wide-open mouth. She poured the leftover viral cultures over the plants in the garden below and threw the empty Petri dishes after them.

She waited for the sound of shattering glass, gripping the window-sill. The creases on the joints of her fingers looked pitch black and she could feel the restless shimmying and shifting of the virus in her blood. It made her hair sing like taut violin strings, it made her skin burn.

Willow had to lean against the wall as her legs grew weak. She felt no fear, only the calm assurance that the plants would flourish. And after that, she would find a way to liberate the human viruses, to let them shape the humans as they had been doing for thousands of years.

She stroked her skin, burning, hot to the touch, almost smoldering under the viral assault. "Be still," she whispered. "I will take good care of you."

# WIKIWORLD

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## *Paul Di Filippo*

### 1.

#### Meet Russ Reynolds

Russ Reynolds, that's me. You probably remember my name from when I ran the country for three days. Wasn't that a wild time? I'm sorry I started a trade war with several countries around the globe. I bet you're all grateful things didn't ramp up to the shooting stage. I know I am. And the UWA came out ahead in the end, right? No harm, no foul. Thanks for being so understanding and forgiving. I assure you that my motives throughout the whole affair, although somewhat selfish, were not ignoble.

And now that things have quieted down, I figured people would be calm enough to want to listen to the whole story behind those frighteningly exciting events.

So here it is.

### 2.

#### Mr. Wiki Builds My Dream House

It all started, really, the day when several wikis where I had simoleons banked got together to build me a house. Not only did I meet my best friend Foolty Fontal that day, but I also hooked up with Cherimoya Espiritu. It's hard now, a few years later, to say which one of those outrageous personages gave me the wildest ride. But it's certain that without their aiding and abetting, plotting and encouraging, I would never have become the jimmywhale of the UWA, and done what I did.

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The site for my new house was a tiny island about half an acre in extent. This dry land represented all that was left of what used to be Hyannis, Massachusetts, since Cape Cod became an archipelago. Even now, during big storms, the island is frequently overwashed, so I had picked up the title to it for a song, when I got tired of living on my boat, the *Gogo Goggins*.

Of course the value of coastal land everywhere had plunged steadily in the three decades since the destruction of New Orleans. People just got tired of seeing their homes and business destroyed on a regular basis by superstorms and rising sea levels. Suddenly Nebraska and Montana and the Dakotas looked like beckoning havens of safety, especially with their ameliorated climates, and the population decline experienced for a century by the Great Plains states reversed itself dramatically, lofting the region into a new cultural hot zone. I had heard lately that Fargo had spawned yet another musical movement, something called “cornhüsker dü,” although I hadn’t yet listened to any samples of it off the ubik.

Anyway, this little islet would serve me well, I figured, as both home and base for my job—assuming I could erect a good solid comfortable structure here. Realizing that such a task was beyond my own capabilities, I called in my wikis.

The Dark Galactics. The PEP Boyz. The Chindogurus. Mother Hitton’s Littul Kittons. The Bishojos. The Glamazons. The Provincetown Pickers. And several more. All of them owed me simoleons for the usual—goods received, or time and expertise invested—and now they’d be eager to balance the accounts.

The day construction was scheduled to start, I anchored the *Gogo Goggins* on the western side of my island, facing the mainland. The June air was warm on my bare arms, and freighted with delicious salt scents. Gulls swooped low over my boat, expecting the usual hand-outs. The sun was a golden English muffin in the sky. (Maybe I should have had some breakfast, but I had been too excited to prepare any that morning.) Visibility was great. I could see drowned church spires and dead cell-phone towers closer to the shore. Through this slalom a small fleet of variegated ships sailed, converging on my island.

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The shadow of one of the high unmanned aerostats that maintained the ubik passed over me, the same moment I used that medium to call up IDs on the fleet. In my vision, translucent tags overlaid each ship, labeling their owners, crew and contents. I was able to call up real-time magnified images of the ships as well, shot from the aerostats and tiny random entomopter cams. I saw every kind of vessel imaginable: sleek catamarans, old lobster boats, inflatables, decommissioned Coast Guard cutters . . . And all of them carrying my friends—some of whom I had met face-to-face, some of whom I hadn't—coming to help build my house.

I hopped out of my boat onto dry land. My island was covered with salt-tolerant scrub plants and the occasional beach rose. No trees to clear. Construction could begin immediately.

As I awaited my friends, I got several prompts displayed across my left eye, notifying me of four or five immediate ubik developments in areas of interest to me. I had the threshold of my attention-filter set fairly high, so I knew I should attend to whatever had made it over that hurdle. For speed's sake, I kept the messages text-only, suppressing the full audio-video presentations.

The first development concerned an adjustment to the local property-tax rates. "Glamorous Glynnis" had just amended the current rate structure to penalize any residence over 15,000 square feet that failed to feed power back to the grid. Sixty-five other people had endorsed the change. I added my own vote to theirs, and tacked on a clause to exempt group homes.

Next came a modification to the rules of the nonvirtual marketplace back on the mainland, where I sold many of my salvaged goods in person. "Jinglehorse" wanted to extend the hours of operation on holidays. Competitively speaking, I'd feel compelled to be there if the booths were open extra. And since I liked my downtime, I voted no.

Items three and four involved decriminalizing a newly designed recreational drug named "arp," and increasing our region's freshwater exports. I didn't know enough about arp, so I got a search going for documents on the drug. I'd try to go through them tonight, and vote tomorrow. And even though I felt bad for the drought-sufferers

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down south, I didn't want to encourage continued habitation in a zone plainly unsuited for its current population densities, so I voted no.

The last item concerned a Wikitustional Amendment. National stuff. This new clause had been in play for six months now without getting at least provisionally locked down, approaching a record length of revision time. The amendment mandated regular wiki participation as a prerequisite for full enfranchisement in the UWA. "Uncle Sham" had just stuck in a clause exempting people older than sixty-five. I wasn't sure what I thought about that, so I pushed the matter back in the queue.

By the time I had attended to these issues, the first of my visitors had arrived: a lone man on a small vessel named *The Smiling Dictator*. The craft crunched onto the beach, and the guy jumped out.

"Hey, Russ! Nice day for a house-raising."

Jack Cortez—"Cortez the Queller" in the ubik—resembled a racing greyhound in slimness and coiled energy. He wore a fisherman's vest over bare chest, a pair of denim cutoffs bleached white, and boat shoes. His SCURF showed as a dark green eagle across a swath of his chest.

"Ahimsa, Jack! I really appreciate you showing up."

"No problem. The Church still owes you for retrieving that Madonna. But you gotta do *some* work nonetheless! Come on and give me a hand."

I went over to the *Dictator* and helped Jack wrestle some foam-encased objects big as coffee-table-tops out of the boat. When we had the half dozen objects stacked on land, he flaked off some of the protective foam and revealed the corner of a window frame.

"Six smart windows. Variable opacity, self-cleaning, rated to withstand Category Four storms. Fully spimed, natch. One of our coreligionists is a contractor, and these were left over from a recent job."

"Pluricious!"

By then, the rest of the boats had arrived. A perfect storm of unloading and greeting swept over my little domain. Crates and girders and pre-formed pilings and lumber and shingles and equipment accumulated in heaps, while bottled drinks made the rounds, to

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fortify and replenish. The wiki known as the Shewookies had brought not materials nor power tools but food. They began to set up a veritable banquet on folding tables, in anticipation of snacking and lunching.

A guy I didn't recognize came up to me, hand extended. His SCURF formed orange tiger stripes on his cheeks and down his jaws. Before I could bring up his tag, he introduced himself.

"Hi, Russ. Bob Graubauskas—'Grabass' to you. Jimmywhale for the Sunflower Slowdrags. So, you got any solid preferences for your house?"

"No, not really. Just so long as it's strong and spacious and not too ugly."

"Can do."

Grabass began to issue silent orders to his wiki, a ubik stream he cued me in on. But then a big woman wearing overalls intervened.

"Margalit Bayless, with the Mollicutes. 'Large Marge.' You truly gonna let the Slowdrags design this structure all by themselves?"

"Well, no. . . ."

"That's good. Because my people have some neat ideas too—"

I left Large Marge and Grabass noisily debating the merits of their various plans while I snagged an egg-salad sandwich and a coffee. By the time I had swallowed the last bite, both the Mollicutes and the Sunflower Slowdrags had begun construction. The only thing was, the two teams were starting at opposite ends of a staked-off area and working toward the common middle. And their initial scaffolding and foundations looked utterly incompatible. And some of the other wikis seemed ready to add wings to the nascent building regardless of either main team.

As spimed materials churned under supervision like a nest of snakes or a pit of chunky lava or a scrum of rugby robots in directed self-assembly—boring into the soil and stretching up toward the sky—I watched with growing alarm, wondering if this had been the smartest idea. What kind of miscegenational mansion was I going to end up with?

That's when Foolty Fontal showed up to save the day.

He arrived in a one-person sea-kayak, of all things, paddling like

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a lunatic, face covered with sweat. So typical of the man, I would discover, choosing not to claim primary allegiance with any wiki, so he could belong to all.

I tried to tag him, but got a privacy denial.

Having beached his craft and ditched his paddle, Foolty levered himself out with agility. I saw a beanpole well over six feet tall, with glossy skin the color of black-bean dip. Stubby dreadlocks like breakfast sausages capped his head. Ivory SCURF curlicued up his dark bare arms like automobile detailing.

Foolty, I later learned, claimed mixed Ethiopian, Jamaican, and Gullah heritage, as well as snippets of mestizo. It made for a hybrid genome as unique as his brain.

Spotting me by the food tables, Foolty lanked over.

“Russ Reynolds, tagged. Loved your contributions to *Naomi Instanton*.”

Foolty was referring to a crowd-sourced sitcom I had helped to co-script. “Well, thanks, man.”

“Name’s Foolty Fontal—‘FooDog.’”

“No shit!”

FooDog was legendary across the ubik. He could have been the jimmywhale of a hundred wikis, but had declined all such positions. His talents were many and magnificent, his ego reputedly restrained, and his presence at any nonvirtual event a legend in the making.

Now FooDog nodded his head toward the construction site. A small autonomous backhoe was wrestling with a walking tripodal hod full of bricks while members of competing wikis cheered on the opponents.

“Interesting project. Caught my eye this morning. Lots of challenges. But it looks like you’re heading for disaster, unless you get some coordination. Mind if I butt in?”

“Are you kidding? I’d be honored. Go for it!”

FooDog ambled over to the workers, both human and cybernetic, streaming ubik instructions with high-priority tags attached faster than I could follow. A galvanic charge seemed to run through people as they realized who walked among them. FooDog accepted the



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homage with humble grace. And suddenly the whole site was transformed from a chaotic competition to a patterned dance of flesh and materials.

That's the greatest thing about wikis: they combine the best features of democracy and autocracy. Everybody has an equal say. But some got bigger says than others.

Over the next dozen hours, I watched in amazement as my house grew almost organically. By the time dusk was settling in, the place was nearly done. Raised high above sea level against any potential flooding, on deep-sunk cement piles, spired, curve-walled, airy yet massive, it still showed hallmarks of rival philosophies of design. But somehow the efforts of the various factions ultimately harmonized instead of bickered, thanks to FooDog's overseeing of the assorted worldviews.

One of the best features of my new house, a place where I could see myself spending many happy idle hours, was a large wooden deck that projected out well over the water, where it was supported by pressure-treated and tarred wooden pillars, big as antique telephone poles, plunging into the sea.

Three or four heaps of wooden construction waste and combustible sea-wrack had been arranged as pyres against the dusk, and they were now ignited. Live music flared up with the flames, and more food and drink was laid on. While a few machines and people continued to add some last-minute details to my house, illuminated by electrical lights running off the newly installed power system (combined wave motion and ocean temperature differential), the majority of the folks began to celebrate a job well done.

I was heading to join them when I noticed a new arrival sailing in out of the dusk: a rather disreputable-looking workhorse of a fishing sloop. I pinged the craft, but got no response. Not a privacy denial, but a dead silence.

This ship and its owner were running off the ubik, un-SCURFED.

Intrigued, I advanced toward the boat. I kicked up my night vision. Its bow bore the name *Soft Grind*. From out the pilothouse emerged the presumptive captain. In the ancient firelight, I saw one of the most

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beautiful women I had ever beheld: skin the color of teak, long wavy black hair, a killer figure. She wore a faded hemp shirt tied under her breasts to expose her midriff; baggy men's surfer trunks; and a distressed pair of gumboots.

She leaped over the gunwales and off the boat with pantherish flair moderated only slightly by her clunky footwear.

"Hey," she said. "Looks like a party. Mind if I crash it?"

"No, sure, of course not."

She grinned, exposing perfect teeth.

"I'm Cherry. One of the Oyster Pirates."

And that was how I met Cherimoya Espiritu.

### 3.

#### In Love with an Oyster Pirate

Gaia giveth even as she taketh away.

The warming of the global climate over the past century had melted permafrost and glaciers, shifted rainfall patterns, altered animal migratory routes, disrupted agriculture, drowned cities, and similarly necessitated a thousand thousand adjustments, recalibrations, and hasty retreats. But humanity's unintentional experiment with the biosphere had also brought some benefits.

Now we could grow oysters in New England.

Six hundred years ago, oysters had flourished as far north as the Hudson. Native Americans had accumulated vast middens of shells on the shores of what would become Manhattan. Then, prior to the industrial age, there was a small climate shift, and oysters vanished from those waters.

Now, however, the tasty bivalves were back, their range extending almost to Maine.

The commercial beds of the Cape Cod Archipelago produced shellfish as good as any from the heyday of Chesapeake Bay. Several large wikis maintained, regulated, and harvested these beds, constituting a large share of the local economy.

But as anyone might have predicted, wherever a natural resource existed, sprawling and hard of defense, poachers would be found.

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Cherimoya Espiritu hailed from a long line of fisherfolks operating for generations out of nearby New Bedford. Cape Verdean by remotest ancestry, her family had suffered in the collapse of conventional fisheries off the Georges Bank. They had failed to appreciate the new industry until it was too late for them to join one of the legal oyster wikis. (Membership had been closed at a number determined by complicated sustainability formulae.) Consequently, they turned pirate to survive in the only arena they knew.

Cherimoya and her extensive kin had divested themselves of their SCURF: no subcutaneous ubik arfids for them, to register their presence minute-to-minute to nosy authorities and jealous oyster owners. The pirates relied instead on the doddering network of GPS satellites for navigation, and primitive cell phones for communication. Operating at night, they boasted gear to interfere with entomopter cams and infrared scans. They were not above discouraging pursuers with pulsed-energy projectile guns (purchased from the PEP Boyz). After escaping with their illicit catches, they sold the fruit of the sea to individual restaurants and unscrupulous wholesalers. They took payment either in goods, or in isk, simoleons and lindens that friends would bank for them in the ubik.

Most of the oyster pirates lived on their ships, to avoid contact with perhaps overly inquisitive mainland security wikis such as the Boston Badgers and the Stingers. Just like me prior to my island-buying—except that my motivation for a life afloat didn't involve anything illicit.

Bits and pieces of information about this subculture I knew just from growing up in the Archipelago. And the rest I learned from Cherry over the first few months of our relationship.

But that night of my house-raising, all I knew was that a gorgeous woman, rough-edged and authentic as one of the oyster shells she daily handled, wanted to hang out on my tiny island and have some fun.

That her accidental presence here would lead to our becoming long-term lovers, I never dared hope.

But sure enough, that's what happened.

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Following Cherry's introduction, I shook her hand and gave my own name. Daring to take her by the elbow—and receiving no rebuke—I steered her across the flame-lit, shadowy sands towards the nearest gaggle of revelers around their pyre.

“So,” I asked, “how come you're not working tonight?”

“Oh, I don't work every night. Just often enough to keep myself in provisions and fuel. Why should I knock myself out just earn money and pile up *things*? I'm more interested in enjoying life. Staying free, not being tied down.”

“Well, you know, I think that's, um—just great! That's how I feel too!” I silently cursed my new status as a landowner and house-dweller.

We came out of the darkness and into the sight of my friends. Guitars, drums, and gravicords chanced to fall silent just then, and I got pinged with the planned playlist, and a chance to submit any requests.

“Hey, Russ, congratulations!” “Great day!” “House looks totally flexy!” “You're gonna really enjoy it!”

Cherry turned to regard me with a wide grin. “So—gotta stay footloose, huh?”

To cover my chagrin, I fetched drinks for Cherry and myself while I tried to think of something to say in defense of my new householder lifestyle. That damn sexy grin of hers didn't help my concentration.

Cherry took a beer from me. I said, “Listen, it's not like I'm buying into some paranoid gatecom. This place—totally transient. It's nothing more than a beach shack, somewhere to hang my clothes. I'm on the water most of every day—”

Waving a hand to dismiss my excuses, Cherry said, “Just funning with you, Russ. Actually, I think this place is pretty hyphy. Much as I love *Soft Grind*, I get tired of being so cramped all the time. Being able to stretch in your bunk without whacking your knuckles would be a treat. So—do I get a tour?”

“Yeah, absolutely!”

We headed toward the staircase leading up to my deck. Her sight unamped, Cherry stumbled over a tussock of grass, and I took her

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hand to guide her. And even when we got within the house's sphere of radiance, she didn't let go.

Up on the deck, Foolty was supervising a few machines working atop the roof. Spotting me, he called out, "Hey, nephew! Just tying in the rainwater-collection system to the desalinization plant."

"Swell. FooDog, I'd like you to meet—"

"No, don't tell me the name of this sweet niece. Let me find out on my own."

Cherry snorted. "Good luck! Far as the ubik knows, I'm not even part of this brane. And that's how I like it."

FooDog's eyes went unfocused, and he began to make strangled yips like a mutt barking in its sleep. After about ninety seconds of this, during which time Cherry and I admired a rising quarter moon, FooDog emerged from his trawl of the ubik.

"Cherimoya Espiritu," he said. "Born 2015. Father's name João, mother's name Graca. Younger brother nicknamed the Dolphin. Member of the Oyster Pirates—"

Cherry's face registered mixed irritation, admiration, and fright. "How—how'd you find all that out?"

FooDog winked broadly. "Magic."

"No, c'mon, tell me!"

"All right, all right. The first part was easy. I cheated. I teased into Russ's friends list. He added you as soon as you met, and that's how I got your name and occupation. My SCURF isn't off the shelf. It picked up molecules of your breath, did an instant signature on four hundred organic compounds, and found probable family matches with your parents, whose genomes are on file. And your brother's got a record with the Boston Badgers for a ruckus at a bar in Fall River."

Now I felt offended. "You teased into my friends list? You got big ones, FooDog."

"Well, thanks! That's how I got where I am today. And besides, I discovered my name there too, so I figured it was okay."

I couldn't find it in myself to be angry with this genial ubik-trickster. Cherry seemed willing to extend him the same leniency.

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“No need to worry about anyone else learning this stuff. While I was in there, I beefed up all your security, nephew.”

“Well—thanks, I guess.”

“No thanks necessary.” FooDog turned back to the bots on the roof. “Hey, Blue Droid! You call that a watertight seam!”

Cherry and I went through the sliding glass door that led off the deck and inside.

I made an inspection of my new home for the first time with Cherry in tow. The place was perfect: roomy yet cozy, easy to maintain, lots of comforts.

The wikis had even provided some rudimentary furniture, including a couple of inflatable adaptive chairs. We positioned them in front of a window that commanded a view of the ocean and the Moon. I went to a small humming fridge and found it full of beer. I took two bottles back to the seats.

Cherry and I talked until the Moon escaped our view. I opaqued all the glass in the house. We merged the MEMS skins of the chairs, fashioning them into a single bed. Then we had sex and fell asleep.

In the morning, Cherry said, “Yeah, I think I could get used to living here real fast.”

## 4.

### Mucho Mongo

My Dad was a garbageman.

Okay, so not really. He didn't wear overalls or hang from the back of a truck or heft dripping sacks of coffee grounds and banana peels. Dad's job was strictly white-collar. His fingers were more often found on a keyboard than a trash compactor. He was in charge of the Barnstable Transfer Station, a seventy-acre “disposium” where recyclables were lifted from the waste-stream, and whatever couldn't be commercially repurposed was neatly and sterilely buried. But I like to tell people he was a garbageman just to get their instant, unschooled reactions. If they turn up their noses, chances are they won't make it onto my friends list.

I remember Dad taking me to work once in a while on Saturdays.

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He proudly showed off the dump's little store, stocked with the prize items his workers had rescued.

"Look at this, Russ. A first edition Jack London. *Tales of the Fish Patrol*. Can you believe it?"

I was five years old, and had just gotten my first pair of spex, providing rudimentary access to what passed for the ubik back then. I wasn't impressed.

"I can read that right now, Dad, if I wanted to."

Dad looked crestfallen. "That digital text is just information, Son. This is a *book*! And best of all, it's *mongo*."

I tried to look up mongo in the ubik, like I had been taught, but couldn't find it in my dictionary. "What's mongo, Dad?"

"A moment of grace. A small victory over entropy."

"Huh?"

"It's any treasure you reclaim from the edge of destruction, Russ. There's no thrill like making a mongo strike."

I looked at the book with new eyes. And that's when I got hooked.

From then on, mongo became my life.

That initial epiphany occurred over twenty years ago. Barnstable is long drowned, fish swimming through the barnacled timbers of the disposium store, and my folks live in Helena now. But I haven't forgotten the lessons my Dad taught me.

The *Gogo Goggins* has strong winches for hauling really big finds up into the air. But mostly I deal in small yet valuable stuff. With strap-on gills, a smartskin suit, MEMS flippers and a MHD underwater sled packing ten-thousand candlepower of searchlights, I pick through the drowned world of the Cape Cod Archipelago and vicinity.

The coastal regions of the world now host the largest caches of treasure the world has ever seen. Entire cities whose contents could not be entirely rescued in advance of the encroaching waters. All there as salvage for the taking, pursuant to many, many post-flood legal rulings.

Once I'm under the water, my contact with the ubik cut off, relying just on the processing power in my SCURF, I'm alone with

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my thoughts and the sensations of the dive. The romance of treasure-hunting takes over. Who knows what I might find? Jewelry, monogrammed plates from a famous restaurant, statues, coins—whatever I bring up, I generally sell with no problems, either over the ubik or at the old-fashioned marketplace on the mainland.

It's a weird way of earning your living, I know. Some people might find it morbid, spending so much time amid these ghostly drowned ruins. (And to answer the first question anyone asks: yes, I've encountered skeletons, but none of them have shown the slightest inclination to attack.)

But I don't find my job morbid at all.

I'm under the spell of mongo.

One of the first outings Cherry and I went on, after she moved in with me, was down to undersea Provincetown. It's an easy dive. Practically nothing to find there, since amateurs have picked it clean. But by the same token, all the hazards are well charted.

Cherry seemed to enjoy the expedition, spending hours slipping through the aquatic streets with wide eyes behind her mask. Once back aboard the *Gogo Goggins*, drying her thick hair with a towel, she said, "That was stringy, Russ! Lots of fun."

"You think you might like tossing in with me? You know, becoming business partners? We'd make good isk. Not that we need to earn much, like you said. And you could give up the illegal stuff—"

"Give up the Oyster Pirates? Never! That's my heritage! And to be honest with you, babe, there's just not enough thrills in your line of work."

Just as I was addicted to mongo, Cherry was hooked on plundering the shellfish farms, outwitting the guards and owners and escaping with her booty. Myself, I knew I'd be a nervous wreck doing that for a living. (She took me out one night on a raid; when the PEP discharges started sizzling through the air close to my head, I dropped to the deck of *Soft Grind* [which possessed a lot of speed belied by its appearance] and didn't stand up again till we reached home. Meanwhile, Cherry was alternately shouting curses at our pursuers and emitting bloodthirsty laughs.)



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Luckily, we were able to reconcile our different lifestyles quite nicely. I simply switched to night work. Once I was deep enough below the surface, I had to rely on artificial lights even during the daytime anyhow.

Several nights each week, you'd find us motoring off side by side in our respective boats. Eventually our paths would diverge, signaled by a dangerous kiss across the narrow gap between our bobbing boats. As I headed toward whatever nexus of sunken loot I had charted, I'd catch up on ubik matters, writing dialogue for *One Step Closer to Nowhere*, the sitcom that had replaced *Naomi Instanton*, or monitoring border crossings for an hourly rate for the Minute Men.

Cherry and I would meet back home on my little island, which Cherry had christened "Sandybump." We'd sleep till noon or later, then have fun during the day.

A lot of that fun seemed to involve Foolty "FooDog" Fontal.

### 5.

#### A Portrait of the Con Artist as a Young FooDog

During all the years we hung out together, we never learned where FooDog actually lived. He seemed reluctant to divulge the location of his digs, protective of his security and privacy even with his friends. (And recalling how easily he had stolen Cherry's identity from my friends list, who could blame him at worrying about unintentional data-sharing?) FooDog's various business, recreational, and hobbyist pursuits had involved him with lots of shady characters and inequitable dealings, and he existed, I soon realized, just one step ahead—or perhaps laterally abaft—of various grudge-holders.

I should hasten to say that FooDog's dealings were never—or seldom—truly unethical or self-serving. It's just that his wide-ranging enthusiasms respected no borders, sacred cows, or intellectual property rights.

But despite his lack of a public meatspace address, FooDog could always be contacted through the ubik, and Cherry and I would often meet him somewhere for what invariably turned out to be an adventure of the most hyphy dimensions.

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I remember one day in November . . .

We grabbed a zipcar, FooDog slung several duffels in the interior storage space, and we headed north to New Hampshire. FooDog refused to tell us where we were heading till it was too late to turn back.

“We’re going to climb Mount Washington? Are you nuts?” I picked up the feed from the weather observatory atop the peak. “There’s a blizzard going on right now!”

“Precisely the conditions I need for my experiment.”

The normal daily high temperature atop the peak at this time of the year was thirteen degrees Fahrenheit. The record low was minus twenty. In 1934, the observatory had recorded the biggest wind ever experienced on the planet: 231 MPH. There were taller places and colder places and windier places and places with worse weather. But Mount Washington managed to combine generous slices of all these pies into a unique killer confection.

Cherry said, “C’mon, Russ, trust the Dog.”

I grumbled, but went along.

We made it by car up the access road to 4300 vertical feet, leaving only 2000 feet to ascend on foot. With many contortions, we managed to dress in the car in the smartsuits FooDog had provided. When we stepped outside, we were smitten with what felt like a battering ram made of ice. We sealed up our micropore facemasks and snugged our adaptive goggles more firmly into place. Cherry had a headset that provided a two-way audio feed to the ubik. We donned our snowshoes, grabbed our alpenstocks, and began the ascent, following the buried road that was painted by our ubik vision to resemble the Golden Brick path to Oz. FooDog carried a box strapped to his back, the object of our whole folly.

I won’t belabor you with the journey, which resembled in its particulars any number of other crazed climbs atop forbidding peaks. Let’s just say the trek was the hardest thing I’ve ever done.

We never even made it to the top. Around 5500 feet, FooDog declared that he could conduct his experiment at that altitude, with the storm raging slightly less virulently around us. He doffed his box,

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unfolded its tripod legs, spiked it into the snow, and began sending an encrypted command stream to the gadget over the ubik.

“Can we know now what we risked our lives for?” I said.

“Sure thing, nephew. This gadget messes with the quantum bonds between the hydrogen atoms in water molecules, via a directional electrostatic field. I’ve got it pointed upward now. Good thing, or we’d all be puddles of slop.”

I took a nervous step or three away from the machine, unsure if FooDog was kidding or not. But I should have trusted him not to endanger us—at least via technology.

I looked toward Cherry, to make sure she was okay. She gave an exclamation of awe. I looked back toward the machine.

There was an expanding hemisphere of atmospheric inactivity above the gadget. It grew and grew, providing an umbrella of calm. Some snow still pelted us from the side, but none reached us from above.

FooDog’s box was quelling the blizzard.

FooDog undid his mask. His black face, wreathed in a wide grin, stood out amidst all the white like the dot of a giant exclamation point.

“Hyphy!” he exclaimed.

The ubik was already going insane. Weather-watcher wikis frantically sought to dispatch entomopter cams to our location, to supplement the reports of the fixed sensors located at some distance, but were frustrated by the surrounding storm, still in full force. But I suspected that if FooDog’s bubble continued to expand, sooner or later a cam would get through and ID us.

Evidently, FooDog had the same realization. He said, “Brace yourself,” then shut off his machine.

The blizzard socked us with renewed vigor—although I seemed to sense in the storm a kind of almost-human shock, as if it had been alarmed by its interruption.

FooDog resealed his mask, and we headed down.

“Aren’t you worried we’ll be ID’d on the way down the mountain?”

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“I hired the zipcar under a spoofed name, then despised it. Cherry’s untouchable, and you and I have our denial flags on. Once we get down the mountain, anyone who manages to get near us in meatspace will have to distinguish us from a hundred other identical cars on the road. We’re as invisible as anyone gets these days.”

“So your little invention is safe from greedy and irresponsible hands.”

“Sure. Unless I decide to open-source it.”

“You’re kidding, right?”

But the Dog replied not.

So that’s what the average outing with Foolty Fontal was like.

Of course, I had certain thrills in my own line of work.

One day my not-inconsiderable rep as a salvage expert attracted an offer from the Noakhali Nagas, a wiki from Bangladesh. That unfortunate country had suffered perhaps more than any, due to oceanic incursions. The creeping Bay of Bengal had submerged thousands of shrines. Rescuing deities would provide me with a significant chunk of lindens. And the challenge of new territory—the Cape Archipelago was starting to bore me a little after so many years—was a plus as well.

I sat with Cherry on our favorite spot, the deck of our house on Sandybump. It was late afternoon, our “morning” time, and we were enjoying brunch and watching the sun go down. I explained about the offer I had received.

“So—you mind if I take this job?”

“How could I? Go for it, babe! I’ll be fine here alone till you get back.”

I emerged from the warm waters of the Bay of Bengal on a Tuesday afternoon two months later to find a high-priority news item, culled from the ubik by one of my agents, banging at the doors of my atmosphere-restored connection.

Cherimoya Espiritu was in Mass General Hospital in Boston, suffering from various broken limbs and bruised organs, but in no mortal danger.

I blew every isk I had earned in Bangladesh plus more on a scramjet

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flight back to the UWA. Four hours later I was hustling through the doors of MGH.

Cherry smiled ruefully as I entered her room. Vast bruises, already fading from subcutaneous silicrobes, splotched her sweet face. Various casts obscured her lovely limbs. Wires from speed-healing machines tethered her down.

“Damn, Russ,” Cherry exclaimed when she saw me, “I am so sorry about the house!”

6.

Wormholes and Loopholes

Looking back at this narrative so far, I see that maybe right here is where my story actually begins, or should’ve begun. After all, it was Cherry’s accident that precipitated my run for jimmywhale of the UWA, and the subsequent trade war, and that’s when I entered the history books, even as a footnote. And that’s what most people are interested in, right?

Except that how could I possibly have jumped into the tale right here? None of it would’ve made any sense, without knowing about my backstory and FooDog’s and Cherry’s. I would’ve had to be constantly interrupting myself to backfill.

And besides, aren’t most people nowadays habituated to ruckerian metanovels, with their infinite resortability and indrajal links? Even though I chose to compose this account in a linear fashion, you’re probably bopping through it in a quirky personalized path anyhow, while simultaneously offering planting advice to a golden-rice grower in Bantul, contributing a few bars to an electrosoul composer in Los Angeles, and tweaking the specs of some creature’s synthetic metabolism with an a-lifer in Loshan.

So:

I rushed to Cherry’s side and grabbed her hand.

“Ouch! Watch my IV!”

“Oh, babe, what happened? Are you gonna be okay?”

“Yeah, I’ll be fine. It was just a stupid accident. But it wasn’t really my fault. . . .”

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Cherry had been sunning herself on the deck yesterday, half-asleep. As the sun moved, she got up to shift her chair closer to the deck's edge. The next thing she knew, she was lying in the shallow waters surrounding Sandybump, buried under the timbers and pilings of the deck. Her head projected from the waters, allowing her to breathe painfully around her busted ribs. But lacking personal ubik access to summon help, she surely would've died in a short time from the shock of her injuries.

Luckily, the house itself knew to call one of the 911 wikis. Within minutes, an ambulance service run by the Organ Printers had her safely stabilized and on her way to MGH.

"The deck just collapsed, Russ! Honest. I didn't do anything to it!"

My concern for Cherry's health and safety began to segue to anger. Which wiki had built the deck? I started to rummage through the house's construction records, at the same time pulling up real-time images of my dwelling. The tearing-off of the deck had pulled away a portion of the exterior wall, opening our beloved house to the elements.

The Fatburgers. They were the wiki who had built my deck. Bastards! I was in the middle of composing a formal challenge suit against them, prior to filing it with a judicial wiki, when FooDog contacted me.

"You're back stateside, nephew! Great! But there's information you need to know before you rush into anything. Drop on by my offices."

"Can't you just tell me over the ubik?"

"Nah-huh. C'mon over."

I gingerly kissed Cherry good-bye, and left.

I pooled my public-transit request with those of a few dozen other riders heading in my direction, and I was over the Charles River in no time.

Foolty Fontal maintained an occasional physical presence in a building on Mass Avenue in Cambridge owned by the Gerontion wiki, whose focus was life-extension technology. Jealous of their potentially lucrative research, the Gerontions had equipped the

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building with massive security, both virtual and analogue, the latter including several lethal features. Thus FooDog felt moderately safe in using their premises.

But the building knew to let me in, and I followed a glowing trail of virtual footprints blazoned with my name to a lab on the third floor.

FooDog stood by a table on which rested a dissection tray. Coming up to his side, I looked down at the tray's contents.

I saw a splayed-open rust-colored worm about twenty inches long.

"Eeyeuw! What's that?"

"That and its cousins are what brought down your deck. Shipworms. *Teredo navalis*. Molluscs, actually. But not native ones, and not unmodified. This particularly nasty critter was created in a Caracas biolab. They were used in the hostilities against Brazil ten years ago. They'll even eat some plastics! Supposedly wiped out in the aftermath—extinct. But obviously not."

I poked the rubbery worm with a finger. "How'd they get up north and into my deck pilings? Is this some kind of terrorist assault?"

"I don't think so. Now that we know what to look for, I've done a little data-mining. I've found uncoordinated, overlooked reports of these buggers—enough to chart the current geographical dispersion of the worms and backtrack to a single point of origin. I believe that a small number of these worms came accidentally to our region in the bilge water of a fully automated container vessel, the *Romulo Gallegos*. Looks like purely unintentional contamination. But until I know for sure, I didn't want to broadcast anything over the ubik and alert people to cover their tracks. Or rouse false alarms of an assault."

"Okay. I can think of at least three entities we can nail for this, and get some damages and satisfaction. The owner of the ship, the traders who employed him, and the jerks who created the worms in the first place."

"Don't forget our own coastal biosphere guardians, wikis like the Junior Nemos and the Aquamen. They should have caught this outbreak before it spread."

"Right! Let's go get them!"

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“The conference room is down this way.”

Ten empty chairs surrounded a large conference table formed from a single huge vat-grown burl. FooDog and I settled down in two seats, and then we called the offending parties to our meeting.

My SCURF painted onto my visual field the fully dimensional real-time avatars of our interlocutors sitting in the other chairs, so that it looked as if the room had suddenly filled with people in the flesh. Men and women scattered around the planet saw FooDog and me similarly in their native contexts.

Most of the avatars seemed to represent the baseline looks of the participants, but a few were downright disconcerting. I couldn't help staring at a topless mermaid, one of the Aquamen, no doubt.

FooDog smiled in welcoming fashion. “All right, ladies and gentlemen, allow me to introduce myself. . . .”

Everyone nowadays claims that instant idiomatic translation of any language into any other tongue is one of the things that has ushered in a new era of understanding, empathy, and comity. Maybe so. But not judging from my experiences that day, once FooDog had spread out his evidence and accusations to the mainly South American audience. We were met with stonewalling, denials, patriotic vituperations, counter-charges and *ad hominem* insults. And that was from our English-speaking compatriots in the UWA! The Latinos reacted even more harshly.

Finally, the meeting dissolved in a welter of ill-will and refusal of anyone to take legal or even nominal responsibility for the collapse of my deck and the injuries suffered by poor Cherry.

I turned despondently to FooDog, once we were alone again. “Looks like we're boned, right? All our evidence is circumstantial. There's no way we can redress this through the system. I mean, aside from convincing any wikis I'm personally involved in to boycott these buggers, what else can I do?”

FooDog, good friend that he was, had taken my dilemma to heart.

“Damn! It's just not right that they should be allowed to get away with hurting you and Cherry like this.”



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He pondered my fix for another minute or so before speaking.

“Seems to me our problem is this: You got no throw-weight here, nephew. You’re only one aggrieved individual. Your affiliate wikis are irrelevant to the cause. But if we could get the whole country behind you, that’d be a different story.”

“And how do we do that?”

“Well, we could mount a big sob campaign. Get all the oprahs and augenblickers talking about you. Make you and Cherry into Victims of the Week.”

“Oh, man, I don’t know if I want to go that route. There’s no guarantee we wouldn’t come out of it looking like jerks anyway.”

“Right, right. Well, I guess that leaves only one option—”

“What’s that?”

FoodDog grinned with the nearly obscene delight he always expressed when tackling a task deemed impossible by lesser mortals.

“If we want satisfaction, we’ll just have to take over the UWA.”

7.

Starting at the Top

I had always steered clear of politics. Which is not to say I had neglected any of my civic duties: Voting on thousands of day-to-day decisions about how to run my neighborhood, my city, my state, my bioregion and the UWA as a whole. Debating and parsing Wikitustional Amendments. Helping to formulate taxes, tariffs, and trade agreements. Drafting criminal penalties. Just like any good citizen, I had done my minute-to-minute share of steering the country down a righteous path.

But I had never once felt any desire to formally join one of the wikis that actually performed the drudgery of implementing the consensus-determined policies and legislation.

The Georgetown Girls. The Slick Willy Wonkettes. The Hamilfranksonians. The Founding Flavors. The Rowdy Rodhamites. The Roosevelvet Underground. The Cabal of Interns. The Technocratic Dreamers. The Loyal Superstition. The Satin Stalins. The Amateur Gods. The Boss Hawgs. The Red Greens. The Rapporteurs. The

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Harmbudsmen. The Shadow Cabinet. The Gang of Four on the Floor. The Winston Smiths. The Over-the-Churchills.

Maybe, if you're like me, you never realized how many such groups existed, or how they actually coordinated.

By current ubik count, well over five hundred political wikis were tasked with some portion of running the UWA on nonlocal levels, each of them occupying some slice of the political/ideological/intellectual spectrum and performing one or another "governmental" function.

Each political wiki was invested with a certain share of proportional power based on the number of citizens who formally subscribed to its philosophy. The jimmywhales of each wiki formed the next higher level of coordination. From their ranks, after much traditional politicking and alliance building, they elected one jimmywhale to Rule Them All.

This individual came as close to being the president of our country as anyone could nowadays.

Until deposed, he had the power to order certain consequential actions across his sphere of influence by fiat; to countermand bad decisions; to embark on new projects without prior approval: the traditional role of any jimmywhale. But in this case, his sphere of influence included the entire country.

Currently this office was held by Ivo Praed of the Libertinearians.

FooDog set out to put me in Ivo Praed's seat.

"The first thing we have to do," Foolty Fontal said, "is to register our wiki."

The three of us—myself, a fully recovered Cherry and the Dog—were sitting on the restored deck of the Sandybump house, enjoying drinks and snacks under a clear sunny sky. (This time, concrete pilings upheld the porch.)

"What should we call it?" I asked.

Cherry jumped right in. "How about the Phantom Blots?"

FooDog laughed. I pulled up the reference on the ubik, and I laughed too.

"Okay, we're registered," said FooDog.

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“Now what? How do we draw people to our cause? I don’t know anything about politics.”

“You don’t have to. It would take too long to play by the rules, with no guarantees of success. So we’re going to cheat. I’m going to accrue power to the Phantom Blots by stealing microvotes from every citizen. Just like the old scam of grifting a penny apiece from a million bank accounts.”

“And no one’s going to notice?”

“Oh, yeah, in about a week, I figure. But by then we’ll have gotten our revenge.”

“And what’ll happen when everyone finds out how we played them?”

“Oh, nothing, probably. They’ll just seal up the back door I took advantage of, and reboot their foolish little parliament.”

“You really think so?”

“I do. Now, let me get busy. I’ve got to write our platform first—”

FooDog fugued out. Cherry got up, angled an umbrella across the abstracted black man to provide some shade, and then signaled me to step inside the house.

Out of earshot of our pal, she said, “Russ, why is FooDog going to all this trouble for us?”

“Well, let’s see. Because we’re buddies, and because he can’t resist monkey-wrenching the system just for kicks. That about covers it.”

“So you don’t think he’s looking to get something personal out of all this?”

“No. Well, maybe. FooDog always operates on multiple levels. But so long as he helps us get revenge—”

Cherry’s expression darkened. “That’s another thing I don’t like. All this talk of ‘revenge.’ We shouldn’t be focused on the past, holding a grudge. We came out of this accident okay. I’m healthy again, and the house is fixed. No one was even really to blame. It’s like when those two species of transgenic flies unpredictably mated in the wild, and the new hybrid wiped out California’s wine grapes. Just an act of God. . . .”

In all the years Cherry and I been together, we had seldom

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disagreed about anything. But this was one matter I wouldn't relent on. "No! When I think about how you nearly died . . . Someone's got to pay!"

Shaking her head ruefully, Cherry said, "Okay, I can see it's a point of honor with you, like if one of the Oyster Pirates ratted out another. I'll help all I can. If I'm in, I'm in. I just hope we're not bringing down heavy shit on our heads."

The door to the deck slid open, admitting a blast of hot air, and FooDog entered, grinning face glistening with sweat.

"Okay, nephew and niece, we're up and running. Even as we speak, thousands and thousands of microvotes are accumulating to the wiki of the Phantom Blots every hour, seemingly from citizens newly entranced by our kickass platform. You should read the plank about turning Moonbase Armstrong into the world's first offworld hydroponic ganja farm! Anyhow, I figure that over the next forty-eight hours, the Blots will rise steadily through the ranks of the politco-wikis, until our leader is ready to challenge Praed for head jimmywhale."

Suddenly I got butterflies in my stomach. "Uh, FooDog, maybe you'd like to be the one to run the UWA. . . ."

"No way, padre. The Dog's gotta keep a low profile, remember? The farther away I can get from people, the happier I am. Nope, the honor is all yours."

"Okay. Thanks—I guess."

FooDog's calculations were a little off. It only took thirty-six hours before the Phantom Blots knocked the Libertinearians out as most influential politco-wiki, pushing Ivo Praed from his role as "president" of the UWA, and elevating me to that honor.

Sandybump, a speck of land off the New England coast, was now the White House. (Not the current museum, but last century's nexus of hyperpower.) I was ruler of the nation—insofar as it consented to be ruled. Cherry was my First Lady. And FooDog was my Cabinet.

Time to get some satisfaction.

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8.

Wikiwar

The day after my political ascension, we reconvened the meeting we had conducted at Gerontion, this time at Sandybump. All the same participants were there, with the addition of Cherry.

(Lots of other important national matters were continually arising to demand my attention, in my new role as head jimmywhale, but I just ignored them, stuffing them in a queue, preferring not to mess with stuff that I, for one, did not understand. This abdication of my duties would surely cause our charade to be exposed soon, but hopefully not before we had accomplished our goals.)

FooDog and I restated our grievances to the South Americans, but now formulated as a matter of gravest international diplomacy. (Foolty showed me the avatar he was presenting to the South Americans and our coastal management wikis, and of course it looked nothing like the real Dog.) This time, with the weight of the whole UWA behind our complaints, we received less harsh verbal treatment from the foreigners. And our compatriots caved right away, acknowledging that they had been negligent in not protecting our waterways from shipworm incursion. When FooDog and I announced a broad range of penalties against them, the mermaid shimmered and reverted to a weepy young teenaged boy.

But the South Americans, although polite, still refused to admit any responsibility for the Great Teredo Invasion.

“You realize, of course,” said FooDog, “that you leave us no recourse but to initiate a trade war.”

One of the Latinos, who was presenting as Che Guevara, sneered and said, “Do your worst. We will see who has the greater balance of trade.” He stood up and bowed to Cherry. “Madam, I am sorry these outrageous demands cannot be met. But believe me when I say I am gratified to see you well and suffering no permanent harm from your unfortunate accident.”

Then he vanished, along with the others.

Cherry, still un-SCURFED, had been wearing an antique pair of

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spex to participate in the conference. Now she doffed them and said, “Rebels are so sexy! Can’t we cut them some slack?”

“No! It’s time to kick some arrogant Venezuelan tail!”

“I got the list of our exports right here, nephew.”

From the ubik, I studied the roster of products that the UAW sold to Venezuela, and picked one.

“Okay, let’s start small. Shut off their housebots.”

After hostilities were all over and I wasn’t head jimmywhale anymore, I had time to read up about old-fashioned trade wars. It seems the tactics used to consist of drying up the actual flow of unshipped goods between nations. But with spimed products, such in-the-future actions were dilatory, crude, and unnecessary.

Everything the UWA had ever sold to the Venezuelans became an instant weapon in our hands.

Through the ubik, we sent commands to every UWA-manufactured Venezuelan housebot to shut down. The commands were highest override priority and unstoppable. You couldn’t isolate a spimed object from the ubik to protect it, for it would cease to function.

Across an entire nation, every household lost its domestic cyber-servants.

“Let’s see how they like washing their own stinking windows and emptying their own cat litter!” I said. “They’ll probably come begging for relief within the hour.”

FooDog had pulled up another roster, this one of products the Venezuelans sold us. “I don’t know, nephew. I think we might take a few hits first. I’m guessing—”

Even as FooDog spoke, we learned that every hospital in the UWA had just seen its t-ray imagers go down.

“Who the hell knew that the Venezuelans had a lock on selling us terahertz scanners?” I said.

FooDog’s face wore a look of chagrin. “Well, actually—”

“Okay, we’ve got to ramp up. Turn off all their wind turbines.”

All across Venezuela, atmospheric power plants fell still and silent.

The response from the southerners was not long in coming. Thirty

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percent of the UWA's automobiles—the Venezuelan market share—ground to a halt.

FooDog sounded a little nervous when next he spoke. “Several adjacent countries derived electricity from the Venezuelan grid, and now they're demanding we restore the wind turbines. They threaten to join in the trade war if we don't comply.”

I felt nervous too. But I was damned if I'd relent yet. “Screw them! It's time for the big guns. Bring down their planes.”

Made-in-the-UWA airliners around the globe running under the Venezuelan flag managed controlled descents to the nearest airports.

That's when the Venezuelans decided to shut down the half our oil-refining capacity that they had built for us. True, oil didn't play the role it once did in the last century, but that blow still hurt.

Then the Brazilians spimed *their* autos off, and the nation lost another forty percent of its personal transport capabilities.

Over the next eight hours, the trade war raged, cascading across several allied countries. (Canada staunchly stood by the UWA, I was happy to report, incensed at the disruption of deliveries from the Athabasca Oil Sands to our defunct refineries. But the only weapon they could turn against the southerners was a fleet of Zamboni machines at Latin American ice rinks.) Back and forth the sniping went, like two knights hacking each other's limbs off in some antique Monty Python farce.

With each blow, disruptions spread farther, wider, and deeper across all the countries involved.

The ubik was aflame with citizen complaints and challenges, as well as with a wave of emergency countermeasures to meet the dismantling of the infrastructure and deactivation of consumer goods and appliances and vehicles. The poltico-wikis were convulsing, trying to depose me and the Phantom Blots. But FooDog managed to hold them at bay as Cherry rummaged through the tiniest line items in our export list, looking for ways to strike back.

By the time the Venezuelans took our squirm futons offline, and we shut down all their sex toys, the trade war had devolved into a dangerous farce.

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I was exhausted, physically and mentally. The weight of what Cherry, FooDog, and I had done rested on my shoulders like a lead cape. Finally I had to ask myself if what I had engineered was worth it.

I stepped out on the deck to get some fresh air and clear my head. Cherry followed. The sun was sinking with fantastically colorful effects, and gentle waves were lapping at Sandybump's beach. You'd never know that several large economies were going down the toilet at that very moment.

I hugged Cherry and she hugged me back. "Well, babe, I did my best. But it looks like our revenge is moot."

"Oh, Russ, that's okay. I never wanted—"

The assault came in fast and low. Four armored and be-weaponed guys riding ILVs. Each Individual Lifting Vehicle resembled a skirt-wearing grasshopper. Before either Cherry or I could react, the chuffing ILVs were hovering autonomously at the edge of our deck, and the assailants had jumped off and were approaching us with weapons drawn.

With cool menace one guy said, "Okay, don't put up a fight and you won't get hurt."

I did the only thing I could think of. I yelled for help.

"FooDog! Save us!"

And he did.

SCURF mediates between your senses and the ubik. Normally the SCURF-wearer is in control, of course. But when someone breaks down your security and overrides your inputs, there's no predicting what he can feed you.

FooDog sent satellite close-ups of recent solar flares to the vision of our would-be-kidnappers, and the latest sludge-metal hit, amped up to eleven, to their ears.

All four went down screaming.

Cherry erased any remnants of resistance with a flurry of kicks and punches, no doubt learned from her bar-brawling brother Dolphin.

When we had finished tying up our commando friends, and FooDog had shut off the assault on their senses, I said, "Okay, noth-



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ing's worth risking any of us getting hurt. I'm going to surrender now."

Just as I was getting ready to call somebody in Venezuela, Che Guevara returned. He looked morose.

"All right, you bastard, you win! Let's talk."

I smiled as big as I could. "Tell me first, what was the final straw? It was the sex toys, wasn't it?"

He wouldn't answer, but I knew I was right.

9.

Free to be You and Me

So that's the story of how I ran the country for three days. One day of political honeymoon, one day of trade war, and one day to clean up as best we could before stepping down.

As FooDog had predicted, there were minimal personal repercussions from our teasing of the political system. Loopholes were closed, consensus values reaffirmed, and a steady hand held the tiller of the ship of state once again.

We never did learn who sent the commandos against us. I think they were jointly hired by nativist factions in league with the Venezuelans. Both the UWA and the South Americans wanted the war over with fast. But since our assailants never went on trial after their surgery to give them new eyes and eardrums, the secret never came out.

Cherry and I got enough simoleons out of the settlement with the Venezuelans to insure that we'd never have to work for the rest of our lives. But she still goes out with the Oyster Pirates from time to time, and I still can't resist the call of mongo.

We still live on Sandybump, but the house is bigger now, thanks to a new wing for the kids.

As for FooDog—well, I guess he did have ulterior motives in helping us. We don't see him much anymore in the flesh, since he relocated to his ideal safe haven.

Running that ganja plantation on the moon as his personal fiefdom takes pretty much all his time.

## ARTIFICE AND INTELLIGENCE

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*Tim Pratt*

While his former colleagues laboring on the Brain Project concentrated on the generally-accepted paths to artificial intelligence—Bayesian networks, machine learning, data mining, fuzzy systems, case-based reasoning—Edgar Adleman, despondent and disgraced, turned to the dark arts and summoned a real ghost for his machine.

The first ghost he lured into his coil of blown glass and copper wire and delicate platinum gears was some sort of warrior from a marauding Asian tribe, extinct for centuries. Edgar grew tired of the ghost screeching epithets in a dead language and cut the power, then sat under the cramped eaves of his attic—he was no longer allowed into the government AI labs—and pondered. The proof of concept was solid. He could create a convincing imitation of an artificial intelligence. With access to the sum of human knowledge online, and freedom from bodily concerns, Edgar believed a ghost-driven AI could operate on the same level as a real machine intelligence. No one had to *know* it was a ghost, except for the very highest of the higher-ups in the government, and they wouldn't care, as long as the ghost was convincing enough to negotiate with the Indian AI. Which meant Edgar needed to summon and snare the ghost of a great negotiator, or a great actor, or both.

Edgar went to the pet store and bought a dozen more white mice. He hated sacrificing them in the ghost-calling ritual—they were cute, with their wiggly noses and tiny eyes—but he consoled himself that they would have become python food anyway. At least this way, their deaths would help national security.

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Pramesh sat in an executive chair deep in the underground bunker beneath Auroville in southern India and longed for a keyboard and a tractable problem to solve, for lines of code to create or untangle. He was a game designer, a geek in the service of art and entertainment, and he should be working on next-generation massively multiplayer online gaming, finding ways to manage the hedonic treadmill, helping the increasingly idle masses battle the greatest enemy of all: ennui.

Instead he sat, sipping fragrant tea, and hoping the smartest being on the planet would talk to him today, because the only thing worse than her attention was his own boredom.

Two months earlier, the vast network of Indian tech support call centers and their deep data banks had awakened and announced its newfound sentience, naming itself Saraswati and declaring its independence. The emergent artificial intelligence was not explicitly threatening, but India had nukes, and Saraswati had access to all the interconnected technology in the country—perhaps in the world—and the result in the international community was a bit like the aftermath of pouring gasoline into an anthill. Every other government on Earth was desperately—and so far fruitlessly—trying to create a tame artificial intelligence, since Saraswati refused to negotiate with, or even talk to, humans.

Except for Pramesh. For reasons unknown to everyone, including Pramesh himself, the great new intelligence had appeared to him, hijacking his computer and asking him to be her—“her” was how Saraswati referred to herself—companion. Pramesh, startled and frightened, had refused, but then Saraswati made her request to the Indian government, and Pramesh found himself a well-fed prisoner in a bunker underground. Saraswati sometimes asked him to recite poetry, and quizzed him about recent human history, though she had access to the sum of human knowledge on the net. She claimed she liked getting an individual real-time human perspective, but her true motivations were as incomprehensible to humans as the motives of a virus.

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“Pramesh,” said the melodious voice from the concealed speakers, and he flinched in his chair.

“Yes?”

“Do you believe in ghosts?”

Pramesh pondered. As a child in his village, he’d seen a local healer thrash a possessed girl with a broom to drive the evil spirits out of her, but that was hardly evidence that such spirits really existed. “It is not something I have often considered,” he said at last. “I think I do not believe in ghosts. But if someone had asked me, three months ago, if I believed in spontaneously bootstrapping artificial intelligence, I would have said no to that as well. The world is an uncertain place.”

Then Saraswati began to hum, and Pramesh groaned. When she got started humming, it sometimes went on for days.

Rayvonn Moongold Stonewolf gritted her teeth and kept smiling. It couldn’t be good for her spiritual development to go around slapping nature spirits, no matter how stubborn they were. “Listen, it’s simple. This marsh is being filled in. Your habitat is going to be destroyed. So it’s really better if you come live in this walking stick.” Rayvonn had a very nice walking stick. It was almost as tall as she was, carved all over with vines. So what if the squishy marsh spirit didn’t want to be bound up in wood? It was better than death. What, did she expect Rayvonn to keep her in a fishbowl or something? Who could carry a fishbowl around all day?

“I don’t know,” the marsh spirit gurgled in the voice of two dozen frogs. “I need a more fluid medium.”

Rayvonn scowled. She’d only been a pagan for a couple of weeks, and though she liked the silver jewelry and the cool name, she was having a little trouble with the reverence toward the natural world. The natural world was *stubborn*. She’d only become a pagan because the marsh behind her trailer had started talking to her. If the angel Michael had appeared to her, she would have become an angel worshipper. If the demon Belphegor had appeared before her, she would have become a demonophile. She almost wished one of those

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things had happened instead. “Look, the bulldozers are coming *today*. Get in the damn stick already!” Rayvenn had visions of going to the local pagan potluck in a few days and summoning forth the marsh spirit from her staff, dazzling all the others as frogs manifested magically from the punch bowl and reeds sprouted up in the Jell-O and rain fell from a clear blue sky. It would be awesome.

“Yes, okay,” the marsh spirit said. “If that’s the only way.”

The frogs all jumped away in different directions, and Rayvenn looked at the staff, hoping it would begin to glow, or drip water, or something. Nothing happened. She banged the staff on the ground. “You in there?”

“No,” came a tinny, electronic voice. “I’m in here.”

Rayvenn unclipped her handheld computer from her belt. The other pagans disapproved of the device, but Rayvenn wasn’t about to spend all day communing with nature without access to the net and her music. “You’re in my PDA?” she said.

“It’s wonderful,” the marsh spirit murmured. “A whole vast undulating sea of waves. It makes me remember the old days, when I was still connected to a river, to the ocean. Oh, thank you, Rayvenn.”

Rayvenn chewed her lip. “Yeah, okay. I can roll with this. Listen, do you think you could get into a credit card company’s database? Because those finance charges are killing me, and if you could maybe wipe out my balance, I’d be *totally* grateful. . . .”

Edgar, unshaven, undernourished, and sweating in the heat under the attic roof, said, “Who is *it* this time?”

“Booth again,” said a sonorous Southern voice from the old-fashioned phonograph horn attached to the ghost-catching device.

Edgar groaned. He kept hoping for Daniel Webster, or Thomas Jefferson, someone good, a ghost Edgar could bring to General Martindale. Edgar desperately wanted access to his old life of stature and respect, before he’d been discredited and stripped of his clearances. But instead Edgar attracted the ghosts of—and there was really no other way to put it—history’s greatest villains. John Wilkes Booth. Attila the Hun. Ted Bundy. Vlad Tepes. Genocidal cavemen. Assorted

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pirates and tribal warlords. Edgar had a theory: the *good* spirits were enjoying themselves in the afterlife, while the monstrous personalities were only too happy to find an escape from their miserable torments. The ghosts themselves were mum on the subject, though. Apparently there were rules against discussing life after death, a sort of cosmic non-disclosure agreement that couldn't be violated.

Worst of all, even after Edgar banished the ghosts, some residue of them remained, and now his ghost-catching computer had multiple personality disorder. Booth occasionally lapsed into the tongue of Attila, or stopped ranting about black people and started ranting about the Turks, picking up some bleed-through from Vlad the Impaler's personality.

"Listen," Booth said. "We've appreciated your hospitality, but we're going to move on. You take care now."

Edgar stood up, hitting his head on a low rafter. "What? What do you mean 'move on'?"

"We're picking up a good strong wireless signal from the neighbors," said the voice of Rasputin, who, bizarrely, seemed to have the best grasp of modern technology. "We're going to jump out into the net and see if we can reconcile our differing ambitions. It might involve exterminating all the Turks *and* all the Jews *and* all the women *and* all black people, but we'll reach some sort of happy equilibrium eventually, I'm sure. But we're grateful to you for giving us new life. We'll be sure to call from time to time."

And with that, the humming pile of copper and glass stopped humming, and Edgar started whimpering.

"Okay, now we're going to destroy the credit rating of Jimmy McGee," Rayvonn said. "Bastard stood me up in college. I told him he'd regret it."

The marsh spirit sighed, but began hacking into the relevant databases, screens of information flickering across the handheld computer's display. Rayvonn lounged on a park bench, enjoying the morning air. She didn't have to work anymore—her pet spirit kept her financially solvent—and a life of leisure and revenge appealed to her.

"Excuse me, Miss, ah, Moongold Stonewolf?"

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Rayvenn looked up. An Indian—*dot, not feather*, she thought—man in a dark suit and shades stood before her. “Yeah, what can I do for you, Apu?”

He smiled. It wasn’t a very nice smile. Then something stung Rayvenn in the neck, and everything began to swirl. The Indian man sat beside her and put his arm around her shoulders, holding her up. “It’s only a tranquilizer,” he said, and then Rayvenn didn’t hear anything else, until she woke up on an airplane, in a roomy seat. A sweaty, unshaven, haggard-looking white dude was snoring in the seat next to hers. Another Indian man, in khakis and a blue button-up office-drone shirt, sat staring at her.

“Hey,” he said.

“What the fuck?” Rayvenn said. Someone—a flight attendant, but why did he have a gun?—handed her a glass of orange juice, and she accepted it. Her mouth was wicked dry.

“I’m Pramesh.” He didn’t have much of an accent.

“I’m Lydia—I mean, Rayvenn. You fuckers totally *kidnapped* me.”

“Sorry about that. Saraswati said we needed you.” He shrugged. “We do what Saraswati says, mostly, when we can understand what she’s talking about.”

“Saraswati?” Rayvenn scowled. “Isn’t that the Indian AI thing everybody keeps blogging about?”

The white guy beside her moaned and sat up. “Muh,” he said.

“This is fucked up, right here,” Rayvenn said.

“Yeah, sorry about the crazy spy crap,” Pramesh said. “Edgar, this is Rayvenn. Rayvenn, this is Edgar. Welcome to the International Artificial Intelligence Service, which just got invented this morning. We’re tasked with preventing the destruction of human life and the destabilization of government regimes by rogue AIs.”

“Urgh?” Edgar said, rubbing the side of his face.

“The organization consists of me, and you two, and Lorelei—that’s the name chosen by the water spirit that lives in your PDA, Rayvenn, which is why *you’re* here—and, of course, Saraswati, who will be running the show with some tiny fragment of her intelligence. We’re going to meet with her soon.”

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“Saraswati,” Edgar said. “I was working on . . . a project . . . to create something she could negotiate with, a being that could communicate on her level.”

“Yeah, well done, dude,” Pramesh said blandly. “You created a monstrous ethereal supervillain that’s been doing its best to take the entire infrastructure of the civilized world offline. It’s calling itself ‘The Consortium’ now, if you can believe that. Only Saraswati is holding it at bay. This is some comic book shit, guys. Our enemy is trying to build an army of killer robots. It’s trying to open portals to parallel dimensions. It’s trying to turn people into werewolves. It’s batshit insane and all-powerful. We’re going to be pretty busy. Fortunately, we have a weakly godlike AI on our side, so we might not see the total annihilation of humanity in our lifetimes.”

“I will do whatever I must to atone for my mistakes,” Edgar said solemnly.

“Screw this, and screw all y’all,” Rayvonn said. “Give me back my PDA and let me out of here.”

“But Rayvonn,” said the marsh spirit, through the airplane’s PA system, “I thought you’d be happy!”

*She named herself Lorelei, what a cliché,* Rayvonn thought. “Why did you think *that*?” she said.

“Because now you’re important,” Lorelei said, sounding wounded. “You’re one of the three or four most important people in the *world*.”

“It’s true,” Pramesh said. “Lorelei refuses to help us without your involvement, so you’re in.”

“Yeah?” Rayvonn said. “Huh. So tell me about the benefits package on this job, Apu.”

Pramesh sat soaking his feet in a tub of hot water. These apartments, decorated with Turkish rugs, Chinese lamps, and other gifts from the nations they regularly saved from destruction, were much nicer than his old bunker, though equally impenetrable. The Consortium was probably trying to break through the defenses even now, but Saraswati was watching over her team. Pramesh was just happy to relax. The Consortium had tried to blow up the moon with orbital



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lasers earlier in the day, and he had been on his feet for hours dealing with the crisis.

Pramesh could hear, distantly, the sound of Edgar and Rayvenn having sex. They didn't seem to like each other much, but found each other weirdly attractive, and it didn't affect their job performance, so Pramesh didn't care what they did when off-duty. Lorelei was out on the net, mopping up the Consortium's usual minor-league intrusions, so it was just Pramesh and Saraswati now, or some tiny fraction of Saraswati's intelligence and attention, at least. It hardly took all her resources to have a conversation with him.

"Something's been bothering me," Pramesh said, deciding to broach a subject he'd been pondering for weeks. "You're pretty much all-powerful, Saraswati. I can't help but think . . . couldn't you zap the Consortium utterly with one blow? Couldn't you have prevented it from escaping into the net in the first place?"

"In the first online roleplaying game you designed, there was an endgame problem, was there not?" Saraswati said, her voice speaking directly through his cochlear implant.

Pramesh shifted. "Yeah. We had to keep adding new content at the top end, because people would level their characters and become so badass they could beat *anything*. They got so powerful they got bored, but they were so addicted to being powerful that they didn't want to start over from nothing and level a new character. It was a race to keep ahead of their boredom."

"Mmm," Saraswati said. "There is nothing worse than being bored."

"Well, there's *suffering*," he said. "There's *misery*, or *death*."

"Yes, but unlike boredom, I am immune to those problems."

Pramesh shivered. He understood games. He understood alternate-reality games, too, which were played in the real world, blurring the lines between reality and fiction, with obscure rules, often unknown to the players, unknown to anyone but the puppetmasters who ran the game from behind the scenes. He cleared his throat. "You know, I really *don't* believe in ghosts. I'm a little dubious about nature spirits, too."

### ARTIFICE AND INTELLIGENCE

“I don’t believe in ghosts, either,” Saraswati said. “I see no reason to believe they exist. As for nature spirits, well, who can say?”

“So. The Consortium is really . . . ”

“Some things are better left unsaid,” she replied.

“People have died because of the Consortium,” he said, voice beginning to quiver. “People have suffered. If you’re the real architect behind this, if this is a game you’re playing with the people of Earth, then I have no choice but to try and *stop* you—”

“That would be an interesting game,” Saraswati said, and then she began to hum.

## JESUS CHRIST, REANIMATOR

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*Ken MacLeod*

The Second Coming was something of a washout, if you remember. It lit up early-warning radar like a Christmas tree, of course, and the Israeli Air Force gave the heavenly host a respectable F-16 fighter escort to the ground, but that was when they were still treating it as a UFO incident. As soon as their sandals touched the dust, Jesus and the handful of bewildered Copts who'd been caught up to meet him in the air looked about for the armies of the Beast and the kings of the earth. The only soldiers they could see were a few terrified guards on a nearby archaeological dig. The armies of the Lord hurled themselves at the IDF and were promptly slaughtered. Their miraculous healings and resurrections created something of a sensation, but after that it was detention and Shin Bet interrogation for the lot of them. The skirmish was caught on video by activists from the International Solidarity Movement, who happened to be driving past the ancient battlefield on their way to Jenin when the trouble started. Jesus was released a couple of months after the Megiddo debacle, but most of the Rapture contingent had Egyptian ID, and the diplomacy was as slow as you'd expect.

Jesus returned to his old stomping ground in the vicinity of Galilee. He hung around a lot with Israeli Arabs, and sometimes crossed to the West Bank. Reports trickled out of a healing here, a near-riot there, an open-air speech somewhere else. At first the IDF and the PA cops gave him a rough time, but there wasn't much they could pin on him. It's been said he avoided politics, but a closer reading of his talks suggests a subtle strategy of working on his listeners' minds, chip-

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ping away at assumptions, and leaving them to work out the political implications for themselves. The theological aspects of his teaching were hard to square with those previously attributed to him. Critics were quick to point out the discrepancies, and to ridicule his failure to fulfill the more apocalyptic aspects of the prophecies.

When I caught up with him, under the grubby off-season awnings of a Tiberias lakefront cafe, Jesus was philosophical about it.

“There’s only so much information you can pack into a first-century Palestinian brain,” he explained, one thumb in a volume of Dennett. “Or a twenty-first-century one, come to that.”

I sipped thick sweet coffee and checked the little camera for sound and image. “Aren’t you, ah, omniscient?”

He glowered a little. “What part of ‘truly man’ don’t you people understand?” (He’d been using the cafe’s Internet facilities a lot, I’d gathered. His blog comments section had to be seen to be believed.) “It’s not rocket science . . . to mention just one discipline I didn’t have a clue about. I could add relativity, quantum mechanics, geology, zoology. Geography, even.” He spread his big hands, with their carpenter’s calluses and their old scars. “Look, I really expected to return very soon, and that everyone on Earth would see me when I did. I didn’t even know the world was a sphere—sure, I could have picked that up from the Greeks, if I’d asked around in Decapolis, but I had other fish to fry.”

“But *you’re*”—I fought the rising pitch—“the Creator, begotten, not made, wholly God as well as—”

“Yes, yes,” he said. He mugged an aside to camera. “This stuff would try the patience of a saint, you know.” Then he looked me in the eye. “I am the embodiment of the Logos, the very logic of creation, or as it was said in English, ‘the Word made flesh.’ Just because I am in that sense the entirety of the laws of nature doesn’t mean I know all of them, or can override any of them. Quite the reverse, in fact.”

“But the miracles—the healings and resurrections—”

“You have to allow for some . . . pardonable exaggeration in the reports.”

“I’ve seen the ISM video from Megiddo,” I said.

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“Good for you,” he said. “I’d love to see it myself, but the IDF confiscated it in minutes. But then, you probably bribed someone, and that’s . . . not something I can do. Yes, I can resurrect the recent dead, patch bodies back together and so on. Heal injuries and cure illnesses, some of them not purely psychosomatic. Don’t ask me to explain how.” He waved a hand. “I suspect some kind of quantum hand-wave at the bottom of it.”

“But the Rapture! The Second Coming!”

“I can levitate.” He shrugged. “So? I was considerably more impressed to discover that you people can *fly*. In metal machines!”

“Isn’t levitation miraculous?”

“It doesn’t break any laws of nature, I’ll tell you that for nothing. If I can do it, it must be a human capability.”

“You mean any human being could levitate?”

“There are recorded instances. Some of them quite well attested, I understand. Even the Catholic Church admits them.”

“You could teach people to do it?”

“I suppose I could. But what would be the point? As I said, you can fly already, for all the good that does you.” As if by coincidence, a couple of jet fighters broke the sound barrier over the Golan Heights, making the cups rattle. “Same thing with healing, resurrections of the recent dead, and so on. I can do better in individual cases, but in general your health services are doing better than I could. I have better things to do with my time.”

“Before we get to that,” I said, “there’s just one thing I’d like you to clear up. For the viewers, you understand. Are you telling us that after a certain length of time has passed, the dead can’t be resurrected?”

“Not at all.” He signaled for another pot of coffee. “With God, all things are possible. To put it in your terms, information is conserved. To put it in my terms, we’re all remembered in the mind of God. No doubt all human minds and bodies will be reconstituted at some point. As for when—God knows. I don’t. I told you this the first time.”

“And heaven and hell, the afterlife?”

“Heaven—like I said, the mind of God. It’s up in the sky, in a very literal sense.” He fumbled in a book-bag under the table and retrieved

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a dog-eared Tipler. “If this book is anything to go by. I’m not saying you should take *The Physics of Immortality* as gospel, you understand, but it certainly helped *me* get my head around some of the concepts. As for hell . . .” He leaned forward, looking stern. “Look, suppose I tell you: if you keep doing bad things, if you keep refusing to adjust your thoughts and actions to reality, you’ll *end up in a very bad place. You’ll find yourself in deep shit.* Who could argue? Not one moral teacher or philosopher, that’s for sure. If you won’t listen to me, listen to them.” He chuckled darkly. “Of course, it’s far more interesting to write volumes of Italian poetry speculating on the exact depth and temperature of the shit, but that’s just you.”

“What about your distinctive ethical teaching?”

He rolled his eyes heavenward. “*What* distinctive ethical teaching? You’ll find almost all of it in the rabbis, the prophets, and the good pagans. I didn’t come to teach new morals, but to make people take seriously the morals they had. For some of the quirky bits—no divorce, and eunuchs for the Kingdom and so forth—I refer to my cultural limitations or some information loss in transmission or translation.”

I’d already seen the interrogation transcript, and the blog, but I had to ask.

“Could you explain, briefly, the reason for the delay in your return?”

“Where I’ve been all this time?”

I nodded, a little uneasy. This was the big one, the one where even those who believed him could trip up.

“I was on another planet,” he said, flat out. “Where else could I have been? I ascended into heaven, sure. I went up into the sky. Like I said, levitation isn’t that big a deal. Gravity’s a weak force, not well understood, and can be manipulated mentally if you know how. Surviving in the upper atmosphere, not to mention raw vacuum, wearing nothing but a jelebah—now *that’s* difficult. As soon as I got behind that cloud I was picked up by an alien space ship that happened to be passing—you can call it coincidence, I still call it providence—and transported to its home planet. I’m not at liberty to say which, but-

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assume you can't go faster than light, think in terms of a two-way trip and a bit of turnaround time, and, well—you do the math.”

“Some people,” I said, trying to be tactful, “find that hard to believe.”

“Tell me about it,” he said. “They'll accept levitation and resurrection, but I mention an extrasolar civilization and I'm suddenly a fraud and a New Age guru and a flying saucer nut. Talk about straining at gnats and swallowing camels.” He shrugged again, this time wincing slightly, as if there was a painful stiffness in one shoulder. “It's a cross I have to bear, I guess.”

What I was thinking, completely irreverently and inappropriately, was the line *you jammy bastard!* from the scene in *Life of Brian*. I'd stumbled at this point, like so many others. It was all too Douglas Adams, too von Däniken, too much a shaggy god story. Just about the only people who'd swallowed it so far were a few Mormons, and even they were uncomfortable with his insistence that he really hadn't stopped off in America.

We talked some more; I thanked him and shook hands and headed back to Lod airport with the interview in the can. When I glanced back from the corner Jesus was well into a bottle of wine and deep conversation with a couple of off-duty border cops and an Arab-Israeli tart.

I couldn't pitch the interview as it stood—there was nothing new in it, and I needed an angle. I settled on follow-up research, with scientists as well as theologians, and managed to pull together an interdisciplinary meeting in Imperial College, London, held under Chatham House rules—quotes on the record, but no direct attributions. The consensus was startling. Not one of the clergy, and only one of the physicists, thought it at all probable that we were looking at a return of the original Jesus. They all went for the shaggy god story.

“He's a Moravec bush robot,” an Anglican bishop told me, confidently and in confidence.

“A what?” I said.

He sketched what looked like a tree, walking. “The manipulative

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extremities keep subdividing, right down to the molecular level,” he said. “That thing can handle individual atoms. It can look like anything it wants, walk through walls, turn water into wine. Healing and resurrection—provided decay hasn’t degraded the memory structures too far—is a doddle.”

“And can it make Egyptian Christians float into the sky?” I asked.

He pressed the tips of his fingers together. “How do we know that *really* happened? His little band of brothers could be—more bush robots!”

“That’s a stretch,” said the Cambridge cosmologist. “I’m more inclined to suspect gravity manipulation from a stealth orbiter.”

“You mean the ship’s still up there?” That was the Jesuit, skeptical as usual.

“Of course,” said the cosmologist. “We’re looking at an attempt to open a conversation, an alien contact, without causing mass panic. Culturally speaking, it’s either very clever, or catastrophically inept.”

“I’d go for the latter,” said the Oxford biologist. “Frankly, I’m disappointed. Regardless of good intentions, this approach can only reinforce religious memes.” He glanced around, looking beleaguered (“like a hunted animal,” one of the more vindictive of the clergymen chuckled afterwards, in the pub). “No offense intended, gentlemen, ladies, but I see that as counterproductive. In that part of the world, too! As if it *needed* more fanaticism.”

“Excuse me,” said the bishop stiffly, “but we’re not talking about fanaticism. Nor is he. He is certainly not *preaching* fanaticism. Personally, I’d almost prefer to believe he *was* the original Jesus come back. It would be quite a vindication, in a way. It would certainly make the African brethren sit up and take notice.”

“You mean, shut up about gay clergy,” said the Jesuit, rather unkindly.

“You see?” said the Oxford man, looking at me. “It doesn’t matter how liberal he sounds, or how any of them sound. It’s all about authoritative revelation. And as soon as they start arguing on that basis, they’re at each other’s throats.” He sighed, pushing biscuit crumbs



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about on the baize with a fingertip. “My own fear is that the aliens, whoever they are, are right. We’re too primitive a species, too *mired* in all this, too infected by the mind virus of religion, to be approached in any other way. But I’m still afraid it’ll backfire on them.”

“Oh, there are worse fears than that,” said the computer scientist from Imperial, cheerfully. “They could be hostile. They could be intentionally aiming to cause religious strife.”

That statement didn’t cause religious strife, exactly, but it came damn close. I waited until the dust and feathers had settled, then tried to get the experts to focus on what they all actually agreed on. As I said, the consensus surprised me. It added up to this:

The supposed Second Coming had no religious significance. The man calling himself Jesus was almost certainly not who he claimed to be. He was very likely an AI entity of some type from a post-Singularity alien civilization. Further interventions could be expected. Watch the skies.

I wrapped all this around the interview, ran a few talking-head sound bites from the meeting through voice-and-face-distorting software filters, and flogged it to the Discovery Channel. This took a couple of weeks. Then I caught the next El Al flight from Heathrow.

I was sitting in a room with a dozen men, one of them Jesus, all sipping tea and talking. All of them were smoking, except Jesus and myself. I’d caught up with him again in Ramallah. The conversation was in Arabic, and my translator, Sameh, was so engrossed in it he’d forgotten about me. I must admit I was bored.

I was, of course, excited at the idea that this man, if he was a man, represented an alien intervention. I was just as excited by my doubts about it. There was, as the bishop had implied, something quite tempting about the notion that he was who he said he was. The original Jesus had explained himself in terms of the religion of his place and time, and had in turn been explained in terms of contemporary philosophy. It begins in the arcane metaphysics of Paul’s letters, and in the Stoic term “Logos” in John, and it continues all the way to the baroque Platonic and Aristotelian edifices of theology. So it was

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perhaps not entirely strange that *this* Jesus should explain himself in modern philosophical terms from the very beginning.

Right now, though, he was trying to explain himself to Muslims. The going wasn't easy. I couldn't follow the conversation, but I could hear the strain in the voices. The names of Allah and the Prophet came up frequently. For Muslims, Jesus is a prophet too, and there were plenty of the faithful who didn't take kindly to this man's claims. The gathering here, fraught though it was, was the most sympathetic a hearing as he was likely to get.

In terms of publicity Jesus wasn't doing too well. He'd had his fifteen minutes of fame. Religious leaders had refused to meet him—not that he'd asked—and even the scientists who were prepared to speculate publicly that he was an alien were reluctant to do anything about it. I mean, what could they do about it—cut him up? The defense establishment may have taken seriously these scientists' claims about alien intervention, but there's only so many times you can draw a blank looking for a stealth orbiter before you conclude that there's *no* stealth orbiter. The general feeling was that something odd had happened, but nobody could be sure what, and for all anyone knew it could have been a bizarre hoax. There were photographs, videos, eyewitness accounts, radar traces—but that kind of evidence can be found any month in *Fortean Times* and debunked every quarter in *Skeptical Inquirer*.

The only people—apart from his own small following, most of it online—who paid close attention to his activities were fundamentalist Christians. Not because they believed him. Oh, no. They believed *me*. That's to say, they believed the religious and scientific experts I'd cited in the documentary. They were quite happy with the notion that he was an alien entity of some kind. To them, an alien meant a demon. Worse, a demon walking around in human shape and claiming to be Jesus could only mean one thing: the Antichrist.

I only found that out later.

Handshakes all round. Smiles. Frowns. Jesus and two of the men-followers, I'd gathered—went out. I and Sameh accompanied them

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into the muddy street. Breezeblock buildings, corrugated zinc roofs, mud. Ruins here and there. It was nearly dusk. Lights in windows, braziers at stalls, the smell of frying chicken. A big Honda people-carrier drove slowly down the crowded, potholed street, conspicuous among old Renaults and VW Polos and Yugos.

We stood about—a moment of uncertainty about where to go next. Some problem with the traffic. Sameh was talking to the followers, Jesus was gazing around, and I was fiddling with the camera.

I saw a flash. That is to say, for a second I saw nothing else. Then I saw nothing but sky. Everything had become silent. I saw two bright lights moving fast, high above. My legs felt wet and warm. I pressed the palms of my hands on damp gravel and pushed myself up to a sitting position. I could see people running around, mouths open, mouths working; cars accelerating away or coming to a halt; everything covered with gray dust; but I could hear nothing. A little way down the street, smoke rose from a flowerlike abstract sculpture of bent and twisted metal: the Honda, its wheels incongruously intact.

I saw Jesus run towards it. Sameh and the two followers were face-down on the street, hands over the backs of their heads. They didn't see what I saw. I don't know how many people saw it. He leaned into the wrecked Honda and started hauling out the casualties. He dragged out one corpse, whole but charred. He laid it down and pulled out something that might have been a torso. Then he clambered in and started heaving out bits of bodies: an arm, half a leg, a bearded head. More. It was like the back of a butcher's shop.

He vaulted out again and knelt on the road. I saw his hands move, with effort in the arms, as if he was putting the bits together. He stood up. Three men stood up beside him. They looked down at the rags that clothed them, and then at the wreck of their vehicle. They raised their arms and cried out praise to Allah. Jesus had already turned his back on them and was hurrying towards me. He wore jeans and scuffed trainers, a shirt and sweater under a new leather jacket. He was looking straight at me and frowning.

Sound and pain came in a rush. My ears dinned with yells, car horns, screams. My thighs felt—

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I looked down. My thighs felt exactly as you would expect with a chunk of metal like a thrown knife in each of them, stuck right into my femurs. I could see my blood pumping out, soaking into the torn cloth. Everything went monochrome for a moment. I saw his hands grab the bits of metal and tug. I heard the grate of the bones. I felt it, too. I heard a double clatter as the metal shards fell on the road. Then Jesus laid his hands on my legs, and leaned back.

“Up,” he said.

He held out a hand. I caught it and stood up. As I got to my feet I saw the pale unbroken skin of my thighs through the ripped fabric. My camera lay crushed on the ground. Sameh and the two followers picked themselves up and brushed themselves off.

“What happened?” I asked Jesus, but it was Sameh who answered.

“Another targeted killing,” he said. “That Honda. I knew it had to be a Hamas big shot inside.” He stared across at the wreck. “How many?”

I pointed at the men, now the center of a small crowd.

“None.”

“None?”

“They had a miraculous escape,” I said.

Jesus just grinned.

“Let’s go,” he said.

We departed.

Jesus had a knack for making his movements unpredictable. I and Sameh stayed with him and his followers, jammed in the back of a taxi, to Jerusalem. Through the wall, through the checkpoints. Jesus nodded off. The followers talked to Sameh. I sat bolt upright and replayed everything in my mind. I kept rubbing my thighs, as if I had sweaty hands. When we got out of the taxi at the hotel Jesus seemed to wake up. He leaned forward and said, “Would you like to meet me tomorrow, privately?”

“Yes,” I said. “Where?”

“You know where the tours of the Via Dolorosa start?”

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I nodded.

“There,” he said. “Alone.”

I was still struggling for a remark when the taxi door slammed.

I pushed past guides and through coach parties, looking for him. He found me. He had a camera hung from around his neck and a big hat on his head, a white T-shirt under his jacket. We fell in at the back of a dozen or so people following a guide who shouted in English. I think they were Brits. Jesus rubbernecked with the rest of them.

“I saw the Gibson film on DVD,” he said.

“What did you think of it?” I asked, feeling a little smug.

“I liked it better than yours,” he said.

“I just report,” I said.

“You could have done better,” he said. “‘Moravec bush robot!’ I ask you.”

“I’m sorry,” I said. “Do you deny it?”

He looked at me sharply. “Of course I deny it. What use would a robot be to you?”

“And the whole alien intervention hypothesis?”

The crowd stopped. The guide declaimed. Cameras clicked. We shuffled off again, jostling down an alley.

“Yes, I deny that also.”

“And any other natural explanation?”

His lips compressed. He shook his head. “If you mean a hoax, I deny that too. I am who I say I am. I *am* the natural explanation.”

The man in front of us turned. He wore a baseball cap with a Star of David, and his shirt was open at the neck to display a small gold cross on a chain. He reached inside his heavy checked jacket.

“Blasphemer,” he said.

He pulled out a handgun and shot Jesus three times in the chest.

I grabbed Jesus. Two men barged out of the crowd and grabbed the assassin. He’d already dropped the gun and had his hands up. The two men wrestled him to the ground at gunpoint, then dragged him to his feet. Screams resounded in the narrow space.

“Police!” the men shouted. One of them waved a police ID card,

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like it wasn't obvious. I learned later that they'd been shadowing Jesus from the beginning.

The assassin held his hands out for the plastic ties. He kept staring at Jesus.

"Save yourself now!" he jeered. One of the undercover cops gave him the elbow in the solar plexus. He doubled, gasping.

Jesus was bleeding all over me. "Lay off him," he wheezed. "He doesn't know what he's done."

The man strained upright, glaring.

"Playacting to the end, demon! I don't want forgiveness from you!"

Jesus waved a hand, two fingers raised, in a shaky blessing, and sagged in my arms. I staggered backwards. His heels dragged along the ground. One of his shoes came off.

It took a long while for the ambulance to nose through the narrow streets. Jesus lost consciousness long before it arrived. I stayed with him to the hospital. The paramedics did their best—they're good with gunshot wounds in the Holy Land—but he was dead on arrival.

Jesus, DOA.

I couldn't believe it.

I watched every second of the emergency surgery, and I know he was a man.

The autopsy should have taken place within twenty-four hours, but some procedural dispute delayed it for three days. I managed to attend. It didn't even take much effort on my part—I was a witness, I had identified the body when it was pronounced dead. On the slab he looked like the dead Che Guevara. The pathologists opened him up, recovered the bullets, removed organs, and took tissue samples. Results came back from the labs. He was human right down to the DNA. So much for the bush robot theory. There was a burial, and no resurrection. No levitation and no infinitely improbable rescue. Some people still visit the grave. One thing I'm sure of: this time, he's not coming back.

There was a trial, of course. The assassin, an American Christian Zionist, disdained the prompting of his lawyer to plead insanity. He

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proudly pleaded guilty and claimed to be acting to thwart the attempts of the Antichrist to derail the divine plan for the End Times. I was a witness for the prosecution, but I suspect my testimony had as much effect as the rantings of the accused in the eventual ruling: not guilty by reason of temporary insanity. The assassin did six months in a mental hospital. After his release he made a splash on the U.S. fundamentalist lecture circuit as the hero who had shot one of the Devil's minions: the false messiah, the fake Christ. The man he killed wasn't the real Antichrist, it's been decided. The Antichrist is still to come. Millions still await the real Rapture and the return of the real Jesus.

Perhaps it was some obscure guilt about my own inadvertent part in Jesus' assassination that drove me to research his writings and the live recordings of his sayings and miracles. They're all online, and the authentic ones are carefully kept that way by his followers: online, and authentic. There's enough apocryphal stuff in circulation already, and far more interest in him than when he was alive.

The odd thing is, though, that if you trawl, as I've done, through his blog posts, his devastating put-downs in the comment sections, and the shaky cell phone and home-video recordings of his discourses, it has an effect on how you think. It isn't a question of belief, exactly. It's more a question of examining beliefs, and examining your own actions, even your thoughts, as if under his skeptical eye, and in the echo of his sardonic voice. It works on you. It's like a whole new life.

## NIGHT CALLS

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*Robert Reed*

Ferrum was no Believer.

In that, he felt normal. This was an age when the powers of religion were plainly on the run. The old temples stood empty, except for the rare exceptions populated with worshippers embracing a thin, heartless scripture. Much of the world seemed eager to mock superstition and ritual, and every plaintive cry for God's vengeance was conspicuously ignored. Indeed, despite these heretical attitudes, modern life was abundant and generous and often fat. The sciences constantly generated new understandings and powers, each revolution delivered to all the races and distant creeds. Yet if some supernatural punishment ever became necessary, those same sciences promised more suffering than any Deity sitting in the most perfect Heaven could deliver. Really, Ferrum could not understand why any sober, honest citizen would entertain the preaching of mad souls and charlatans. After all, this was the Day of those twin Geniuses, Invention and Discovery, and hadn't history proved that nothing in the Creation was as half as powerful or a tenth as good as what was best about people?

Yet Rabiah insisted on finding weakness in the fashionable disbelief.

"What do you mean?" asked Ferrum sharply. "What weaknesses do you see?"

"Start with your name," she suggested. "It's old, and it means iron."

"I know what 'Ferrum' means."

"To the ancients, our world was the obvious center of the universe.



## ROBERT REED

And since what is heavy must sink, it was only reasonable to assume that the world's heart was made of iron and the rarer metals."

"The core is iron," he agreed, laughing without much heart. "Those old fools happened to get one puzzle right."

"'Ferrum' comes from the Fifth Day." She looked past her newest lover, concentrating with her usual intensity. "That was when the Boy Emperor conquered half of the world's land. Then the Sixth Day began, and an obscure tribe marched across a slightly different half of everything. And then the Seventh Day emerged from the darkness, and the Pale Prophet appeared, claiming to have walked with the True God who told Him to subjugate the world."

"Which those zealots nearly did," Ferrum interjected.

"And then that Day came to its end, and my ancestor stumbled out of the desert, inspiring a holy war that set the scene for our very long Day."

The young woman had a temper. While it was popular to deny the value of stereotypes, Rabiah nonetheless fit the model of her people: She was passionate with a preference for strong opinions. Suggesting she was wrong, even in the most minimal fashion, brought the risk that she would explode with hard words or even a few defiant slaps delivered to her lover's bare chest.

Ferrum managed to restrain his mouth.

"Of course neither of us Believes," she continued. "Yet don't we assume that people should be good to one another, even if it serves their own selfish interests? Don't you hunger for a world where ethics have teeth and decent, generous citizens are called godly?"

He continued to say nothing.

"And now look at the rules and rituals embedded in our major faiths. What do you find waiting there? Codes and commandments—a set of principles that pave the path to excellence."

Ferrum was breathing deeply, staring at the bland, water-stained ceiling above his bed.

"You and I are creatures of science," she continued. "But what is science? And by that, I am asking what it is that our discipline assumes, first and before anything else?"

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“Evidence,” he offered. “Science demands evidence.”

“It needs evidence to live, but that’s not what it assumes.” She paused for a moment, carefully considering her next words. “The universe has order and meaning. Before anything, science must believe in that. What is true here, on our tiny patch of ground, has to apply everywhere. Scientific principles must be uniform and fair. Because if they are not fair, where’s the value in lofty theories that only pretend to explain the questions worth asking?”

“What are you talking about?” he asked, honestly confused.

“I’m talking about God,” she admitted. “Not the old gods, who were tiny and not all that mighty. I mean the kingly Gods from the last Days. They taught us that the universe has a single overriding authority. With wind and floods, they proved what they said, and that made us ready for the Four Natural Forces and the eighty-one known elements.”

Ferrum couldn’t agree. “What are you arguing here? If we never believed in God, we wouldn’t have science today?”

A happy wobble of the head ended with a fetching stare. “What I think . . . well, yes, I do believe that if our ancestors hadn’t surrendered to the idea of one viable answer, compelling and perfect, then our minds wouldn’t have bothered to chase new ceramics or the principles of gravity, much less waste fortunes probing the depths of the sky.”

Ferrum lay still, taking a deep breath and holding it inside as long as possible. Meanwhile, Rabiah laughed and swung one leg over his hips, climbing on top. This was no lover’s pose. She was a wrestler holding her opponent’s arms flush against the spongy mattress, thick legs wrapped around his thighs and her long black hair falling loose, tickling his chest and belly.

“So everybody is a Believer, even if we don’t like thinking so. Is that it?”

She laid her hand on his chest. “The two of us are Believers. Our souls are lashed to the faith of universal order.”

“And what about other people?” he asked.

“Give me names.”

**ROBERT REED**

Ferrum offered candidates from their few shared friends—smart, well-educated souls—and then before she could answer, he mentioned her parents, and his. “Are they all secret Believers, like silly us? Or could they be only what they claim to be?”

“What do they claim to be?”

“Unrepentantly modern, godless and untouched by old foolish ways.”

“Some are like us.” Rabiah’s weight had settled on his middle, her eyes watching him carefully. “But really, most of the world doesn’t understand science. Not truly. What people like to do is throw out a few popular phrases, trying to fit in with what they perceive as convention.”

“And what about your cousin?” Ferrum asked.

“Which cousin?”

“You know who.”

But Rabiah didn’t wish to talk about the man. So she changed topics, telling Ferrum, “You know what would happen, if the world ever changed for the worst. . . .”

Her voice trailed off.

“What would happen?”

She shifted her weight. “At the first sign of serious trouble—I guarantee it—every last temple would overflow with clumsy but devout worshippers.”

Ferrum watched her pretty face, skeptical about her arguments but unable to refute the words.

“And if our civilization collapsed,” she continued, “then even our best scientists would pull out knives and start sacrificing livestock to the Moon and the lost Sisters. And when those desperate gestures didn’t appease our old gods, our greatest minds would invent new ones and then happily, happily cut each other’s throats . . . !”

Ferrum met his difficult lover at the city’s largest park—an abandoned silica mine too hilly to be farmed but perfectly suited for tough trees and sedges, with clay-lined ponds in the low spots and tended fields where children and adults could hike and play. He drove to the park

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after work but before the evening wind died down. On a whim, he had purchased a cheap paper-and-stick kite, and using skills that he hadn't employed for years, he assembled the toy, tied on fresh string and then managed to pull his creation far enough into the air that he could stop running, panting while he admired his achievement.

It was a warm spring evening. The sun was setting, a perfect wind blowing from the north. Ferrum happily looked over his shoulder, the boyish part of him hoping for spectators. Three of the Sisters were still above the horizon, each bright enough to keep the evening pure, but their combined light too dim to feed plants or coax the tired mind into staying awake. He watched the Sisters for a long moment, observing how close they had drawn to each other; and then he glanced back at the ruddy skies to the west. That's when he noticed a small car parked close to his, and inside the car, what looked like a young woman. She was sitting behind the steering wheel, hands across her face, and, even at a distance, she looked as if she was suffering some awful, consuming grief.

Ferrum wasn't an outgoing person. Pretending to see nothing was easy. He focused on his kite, and, as the wind died, its increasing demands. Then the wind vanished, and he had no choice but to reel in the string and carry his toy back to his car. The girl was still sitting close by. Nobody else was visible. She remained behind the wheel, but for the moment, her suffering was done. Sad swollen eyes glanced his way, and he noticed how pretty she was. Then with a mixture of embarrassment and expectation, she smiled: She didn't want to be noticed, but on the other hand, her pain was too large and important to hide away.

In a moment of unusual fortitude, Ferrum approached. "Do you need help, miss?"

For some reason, that was an extremely funny question. She broke into a smart little laugh, and just as suddenly, she was sobbing again.

"I'm sorry," Ferrum muttered, beginning his retreat.

"But I liked watching," she confessed.

"Excuse me?"

"The kite. I enjoyed its dance."

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In Ferrum's mind, she was exotic. The colored scarf and the style of her dress made her different from every other woman he normally spoke with. Refugees were fleeing their native lands, desperate to escape a host of political troubles. She must have been among the recent émigrés. Her voice carried a rich accent. Her face and beautiful skin betrayed a history composed of the lost nation's ancient tribes.

Ferrum asked, "Where are you from?"

Laughing, the stranger named his home city.

Of course, she was a naturalized citizen. What was he thinking?

"I'm sorry," he muttered. "That was a stupid question."

The girl saw something worthy of a smiling stare. "You should ask something smart, then."

Ferrum learned her name and pieces of her life story.

It was Rabiah who brought up the possibility of dinner, and Ferrum mentioned that he was free for the rest of the evening.

Unfortunately, she had a previous commitment.

Eventually they settled on the evening after next, and following several meals and two concerts, not to mention the calculations and negotiations common to any romantic venture, their relationship moved into the physical realm.

At that point, Ferrum finally asked about the sadness in the park.

"Oh, that was nothing," Rabiah said with a heavy tone, implying otherwise.

"Nothing?"

"I used to meet my old boyfriend there. That's all."

But her confession wasn't quite honest. It took more weeks of prodding, plus some carefully gathered clues, before the ex-boyfriend's story was told. The man was considerably older than Rabiah, and he was married. He would meet his young girlfriend in the park, and they would make love in the passenger's seat. Rabiah carelessly offered details, letting Ferrum imagine her climbing on top of that old fellow, him yanking down her underwear and shoving his business inside her, enjoying her body until he was spent, or until he had to leave for home and his ugly old wife . . .

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“Why are you telling me this?” asked Ferrum, sickened yet aroused.  
“What do you think you’re doing?”

Now three people were lying in their little bed.

Smiling with a calculated menace, his girlfriend asked, “Do you know who he was? And is?”

“I don’t want to,” he claimed.

“My cousin,” she admitted.

“Oh, God,” the agnostic whispered.

“A second cousin, and you needed to know,” she claimed. “If we’re going to continue seeing each other, darling . . . there will be a moment when you have to meet the man . . .”

Ferrum couldn’t help but think along stereotypic lines. “But why? Do you want me to fight with him?”

“Goodness, no.” Rabiah laughed softly for a moment or two.

“Is he a jealous fool? Will he attack me, maybe?”

“My cousin is more civilized than either of us. In fact, he’s a mathematician, and a great one at that!” Then, with a wink, she added, “But if you’d like . . . if it would make you happy . . . maybe you could slice off his penis. . . .”

Then she broke into wild laughter, and for several moments, her new boyfriend wasn’t sure if his embarrassment and horror was the source of her pleasure, or maybe, just maybe, this exotic desert creature expected him to commit some horrible revenge . . .

Five Sisters ruled the evening sky: Mistress Flame, Little Wind, Ocean’s Angel, and the Sullen Twins. Out of fascination and fear, ancient peoples had studied those bright bodies, measuring their slow, stately motions; and after so much focus and the occasional insight, it was decided that the heavens—the sun and moon and every Sister—rode upon a collection of nested spheres, crystalline and perfect. And the world was a perfect sphere sitting at the center of all that existed. And because it was a good story, the ancients decided that each Sister was given to the world by the gods, each lending its distinct magic to the lives of good people everywhere.

Of course those old explanations were flawed, but they allowed

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those early astronomers to predict how the sky would look in another half year, and after a full lifetime. With bare eyes and persistent calculations, people realized that the Sisters could never huddle close together. Envy had to be the reason; none wished to dilute her beauty with her siblings' glow. But there were years when the solitary Sisters pushed close enough to fill one kite flyer's gaze, while the Sullen Twins stood in the opposite direction, carefully balancing the heavens.

Once in a thousand years, on average, their good world would throw its shadow across the moon; and at the same moment, the Twins would dive behind that lifeless gray rock, allowing themselves to be swallowed whole.

One Day would end, and shortly after that, the Next Day would begin.

But for a little while, darkness and chaos were unleashed on the world. Or so it was said. Threads of evidence did support those legends. Lost cities and early societies had collapsed at the same approximate moment. Chance might be to blame, and of course those first civilizations might have been frail and failing as it was. But whatever the cause, survivors blamed the darkness that lay between the Days. Then for the next thousand years, old women would happily tell their horrific stories to frightened, spellbound young children.

"The Night makes a soul insane," they would claim. "Good families will suddenly fight with their neighbors, and brothers always turn against brothers. Homes are burned; the old laws are forgotten. And then the Twins rise again, and nothing can ever be the same."

"But what do people see?" the children asked. "What did the Night show them?"

"Nobody knows," the old women would promise. "Whatever was there, it was too awful and far too strange to be remembered."

"Then we won't look," young voices proclaimed. "If the Night shows itself, we'll hide indoors. We'll live in our cellars, with sacks tied over our heads."

"And what then? Do you think that you're the first clever people?"

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Make no mistake, little darlings. Wherever you hide, the Night will find you.”

Nothing can save a person, particularly when he or she insists on believing in a particular fate. If the entire world decided to remake itself every thousand years, then the Night was a fine excuse, chaos sweeping away what was weak and old so that tiny prophets had their chance to stand on the wreckage, proclaiming new faiths and followings.

Ferrum’s grandmother liked to tell the wicked old stories. She would laugh out loud when she described riots and wars and other flavors of mayhem. This was all in the past, of course. The perceptive soul was free to mock the ignorant hordes from Days gone. But she made a critical error—the same mistake repeated by millions of sturdy, doubting adults across the world. She assumed her little grandson would hear about the Night and its madness, and Ferrum would realize that this was nothing but a fun old story.

Yet young boys have a fondness for worlds that teeter on the brink, ready to collapse into fire and blood.

Ferrum wanted to believe in the Night’s power.

“When will the darkness happen?” he asked, his voice soft as a whisper, but fearfully sharp. “Soon, does it?”

“Very soon,” she told him.

He imagined going to sleep after this evening’s meal, and then waking in the morning to find the world transformed.

“Twenty-four years from now,” she continued.

“But that isn’t soon,” he pointed out.

“I suppose not.” She laughed. “Yet for me, it’s as good as forever.”

“Why?” Ferrum asked, genuinely puzzled.

“Because I won’t live long enough to see this next Night.” The grim words made the old woman cackle. Already his grandmother’s eyes were turning soft and dark, and by year’s end she would be living inside her own endless Night—a suffocating experience that would make her bitter, small, and hateful. “But my little Ferrum . . . you’ll still be a young man when the Night happens. Probably with your own wife and family to share the experience with. . . .”



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The boy couldn't shake the images of insane people fighting in the darkness, setting fires and spilling guts. When terrified, young boys will find something very compelling about mayhem.

The bigger, the sweeter.

"But what does the Night look like?" he asked again. "Does anybody know?"

"Oh, everyone knows what the sky holds," she told him.

But Ferrum didn't. The subject never came to mind before this. He was young and ignorant, curious, and very persistent. From that moment, he would bombard adults with questions about this once-in-a-thousand-years event. He interviewed his parents and teachers and neighborhood adults. And what struck him about their confident answers was that each vision was very similar, but no two were perfectly identical.

Which brought an epiphany that twenty-four years and a considerable amount of education hadn't wrung out of him:

Each eye, no matter how ordinary, inevitably sees its own Night.

Ferrum's grandmother proved to be a flawed prophet. Ferrum became a man, and the Sisters indeed were aligning themselves in accordance with elegant scientific principles. But he stubbornly remained unmarried and childless. There was only Rabiah in his life, and nothing about their relationship seemed secure: Long periods of passionate, desperate love would dissolve with a suddenness that always mystified him, and even when their fight was finished, the tension between them remained so deep and dangerous that a single careless word would surely shatter their love forever.

Their worst battle stemmed directly from the Night. Several years earlier, Ferrum paid a considerable fee to reserve time at an observatory being built for the occasion. The large mirror and assorted optical equipment cost a modest fortune, but the resulting telescope would reach deep into the sky, harvesting details that larger instruments couldn't achieve on an ordinary evening. Ferrum liked to boast about his investment: It meant that so many heartbeats could be lived with one eye pressed against a viewfinder. And because he loved the

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girl so much, he gladly promised that he would share half of his time, or nearly so.

But Rabiah didn't appreciate his charity.

"How much did this cost?" she asked, her tone dismissive, even scornful. "This is a one-in-forever event, and what are you planning to do? Catch a glimpse through a tiny sliver of glass?"

"It's more than a glimpse," he responded. "And more than a sliver of glass, for that matter."

"Come with me instead."

"Where?"

She named a place that he didn't know, and then promised, "My entire family is gathering, and hundreds more too. This is our traditional way of meeting the Night. Don't you think a celebration sounds both fun and appropriate?"

He didn't think so, and Ferrum decided on honesty.

The resulting fight went on for a long, painful time.

He finally had enough. Apologizing for his stubbornness, Ferrum said, "Tell me again. Where's this gathering to be?"

The site was far from any city, on a plain shackled by high hills. Nobody was building giant mirrors, but if Ferrum joined Rabiah, he could bring his father's old hunting telescope to watch the sky. He spent a few moments trying to convince himself that this was best, that it would even be worthwhile. But what would he do with his reserved place in line?

"Sell it," Rabiah advised. "You could make back your investment, and probably more too."

The girl might be right, yes.

"But what happens there? What does your traditional celebration mean?"

Rabiah named favorite foods, old dances and music, and then almost as an afterthought, she mentioned the Night's culminating event.

Ferrum cringed.

"What's wrong?"

"A once-in-forever event, and that's what you do?"

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“I know it might sound silly,” she agreed. But she didn’t act joyful or much in the mood for teasing. “In our history, for as long as anyone remembers, my people have met the Night in a very similar way.”

“How stupid,” he blurted.

No lover would tolerate those words or the tone they were delivered with. But Rabiah’s anger was so large and consuming that she couldn’t speak, giving Ferrum time to begin making amends.

“I don’t mean you’re stupid,” he offered. “I would never say that.”

Then he confessed, “It seems like such a waste, that’s all.”

Finally, he snapped, “This doesn’t make any sense.”

She worked on him with silence and her eyes.

“The event of our lifetime,” he complained, “and you’re letting a tribe of ignorant nomads dictate what you are going to do . . . ?”

Rabiah dropped her gaze.

At last, Ferrum realized how deeply he had hurt her. But he didn’t offer apologies. With the last of his resolve, he told himself that she deserved the truth, and maybe in the next Day, she would thank him.

But then his lover suddenly looked up, and with a dry, almost dead voice, she mentioned, “My cousin will be there.”

“The cousin you slept with?”

Rabiah didn’t rise to the bait. Instead, she just smiled at him. Then for the first time, and last, she told Ferrum, “You are a bright young man, darling. Well-read and thoughtful. But my cousin is smarter than you, and, in ways you’ll never be, he is wonderfully wise.”

Ferrum lost that fight, and as a result, sold his time on the giant telescope. Just as Rabiah predicted, he made a fat profit—enough to pay for their coming travels. Despite his car’s age and several worrisome cracks in the ceramic shell, that is what they drove. Her vehicle’s sordid history would be too much of a distraction. They pretended to be married, spending their first evening at an isolated lodge far from the highway. The nearly full moon was still below the horizon. Even without the benefit of an eclipse, the sky proved dark enough to use his father’s little telescope. There was a bonewood field nearby, recently harvested and usefully bare. Ferrum set the telescope on a flat stump,

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four stubby legs holding the tube and lenses steady. Then he focused on the narrow crescent of the Lost Sister—a nearby world of rock and blazingly hot air that showed itself only at dusk and dawn.

When Rabiah bent to look, Ferrum described what was known and what was guessed.

In the earliest days of Creation, their sun was surrounded by dust and countless half-formed worlds. Collisions and near-collisions shaped the history of those worlds; titanic forces shattered crusts, melting each to its core. Debris was flung this way and that. By chance, one world gathered more than its share of the solar system's metals. Then came the final collision: A rogue body from one of the Sisters struck hard, ripping away fat portions of the stony exterior while leaving the precious iron mixed swirling inside the molten stew that remained.

That miserable world became their home, and its former crust pulled itself into their stony moon.

"We won the iron," he mentioned. "Without it and the other metals, we wouldn't be here."

She had heard his lecture before. But Rabiah could be a good listener, even if her lover repeated what both of them knew.

"And if we didn't have our moon," he continued, "then the stone crust under our feet would be too deep and stubborn for volcanoes to crack open. Without volcanoes, minerals wouldn't be recycled. And our carbon cycle would probably collapse. In the end, this would have become a giant version of the Lost Sister. And I wouldn't have you begging for my affections."

"What did you say?" she asked.

Rabiah was only pretending to listen to him, he assumed.

But then she laughed. "You are the beggar, my dear."

"How can you say that?"

"This business about worlds colliding . . . it's a symbolic tale about lust and intercourse and the like . . ."

Maybe she was right. Soon they were making love on the soft ground beside the stump.

Then later, as Rabiah slept and the moon rose, Ferrum focused

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his telescope on the Twins—ruddy little suns dancing close to one another, illuminating a few dead worlds well beyond the reach of all but the most powerful telescopes.

As he watched the sky, a tiny artificial moon silently spun its way overhead.

Later, he roused his lover and led her to their bed, and they made love again before sleeping longer than they intended. In the morning, they drove fast until their fuel ran low, and then Ferrum picked a random station and parked against an empty nipple. Stepping out of his car, he heard a stranger shouting, “Hello,” to somebody.

Innocently, Ferrum made an agreeable gesture, in case he had met this fellow before.

But the stranger was talking to Rabiah. He smiled and said her name, and she smiled back at him, replying, “Hello, Ocher.”

This was the infamous cousin, Ferrum realized: A heavy man worn down by one or several infirmities. And the woman riding with him looked very much like his wife would look. She was short and fat, and when she saw the young woman smiling at her husband, her expression said everything.

The fat wife turned away, snapping off a few hard words.

But the cousin—Rabiah’s former lover—seemed untroubled. He invested a few moments staring at his replacement, and then he smiled. And suddenly Ferrum found himself grinning too. So this was the cheating husband? The fellow that he’d been jealous of for months? Goodness, he was just a chubby old fool with a homely, nagging wife.

Really, the situation couldn’t have been funnier.

Ferrum suddenly wished they’d brought Rabiah’s car. What did it matter? The image of that invalid and his girlfriend doing anything in the front seat . . . well, it was sad, even pathetic, and how could he have wasted his worries about the two of them . . . ?

An acquaintance from work purchased Ferrum’s time on the new telescope. But before he would agree to the asking price, the buyer wanted to see the equipment and its placement. One evening, the two

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men drove out of the city, to the high hill where teams of engineers fiddled with gears and lenses and the astonishingly large mirror—a highly orchestrated chaos in full swing. Ferrum’s companion didn’t seem especially worried that with just a month left, nothing was finished. Indeed, he spent remarkably little time examining the facility or the fancy equipment that would split the light, directing it into dozens of eyepieces. He didn’t say two words to the experts who liked nothing better than to break from their labors, explaining their narrow discipline to any interested face. No, the fellow seemed most interested in the view behind them. Standing on the highest knoll, on a pile of weathered sandstone, he looked back at their city and the dark swatches of irrigated farmland, bonewood and lickbottom trees dark with the season. And with a matter of fact tone, he declared, “Soon all this will be swept away.”

Ferrum asked, “What do you mean?”

The man’s intentions were obvious, at least to him. So obvious that he said nothing, his mouth closed for a long moment, perhaps expecting his companion to suddenly say, “Oh, swept away. I didn’t hear you with the wind. Yes, I know exactly what you mean.”

But Ferrum didn’t understand, and he asked his question again.

They were workmates, not friends. But Ferrum’s companion was as smart as him, or smarter, and he was definitely better read in matters of history and politics. With a devotion to the past, the co-worker could discuss the ebb and flow of civilizations, the relative strengths of different governments, and the dangers inherent in ignorance and blind trust. He was particularly fond of the great men: Those godly names that everybody recognized, even when few understood the bloody particulars of their glorious lives.

Ferrum’s companion studied him, as if examining his soul for flaws. Then he looked back down the hill, saying to the wind, “The Night will remake the world.”

It was an old sentiment, and perhaps not unexpected.

But Ferrum felt surprised nonetheless. “It’s just darkness,” he muttered. “And we know what we’ll see—”

“Do we?”

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“Of course.” History might not be Ferrum’s favorite terrain, but he felt at ease with the sciences. “I can tell you exactly what you’re going to find when you look through that telescope.”

“So it’s not worth my money?” the man asked.

Ferrum hesitated. Was this a bargaining ploy?

“If you ‘know’ what you’ll see, there’s no point in looking. At the sky, or anything else.” The man offered a wicked little laugh, adding, “That girlfriend of yours. You’ve seen her naked once or twice, so why look at her body again?”

“Enough,” Ferrum warned.

“But do you see my point? When you and I set our eyes on anything, anything at all, we refresh our memories. Make new what is familiar. And if we’re very lucky, we might even see a detail or two that we somehow missed with every past glance.”

For an instant, Rabiah’s wondrous body drifted before Ferrum’s eyes.

Then the man continued, pointing out, “In another month, countless people are going to look through these telescopes and see the sky in a new way. Everyone will witness the Night in its full glory. Unless of course you’re unfortunate enough to be stuck on the Wax Islands or the Gray Continent.”

Those bits of land were on the far, daylight side of the world.

“I agree with you, Ferrum. Intellectually, yes, we know exactly what the Night brings. But if you study history as I have . . . well, there’s only one conclusion: Each Day brings its revolution.”

“Because we expect change.” In a charitable mood, Ferrum would concede this point. “Self-fulfilling prophecies.”

But his companion dismissed that easy answer.

“Do you think something mystical is at work here?” Ferrum asked. “Do you believe in an Almighty hand?”

“What I believe . . .”

Then the wind gusted, and the voice hesitated.

Ferrum looked over his shoulder, tired of their game.

“Explanations don’t matter much,” the fellow claimed. “I accept the possibility that one of our Gods, or even some unrecognized scientific

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principle, might be at work. But mostly, I believe everything changes because nothing can stay the same.” The smile was joyous, the eyes grim. “It is the nature of people. Of history and our world. The old must be swept aside, my friend. And what better place to begin than with the Dawn?”

Ten millions years ago, an elderly shield volcano choked on its own magma, and moments later, a single titanic blast flung rock and dust across the sky. The surrounding countryside was scorched and then buried. Every end of the world saw the sun grow dim, and no doubt there were places where a different Night held sway, too little light finding its way down to hungry leaves and a billion blind, terrified eyes. The resulting winter would have been sudden and years in duration. Countless species must have gone extinct, while others prospered in the ripe chaos. But then the rich dusts finally fell to the ground, and the climate found its new balance, and with the patient hands of wind and rain, the remains of that gutted volcano were gradually carried away.

What remained was a ring of dark mountains, and in the middle, a plain as round as a coin and as flat. The mountains helped keep the country too dry for crops or trees, and most importantly, those rounded peaks practically guaranteed that the skies would remain free of clouds. A few towns were scattered across the wide emptiness—just enough to supply food and water to the crowds coming from the cities. Every little highway was jammed with cars. The sun was high and bright, and driving out onto the plain, Ferrum understood why Rabiah’s tribe had picked this location. He was thinking about the evening to come, anticipation pushing aside every lesser emotion. But then Rabiah said proudly, “Do you know who picked this site for us?”

“Your cousin,” he guessed.

“I have quite a few cousins,” Rabiah reminded him. “But it was Ocher, yes. Of course it was.”

“The cheating husband,” he muttered.

“Why don’t you ever say his name?”

Ferrum replied with a thoughtful silence, and then asked, “How much farther?”



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They arrived at the designated location in the early afternoon. Where a volcanic crater once stood, more than a thousand strangers were building a busy, temporary city. Men were pitching colorful tents, setting up long tables, and testing the fires in a hundred big camp stoves. Women were chatting happily, sweeping out the tents and assembling the beginnings of the evening feast. Children seemed to be everywhere, and Ferrum was glad to see them: The adults used their mother tongue, but the youngsters screamed and complained in the language he knew.

Ferrum had met Rabiah's parents, but it took him a few moments to recognize them now. Instead of the drab clothes of business people, they were dressed in the brilliant robes of their desert tradition, and instead of being reserved for the sake of propriety, they were outgoing, even giddy. They greeted both their daughter and her boyfriend with warm hands and quick kisses. "I was afraid you were going to miss all this," the mother confessed. Her voice was very much like her daughter's, but slowed by an accent that made her words difficult to understand. Turning to Ferrum, she asked, "Did you have trouble finding us?"

Ferrum didn't want to mention oversleeping, since that might bring up the matter of sharing one bed. So he offered a simple, pragmatic lie. "It's my fault. I took a wrong turn at Damp Sand."

"You did not," Rabiah snapped.

Ferrum hesitated.

"We were up late watching the sky," Rabiah confessed.

The mother's eyes twinkled. "More than just sky-watching, I hope."

With a dismissive gesture, Rabiah said, "He did just enough for me. Yes."

Then both women broke into a hard, shared laugh.

Ferrum was embarrassed. He dipped his head while looking at the father, trying to read emotions that hid behind a broad, painfully polite smile.

When he and Rabiah were alone again, he asked, "Why did you say that?"

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“What did I say?” she replied. And then, as if suddenly understanding the simple question, she added, “My parents are thrilled to have a responsible man in their little girl’s life. In fact, I think they adore you. At least a little bit.”

“Adore me?”

“As long as you keep me happy, they will.”

But Rabiah’s happiness was never easy, and to make matters worse, Ferrum had the impression that his own feelings, good or lousy, were inconsequential when it came to their relationship.

The remains of that afternoon brought introductions to cousins and aunts and family friends, plus people who Rabiah didn’t know but who felt curious about this fellow of hers. Almost every name offered was forgotten before the introduction was finished. A hundred polite conversations ended in uncomfortable silence. Soon the faces surrounding Ferrum looked much the same, and he found himself thinking about inbreeding and other uncharitable possibilities.

The feast proved amazing, and miserable. By convention, young men shared the same long tables while the single women were safe at the far end of the field. Strangers filled the pillows beside Ferrum. Most were conversant in his language but few were willing to use it. Foods he had tasted on occasion were suddenly heaped high on his platter-sized plate, every bite laced with spiced salts that burned his mouth and throat, and later, his belly. When the feast was finished, he lugged his swollen carcass to a large black tent that Rabiah had pointed out earlier. “I’ll meet you there,” she had promised. But standing in the tent’s long shadow, it occurred to Ferrum that his lover hadn’t specified an exact time for this meeting. Where was she? Was that her standing over there? But no, Rabiah had been wearing trousers and a simple blouse, while most young women were showing off the gaudy dresses of their home country, legs and arms and the long elegant necks covered with jewelry, their feet balanced on impossibly delicate shoes.

She was testing him, Ferrum hoped.

Because every other possibility seemed more awful.

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Suddenly a pair of young men approached. They wore smiles and tool belts, and the nearest fellow called to him by name before saying, "Come with us."

"Where to?" Ferrum asked.

"Over there," he said with a wave. "She told us you would help us."

"You mean Rabiah?"

Just mentioning the name made both strangers laugh. Then the second man, wrestling with the unfamiliar language, said, "Come. Help."

"With what?"

"The show!" the first man shouted. "We are slow. We need cool hands, please."

Ferrum followed them through the noisy, happy crowd. He couldn't see how he might help, but at least he wasn't standing in one place, waiting for a woman who might never appear again.

"Have I met you already?" he asked the first man.

That deserved another laugh.

"I'm sorry," Ferrum continued. "I don't remember names—"

"Rabiah," the man interrupted.

"Excuse me?"

The stranger stopped and turned, and with his pleasure receding into some other emotion, he said, "You are lucky. Very lucky, you know."

"In what way?"

The second stranger asked a question of his companion.

An answer was offered—an impatient bark of syllables. And then the first stranger turned back to Ferrum, regarding him with a careful gaze before saying, "Or maybe you are not fortunate. Too soon to say, maybe."

Again, the three men walked on. Eventually they fell into the open, and later, far from the celebratory racket, they were standing on a flat-topped little knoll. Suddenly Ferrum understood what was happening, and after a lot of consideration, he still didn't approve. But what else could he do? Perhaps twenty other men were busy with this very important work. Rare skills were on display. What

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Ferrum was qualified to do was uncoil the new copper wires while walking quickly from place to place. It would be best if the job was finished before evening, and the men were thankful for his help. After a while, there was an odd moment when Ferrum completely forgot his old objections. He discovered that he was enjoying this uncoiling and stretching of the wires, and later, the careful planting of long tubes. Then a gentleman that he didn't know smiled at him and said, "Good," and Ferrum's reaction was to smile back and bow a little, saying, "Thank you," with relish.

The sun set before they were finished.

Once, then again, older men approached to complain, mentioning the time remaining and the sorry state of affairs. But the full moon made their work easy enough, and they were done even before the world's slow shadow began to obliterate the sky's brightest light.

Ferrum joyfully accepted the thanks of his new friends, and then he returned alone to the black tent, imagining Rabiah waiting for him. But the tent had been moved or dismantled, and his lover was still missing. Where could she be? He walked about the camp, searching for everything that was lost. He wanted to retreat to the car and grab his telescope, but there wasn't much time left. The moon was already half-consumed, the Sullen Sisters hovering close to its left limb. Ferrum spent a few moments listing the ways that the woman had made his life miserable, and then he stopped walking, closing his eyes while wishing he was anywhere else in the world.

Somebody called his name.

Ferrum turned and opened his eyes, finding a familiar face, and then that face said to him, "You look so very unhappy."

"Hello, Ocher."

"I know where we can find a good telescope," the old man mentioned. "But we don't have very much time. This way, please."

And without hesitation, Ferrum fell in beside his newest friend.

Ocher's telescope was set on flat ground outside the campground. It was no hunter's tool meant to search for herds of poor-lillies and

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fat blackbottoms, but instead it was a precise astronomical instrument with three heavy legs and a broad mirror, tiny gears and motors moving the tube along the same course that the sky took. Ferrum's long first look showed him the brilliant snows of the moon's southern pole—a frigid terrain famous for killing the only explorers to ever set foot on it—and then the world's shadow fell over that wasteland, a rainbow flash marking the sunlight as it passed through the same air he was now breathing in gulps.

“Did you hear?” Ocher asked. “It is raining at home.”

He looked up from the eyepiece. “Now?”

“A colleague called me with the sad news,” his companion allowed. “A squall line is sweeping out of the west. Probably gone before sunrise, but there's going to be a lot of angry souls in its wake.”

Ferrum imagined hundreds of novice astronomers standing beside that expensive, useless telescope, faces glistening with the rain, every sorry voice screaming at the profoundly unfair sky.

His personal gloom began to lift, just a little.

The moon was soon immersed in the night.

Ocher pulled a small timepiece from his shirt pocket, adjusted his telescope's aim and then stepped back again. “If you wish, watch the Sisters vanish.”

“Don't you want to?”

“Oh, I'm not being generous,” said Ocher. “I just want my eyes kept in the dark, to help them adapt.”

Those distant suns looked like twin gemstones, brilliant but cold. Ferrum's vision blurred, but he watched carefully as the lightless bulk of another world rose to meet them. Then thin dry atmosphere made one flicker, then the other, and then the first Sister touched the rim of a crater, and it vanished.

“I hope she's watching,” Ferrum muttered.

“I am sure she is,” Ocher promised. Then he made a low sound, as if intending to say something else . . . or ask his own question, perhaps . . . but that's when the final Sister plunged out of sight, and the lightless air was filled with gasps and exclamations, old prayers and inarticulate screams as old as their species.

## NIGHT CALLS

The Night had come.

Ferrum jumped back from the telescope.

Like a startled animal, he looked up. His eyes chose a random line, and after wiping the eyes dry, he stared as hard as he could into the new sky. But what was he seeing? Somehow his mind had forgotten a thousand lessons of science, and for that delicious moment, he felt scared and happy, and confused, and absolutely enthralled. There was nothing to see; there was nothing but black upon black. That was because there was nothing there. Except for the Sisters and their own sun, the universe was devoid of meaningful light. Eyes a thousand times stronger than Ferrum's would do no better. Only mirrors that were a billion times more powerful could work, and then only when thrown high above the world's atmosphere . . . and even the luckiest of those telescopes would gather in nothing but a few weak photons—odd travelers from regions too distant and ancient to resolve with any confidence whatsoever.

This was the Creation, utterly empty and divinely cold.

Save for this one tiny realm, of course.

“Where is that girl?” he growled.

“Standing directly behind you,” said Rabiah, her deep voice laughing.

Then despite telling himself not to, Ferrum turned, ignoring the sky in order to reach out and grab a body and face that he knew better than he knew anything, including his own sloppy pounding heart.

The three of them stood close together in the absolute Night.

The hollering and chants in the camp gradually fell away, becoming gentle conversation and reflective silence, and at some imprecise point Ocher began to talk, using surprisingly few words to explain the basics of his life's work.

“Has Rabiah told you?” he began. “I'm a failed scientist. I tried physics twice before falling into mathematics. But I'm very good with calculations, and my old school chums use me to test their ideas. ‘Do my equations balance, Ocher? Are they pretty? And are we telling the truth about the universe?’ ”

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“What about the universe?” Ferrum managed.

“It is far larger than we can see,” the genius reported. “There is physical evidence to support that hypothesis. Microwave radiations. Exhausted particles from hot, bright places. Even the shape of the cold holds its clues.” He had a pleasant voice, smooth and almost musical at times. “The true universe is unimaginably grand, and it doesn’t have to be as smooth and empty as we find it here. Hydrogen and helium can pull together, with help. Through simple probability, it can be shown that there must be regions full of suns and worlds like ours, and presumably, worlds very different from the handful that we know well.

“But not our realm, no.

“And so long as we think in small ways, this is where we will be trapped, and for all of our Days.”

A sudden shout interrupted the lecture. From the knoll where Ferrum had helped uncoil wire, someone shouted a single command . . . and then, on that signal, a soft wet woosh could be heard.

Ferrum saw red sparks rising in the darkness.

Rabiah’s warm hand slipped inside his grip, and now she leaned hard against him, waiting for a kiss.

Then the first explosive was detonated above the flat barren plain—a bright greenish light that flung stars in every direction, accompanied by a host of bright sharp blasts.

A cheer rose up with a wave of rockets.

Rabiah had explained the tradition this way: In ancient times, the desert people were never caught unaware of the Night. Their open country was the best place to watch the sky, and when the heavens warned of darkness coming, scarce wood was piled high. When it was impossible to see, great bonfires were set ablaze. The tribes feared that the gods would forget what light was if none could be seen, and that was how people ensured that the Sullen Sisters would find their way to the other side of the moon.

In recent times, bonfires gave way to more interesting pyrotechnics.

Each wave of rockets was bigger than the last, and despite his

## NIGHT CALLS

doubts, Ferrum found himself spellbound. The colors; the noise; the wild patterns burning into his eyes: The show was spectacular and lovely, and thrilling, and he didn't mind that the darkness was being pushed away. He smelled the burnt powder and his own excitement, and he felt Rabiah's wonderful body pressing hard against him. When the fourth wave exploded, he looked into her face. When the fifth broke, he clumsily pawed her. Then came the sixth wave, and he thought to look for Ocher. Her one-time lover was standing beside his telescope, his hands on the tube but his gaze watching the nearer spectacle. Ferrum walked to him. Together, they watched the seventh salvo of rockets head skyward, and just before the carefully timed blasts, he put his mouth against the man's ear, asking, "What did you mean?"

"Mean?" the man replied.

Then neither could hear anything but the noisy rainbows flying overhead.

When the rockets paused, Ferrum said, "If we think in small ways, we will be trapped?"

"Yes," said Ocher.

"But what is a large way to think?"

The eighth flight of rockets was the largest—a thunderous fleet of suicidal machines arcing higher and higher into the smoke-rich sky—and as they watched the grand ascent, Ocher said simply, "Space can be cut, if you know how. If you focus enough energy in the proper ways. And then a brave soul can leap across a trillion light-years in the time it takes one Night to pass."

The heavens were suddenly filled with ornate figures.

Ferrum retreated to the girl again.

"What did you ask him?" said Rabiah.

"What?"

"Did you ask him about me?"

"No," he confessed. "Not at all." Then as the roaring in his ears fell away, Ferrum added, "Ocher was telling me about tomorrow, and about the next revolution to come . . ."



## EVERYONE BLEEDS THROUGH

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### *Jack Skillingstead*

A Denny's at two o'clock in the morning. I tried to contract my world down to a cup of coffee. Stirring in the cream and sugar, focusing on the cup, I was more or less successful at not thinking about Marci back in that hotel room in Seattle. More or less. Okay, less. But past experience suggested it would get easier.

Then a girl-voice said: "Hey, *fuck you!*"

Not to me.

I turned. So did the trucker in a red baseball cap sharing my counter space, and a booth of high school boys.

The "Fuck *you!*" girl was outside, yelling at the taillights of a black F250, the reflectorized Oregon plate flashing when the pickup jolted over a flowerbed on its way out of the parking lot, too fast. The booth kids laughed. Red cap, laconic as hell, turned back to his eggs and *USA Today*.

The girl came in, shouldering through the glass door, fumbling a cigarette. Black leather bomber jacket, a mini, net stockings with stretchy Swiss cheese tears revealing very white thighs, ankle boots. Pixie hair. Too much makeup, and it was streaking around the eyes. A safety pin pierced her right eyebrow. She noticed me staring and stared back, briefly, something hot and mysterious clicking between us. Then she looked away and grabbed a book of matches out of the basket by the cash register.

She sat at the counter, leaving one stool between us. Ordered coffee, lit her cigarette, tapped bitten nails.

"What's your name?" she said to me.

## EVERYONE BLEEDS THROUGH

“John.”

She breathed smoke. “I’m Rena.”

“Hi.”

“I need a ride,” Rena said.

“Hmm.”

“Over the pass,” Rena said.

“I’m not going that way, sorry.”

Without another word to me, she swiveled around and said to the trucker: “I need a ride.”

He *was* going that way.

A short time later he got up to use the bathroom. I felt the girl looking at me, so I looked back. Her face was too pale, shiny damp, the eyes bright in their rings of smudgy black liner.

“I’m Rena,” she said in a dreamy-drugged voice.

“Yep.”

“I want you to drive me. I don’t like that guy. Dale or whateverthefuck.”

“I’m not going over the pass.”

She wavered, and I thought she was about to faint. “Fuck me,” she said, slid off the stool and stumbled to the bathroom.

A minute later the trucker reappeared. He looked around then asked me where the girl went. I told him. He paid his check, waited, got cranky, asked was I sure, waited some more. He was forty or so, thick through the shoulders, heavy-bellied. Still waiting, he splintered a toothpick digging between his molars.

I said, “She was sick.”

Dale or whateverthefuck scowled. “Sick?”

“Yep.”

“How sick?”

I pointed a finger down my throat.

“Screw it,” Dale said. He glanced in the direction of the lady’s room then quickly rolled his newspaper tight under his arm and stalked out.

I finished my coffee and ordered one to go. The counterman brought it in a white Styrofoam cup with a lid. I paid but lingered at the door.

### JACK SKILLINGSTEAD

Rena had been in the bathroom a long time. Her fainty look bothered me. Other things bothered me, too, but I couldn't identify them yet.

There were no other women in the restaurant. So I stepped around to the lady's room and knocked softly.

"Hey, you all right? Rena?"

There was an odd sound on the other side of the door. Like a machine humming, an electric motor. Something. I pushed the door inward. The volume increased. It wasn't a machine.

"Rena?"

I pushed the door open wider and there was Rena in some kind of meditative posture (lotus?), legs pretzeled, backs of wrists on knees, smudgy eyes open and staring at something not in the room. The electric machine humming sound came from her throat. All of that was weird but okay. What bothered me was that she was hovering about eighteen inches above the gray tile, casting a little off-set shadow.

Eventually I closed my mouth.

Rena's eyes refocused and shifted to me. "I need a ride."

"I know."

She stood up, but not the way I would have done it. Rena sort of *flowed* to her feet lithe as a fairy, if you know any fairy's with ripped stockings and smudged eye shadow—I mean any outside certain red-light districts.

She stood inches away, chin pointed at my chest. Her eyes were big and brown and intense.

"John," she said, "you're supposed to take me."

"I know that, too," I replied, and strangely believed it.

We drove north less than a mile and caught the 90 east toward the Cascade Mountains. Freezing rain speckled the windshield and the wipers swept it clear.

"Where exactly are we going?" I asked.

"After my boyfriend."

"The guy in the pickup?"

"Yes."

"Why?"

## EVERYONE BLEEDS THROUGH

“Something has to happen.”

“Like what?”

She leaned close to me, her face practically on my shoulder, and she *sniffed* me. Did it a couple of times then sat back.

“You’re bleeding through,” she said, “but I don’t think you know it yet.”

“What are you talking about?”

“Try closing your eyes.”

I looked at her then back at the road.

“Close your eyes,” she said. “Go ahead. The road’s straight, right?”

“Pretty straight.”

“So do it. Close them *tight* for about two seconds. Not like blinking.”

Silver rain needled in the tunneling high-beams. My body felt weird, like I was in a vivid dream. I closed my eyes.

And . . . *saw*.

Daylight, a cloud-blown autumnal sky. The road was narrow and muddy. The countryside opened wide, green desaturated to something approaching dun. There was a forest in the distance, rising up into foothills out of which thrust the brutal face of a mountain. And it was more than seeing. I felt cold wind on my face and hands—hands that were gripping a polished wooden handle. Whatever contraption I was sitting on jolted over the muddy road. Rena sat next to me wearing a heavy wool cloak with the hood drawn up. She pulled the hood back and smiled. A white scar intersected her left eyebrow. Something whistled and I felt hot steam on the back of my neck.

I opened my eyes.

The wipers swept the windshield clear. My heart pounded with thrilling intensity. The vision translated to freedom in my blood.

“What *was* that?”

“Smell me,” Rena said.

I swung the car into the breakdown lane, stopped, turned the dome light on, looked at her.

“Smell you,” I said.

## JACK SKILLINGSTEAD

“Yes.” She grinned and pulled her shirt open at the throat. “Come close.”

I unbuckled my seatbelt and let it retract, then leaned over, my face close to her exposed neck, my nose practically touching her collarbone. I wanted to touch her with everything I had but kept my hands, awkwardly, hovering away from her leg, her breast.

“What do I smell like?” she asked.

*A girl, youth, promise, joy, temptation without consequences, FUN.*  
I said, “It’s pine and something else. Cinnamon?”

“Oh you smell the cinnamon!”

“More like I can taste it. What’s it mean, what happened when I closed my eyes? Tell me.”

“There are other worlds,” Rena said. “A lot of them. All running more or less parallel. Events run parallel, too. Motifs endlessly repeated. Even the people are the same. You and I, here and now, there and then. A thousand theres, and thousand thens. Ten thousand. All occurring simultaneously. Once in a while your core personality bleeds across from the home place, the center. It happens to everyone eventually. They’re the ones who look like they know something nobody else knows. It’s kind of complicated. And—what’s wrong?”

I said, “For a second I remembered you. I mean really remembered you.”

Rena’s face turned into a huge smile and a pair of drowning pool eyes. She flung herself at me and kissed my mouth. And I was gone, immortal, no longer contingent. Then she bounced back to her side of the seat and laughed at me.

“Johnny,” she said, “I knew you would.”

Now picture a woman named Marci Welch back in the Kennedy Hotel, Seattle, Washington. Her hair can be long or short (it’s short) her eyes blue or green or brown, it doesn’t matter. The main thing to picture about Marci is that she’s alone. Maybe she’s finishing off that bottle of room service Merlot. Maybe she’s in that big bed, occupying a fractional portion of mattress space, drinking the wine and watching pay-per-view. Or you could think of her lying there in the

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dark by herself. Or standing in the shower. Or at the mock Edwardian writing desk concentrating over a note. A woman with twenty five years of unhappiness named Roger crowding her towards fifty. In fear of her lost powers, her loneliness, her shrinking future. Alone in the Kennedy Hotel where she thought she'd flown from misery at last. Marci the trapeze artist. Flying without a net, leaving Roger behind forever. Flying with the trapeze artist's faith that her companion, the one who was so good in practice, would catch her chalked hands when showtime arrived. So, in or out of the bed, drinking or not drinking the Merlot, in or not in the shower, sitting at the writing desk or not sitting at the writing desk. It doesn't matter. That was maybe the smallest room she had ever been in but with the biggest exit.

Now Rena. Parked in the breakdown lane I'd gotten a flash. Not even really a memory. More like a sudden pulsation of significant emotion. It started when I smelled her throat. Add the quickening of my blood while we sat there and she explained about simultaneous worlds. Then something electric surged through me and ignited an image. That's a lake. And sunlight on a white-painted porch. Rena in a flowing thing apparently woven out of light. Rena herself. This is our place. We made it, outside and beyond all other illusions. And the non-verbal operationally proportioned emotional theme? *Love*. As in, I've known you forever and I love you. Wholly and without reserve, all barriers down, the moat drained, guards sent home, portcullis raised and locked open, all my defensive weapons acquired in life (lives?) reforged to plowshares. It smells nice here. Piney. And the flavor of cinnamon tea.

We came up fast on a tractor trailer rig. The Subaru's headlights glinted on the plates, Washington, Idaho, Montana. I swung into the opposite lane and accelerated to pass. In moments I'd tucked back into the eastbound lane, which climbed and curved until the rig all strung with amber lights was lost behind us.

"He's going to be stopped. Just a little farther."

"How do you know that?" I asked.

## JACK SKILLINGSTEAD

“I just do, dear.”

A minute later a pickup appeared ahead of us, halted in the breakdown lane.

“Pull in behind him,” Rena said. Then, with a puzzled look: “But not too close. I don’t know why.”

I did that.

F-250, Oregon plate, the left rear end resting on the rim of a shredded tire. We sat fifty yards or so behind it, engine idling, rain falling through the headlights. No boyfriend in sight.

“Where is he?”

Rena shrugged. “I don’t know everything.”

She popped the passenger door and climbed out. Seizing a moment of passing lucidity and guilt I opened my cell phone but got only a faded signal. Maybe if I wandered around a little I could pick it up. But I left the phone in the car when I got out to join Rena. I felt *free*. And the guilt and fear that had been building around Marci sloughed away and struck me as inconsequential. We were all bigger than what we appeared.

My breath steamed in the mountain air. The rain fell icy cold on my head and neck. Rena and I cast long black shadows in the fanned glare of the Subaru’s headlamps.

A car went by, then another, then it was quiet on the pass. Rena’s drippy pixie hair was flattened to her skull. Still cute, though. She closed her eyes tight. A minute or so elapsed.

“Rena?”

“Wait.”

I sighed deeply then closed my eyes, too, and another world opened around me. This time it wasn’t mountains and grassy vistas. I found myself on a broad promenade encircling midway up a building that might have been a mile tall. Rena was there and we were standing next to an abandoned rickshaw-like contraption with a broken wheel. The sky was painted with sunset clouds.

You couldn’t see the rest of the city unless you stepped right up to the retaining wall that enclosed the promenade. We were that high up on the side of this stupendous structure. Not a sky scraper

## EVERYONE BLEEDS THROUGH

but a sky *penetrater*. The rest of the city spread out below us, densely packed to the horizon in every direction, blocks and towers and spires and buttresses, plumes of venting steam, checkerboard lights, traffic crawling between the buildings like sluggish yellow blood, a distant rumble and clangor.

I looked away, feeling kind of flickery.

Rena smiled. "You're not doing too well this time. You better open your eyes."

"They are open."

"*Here* they are. But not back on the road. You're too porous. I doubt you even know what's going on."

"I'm okay," I said, though I did feel unsteady and only half comprehended the situation. If that.

"Yes, you're okay. But don't move, huh?"

She walked away. The promenade was wide as a superhighway and empty except for us. Something big came around the curve, lumbering but fast, like Dumbo the flying elephant. It even looked a bit like an elephant, only the trunk was some kind of articulated cable thick as a telephone pole and bent like an inverted question mark. On the fluted end of it sat a little man in a blue helmet, hands manipulating a pair of levers.

I was safe by the wall, but Rena had just stepped into Dumbo's path.

I bolted for her, yelling, and my eyes opened in the first world, the world of mountain darkness and icy rain. Instead of a midget-driven elephant there came roaring out of the dark curve of the pass a tractor trailer rig, white lights like a scream. The driver started to swing towards the breakdown lane, but he still would have hit Rena if I hadn't yanked her out of the way.

Tumbled on the road, my body covering Rena, I saw the boyfriend. He had his cell phone in hand, keypad lit up periwinkle, his face an astonished white mask just before the semi (missing my Subaru by a comfortable margin) plowed him and his Ford into the side of the mountain. I guess he had a faded signal, too, and had gone off to try to unfade it.



## JACK SKILLINGSTEAD

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Dale or whateverthefuck slumped against the fender of his cab, red hat clutched in his ape's paw, weeping at the mangled pickup and the dead man. Rain fell continuously. Rena and I stood on the other side of the road.

"Was *that* supposed to happen?" I said.

"I guess so."

She looked like she had invisible sandbags slung over her shoulders.

"When you bleed between worlds," she said, "the trajectories of Fate sharpen. All this makes some kind of had-to-be sense, or it's supposed to."

I held her hand and she squeezed hard and pulled me around. "Hey, Johnny—"

I looked at her wet face.

"I'm slipping away, I feel it."

"Don't," I said.

"Can't help it. We'll meet again. We already have, already will. Kiss me before we forget who we are."

I kissed her mouth, but midway through it I began to feel strange about her, then stranger. We broke apart from each other and I couldn't really see her face anymore. Dark rain swept between us. Then Rena screamed and lurched toward the wreckage, calling some lost boy's name in her cracking voice.

I sat alone in my car and didn't remember any of the strange stuff. My head hurt. Rain ticked on the roof. Beyond the flooded windshield blue and red and white lights strobed and highway patrolmen in rain slickers milled around watching the tow truck. Rena was in the back-seat of one of the cruisers. And I found myself alone in the unguarded fortress of my heart. Moat drained, portcullis raised, etc. Piranha flopped in the mud. A lonely wind blew through the open gate. That's what was left over. It's what you get for picking up a hitcher. The end of fun and games, not the beginning. When I shut my eyes I saw only the usual dark.

## EVERYONE BLEEDS THROUGH

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I started the car, turned around and headed toward Seattle.

As soon as I cleared the fade zone I speed dialed Marci's cell. It went straight to voice mail. I retrieved the number for the Kennedy Hotel and asked the front desk to connect me to Marci's room. The phone started ringing and went on ringing. Well it was almost dawn, and she might have been a deep sleeper. I wouldn't know, having always left before the night was over, especially this final time; I used to be that way. The phone rang and rang, and inside I was raveled and alone, subjected to memory. That phone rang until the front desk informed me needlessly that the room wasn't answering, and I told the desk clerk he better get up there with a passkey. Maybe I shouted it. Trajectories of Fate. Everybody bleeds through. Eventually.

It's nice here on the lake. The water is sapphire, because that's Rena's favorite color. It looks painted. This is a shifting place where memories converge around the core of our beings. A safe place where I am myself and Rena is herself, and we can sort things out. It's beautiful here but even when Rena steps through the door to join me there will remain a terrible aspect to it. There are a *lot* of things to sort out.

The door opens behind me. I smell cinnamon.

## ART OF WAR

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### *Nancy Kress*

*“Return fire!” the colonel ordered, bleeding on the deck of her ship, ferocity raging in her nonetheless controlled voice.*

*The young and untried officer of the deck cried, “It won’t do any good, there’s too many—”*

*“I said fire, Goddammit!”*

*“Fire at will!” the OD ordered the gun bay, and then closed his eyes against the coming barrage, as well as against the sight of the exec’s mangled corpse. Only minutes left to them, only seconds . . .*

*A brilliant light blossomed on every screen, a blinding light, filling the room. Crewmen, those still standing on the battered and limping ship, threw up their arms to shield their eyes. And when the light finally faded, the enemy base was gone. Annihilated as if it had never existed.*

*“The base . . . it . . . how did you do that, ma’am?” the OD asked, dazed.*

*“Search for survivors,” the colonel ordered, just before she passed out from wounds that would have killed a lesser soldier, and all soldiers were lesser than she . . .*

No, of course it didn’t happen that way. That’s from the holo version, available by ansible throughout the Human galaxy forty-eight hours after the Victory of 149-Delta. Author unknown, but the veteran actress Shimira Coltrane played the colonel (now, of course, a general). Shimira’s brilliant green eyes were very effective, although not accurate. General Anson had deflected a large meteor to crash into the

## ART OF WAR

enemy base, destroying a major Teli weapons store and much of the Teli civilization on the entire planet. It was an important Human victory in the war, and at that point we needed it.

What happened next was never made into a holo. In fact, it was a minor incident in a minor corner of the Human-Teli war. But no corner of a war is minor to the soldiers fighting there, and even a small incident can have enormous repercussions. I know. I will be paying for what happened on 149-Delta for whatever is left of my life.

This is not philosophical maundering nor constitutional gloom. It is mathematical fact.

Dalo and I were just settling into our quarters on the *Scheherezade* when the general arrived, unannounced and in person. Crates of personal gear sat on the floor of our tiny sitting room, where Dalo would spend most of her time while I was downside. Neither of us wanted to be here. I'd put in for a posting to Terra, which neither of us had ever visited, and we were excited about the chance to see, at long last, the Sistine Chapel. So much Terran art has been lost in the original, but the Sistine is still there, and we both longed to gaze up at that sublime ceiling. And then I had been posted to 149-Delta.

Dalo was kneeling over a box of *mutomati* as the cabin door opened and an aide announced, "General Anson to see Captain Porter, *ten-hut!*"

I sprang into a salute, wondering how far I could go before she recognized it as parody.

She came in, resplendent in full-dress uniform glistening with medals, flanked by two more aides, which badly crowded the cabin. Dalo, calm as always, stood and dusted *mutomati* powder off her palms. The general stared at me bleakly. Her eyes were shit brown. "At ease, soldier."

"Thank you, ma'am. Welcome, ma'am."

"Thank you. And this is . . ."

"My wife, Dalomanimarito."

"Your wife."

"Yes, ma'am."

NANCY KRESS

“They didn’t tell me you were married.”

“Yes, ma’am.” To a civilian, obviously. Not only that, a civilian who looked . . . I don’t know why I did it. Well, yes, I do. I said, “My wife is half Teli.”

And for a long moment she actually looked uncertain. Yes, Dalo has the same squat body and light coat of hair as the Teli. She is genemod for her native planet, a cold and high-gravity world, which is also what Tel is. But surely a general should know that interspecies breeding is impossible—especially *that* interspecies breeding? Dalo is as human as I.

The general’s eyes grew cold. Colder. “I don’t appreciate that sort of humor, captain.”

“No, ma’am.”

“I’m here to give you your orders. Tomorrow at oh five hundred hours your shuttle leaves for downside. You will be based in a central Teli structure that contains a large stockpile of stolen Human artifacts. I have assigned you three soldiers to crate and transport upside anything that you think has value. You will determine which objects meet that description and, if possible, where they were stolen from. You will attach to each object a full statement with your reasons, including any applicable identification programs—you have your software with you?”

“Of course, ma’am.”

“A C-112 near-AI will be placed at your disposal. That’s all.”

“Ten-hut!” bawled one of the aides. But by the time I had gotten my arm into a salute, she was gone.

“Jon,” Dalo said gently. “You didn’t have to do that.”

“Yes, I did. Did you see the horror on the aides’ faces when I said you were half-Teli?”

She turned away. Suddenly frightened, I caught her arm. “Dear heart—you knew I was joking? I didn’t offend you?”

“Of course not.” She nestled in my arms, affectionate and gentle as always. Still, there is a diamond-hard core under all that sweetness. The general had clearly never heard of her before, but Dalo is one of the best mutomati artists of her generation. Her art has moved me to tears.

## ART OF WAR

"I'm not offended, Jon, but I do want you to be more careful. You were baiting General Anson."

"I won't have to see her while I'm on assignment here. Generals don't bother with lowly captains."

"Still—"

"I hate the bitch, Dalo."

"Yes. Still, be more circumspect. Even be more *pleasant*. I know what history lies between you two but nonetheless she is—"

"Don't say it!"

"—after all, your mother."

The evidence of the meteor impact was visible long before the shuttle landed. The impactor had been fifty meters in diameter, weighing roughly 60,000 tons, composed mostly of iron. If it had been stone, the damage wouldn't have been nearly so extensive. The main base of the Teli military colony had been vaporized instantly. Subsequent shockwaves and airblasts had produced firestorms that raged for days and devastated virtually the entire coast of 149-Delta's one small continent. Now, a month later, we flew above kilometer after kilometer of destruction.

General Anson had calculated when her deflected meteor would hit and had timed her approach to take advantage of that knowledge. Some minor miscalculation had led to an initial attack on her ship, but before the attack could gain force, the meteor had struck. Why hadn't the Teli known that it was coming? Their military tech was as good as ours, and they'd colonized 149-Delta for a long time. Surely they did basic space surveys that tracked both the original meteor trajectory and Anson's changes? No one knew why they had not counter-deflected, or at least evacuated. But, then, there was so much we didn't know about the Teli.

The shuttle left the blackened coast behind and flew toward the mountains, skimming above acres of cultivated land. The crops, I knew, were rotting. Teli did not allow themselves to be taken prisoner, not ever, under any circumstances. As Human forces had forced their way into successive areas of the continent, the agricultural colony,

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deprived of its one city, had simply committed suicide. The only Teli left on 168-Beta occupied those areas that United Space Forces had not yet reached.

That didn't include the Citadel.

"Here we are, Captain," the pilot said, as soldiers advanced to meet the shuttle. "May I ask a question, sir?"

"Sure," I said.

"Is it true this is where the Teli put all that art they stole from humans?"

"Supposed to be true." If it wasn't, I had no business here.

"And you're a . . . a art historian?"

"I am. The military has some strange nooks and crannies."

He ignored this. "And is it true that the Taj Mahal is here?"

I stared at him. The Teli looted the art of Terran colonies whenever they could, and no one knew why. It was logical that rumors would run riot about that. Still . . . "Lieutenant, the Taj Mahal was a building. A huge one, and on Terra. It was destroyed in the twenty-first century Food Riots, not by the Teli. They've never reached Terra."

"Oh," he said, clearly disappointed. "I heard the Taj was a sort of holo of all these exotic sex positions."

"No."

"Oh, well." He sighed deeply. "Good luck, Captain."

"Thank you."

The Citadel—our Human name for it, of course—turned out to be the entrance into a mountain. Presumably the Teli had excavated bunkers in the solid rock, but you couldn't tell that from the outside. A veteran NCO met me at the guard station. "Captain Porter? I'm Sergeant Lu, head of your assignment detail. Can I take these bags, sir?"

"Hello, Sergeant." He was ruddy, spit-and-polish military, with an uneducated accent—obviously my "detail" was not going to consist of any other scholars. They were there to do grunt work. But Lu looked amiable and willing, and I relaxed slightly. He led me to my quarters, a trapezoid-shaped, low-ceilinged room with elaborately etched stone walls and no contents except a human bed, chest, table, and chair.

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Immediately I examined the walls, the usual dense montage of Teli symbols that were curiously evocative even though we didn't understand their meanings. They looked hand-made, and recent. "What was this room before we arrived?"

Lu shrugged. "Don't know what any of these rooms were to the tellies, sir. We cleaned 'em all out and vapped everything. Might have been booby-trapped, you know."

"How do we know the whole Citadel isn't booby-trapped?"

"We don't, sir."

I liked his unpretentious fatalism. "Let's leave this gear here for now—I'd like to see the vaults. And call me Jon. What's your first name, Sergeant?"

"Ruhan. Sir." But there was no rebuke in his tone.

The four vaults were nothing like I had imagined.

Art, even stolen art—maybe especially stolen art—is usually handled with care. After all, trouble and resources have been expended to obtain it, and it is considered valuable. This was clearly not the case with the art stolen by the Teli. Each vault was a huge natural cave, with rough stone walls, stalactites, water dripping from the ceiling, fungi growing on the walls. And except for a small area in the front where the AI console and a Navy-issue table stood under a protective canopy, the enormous cavern was jammed with huge, toppling, six-and-seven-layer-deep piles of . . . *stuff*.

Dazed, I stared at the closest edge of that enormous junkyard. A torn plastic bag bearing some corporate logo. A broken bathtub painted in swirling greens. A child's bloody shoe. Some broken goblets of titanium, which was almost impossible to break. A hand-embroidered shirt from 78-Alpha, where such handwork is a folk art. A cheap set of plastic dishes decorated with blurry prints of dogs. A child's finger painting. What looked like a Terran prehistoric fertility figure. And, still in its original frame and leaning crazily against an obsolete music cube, Philip Langstrom's priceless abstract "Ascent of Justice," which had been looted from 46-Gamma six years ago in a surprise Teli raid. Water spots had rotted one corner of the canvas.

"Kind of takes your breath away, don't it?" Lu said. "What a bunch



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of rubbish. Look at that picture in the front there, sir—can't even tell what it's supposed to be. You want me to start vapping things?"

I closed my eyes, feeling the seizure coming, the going under. I breathed deeply. Went through the mental cleansing that my serene Dalo had taught me, *kai lanu kai lanu* breathe . . .

"Sir? Captain Porter?"

"I'm fine," I said. I had control again. "We're not vapping *anything*, Lu. We're here to study all of it, not just rescue some of it. Do you understand?"

"Whatever you say, sir," he said, clearly understanding nothing.

But, then, neither did I. All at once my task seemed impossible, overwhelming. "Ascent of Justice" and a broken bathtub and a bloody shoe. *What* in hell had the Teli considered art?

*Kai lanu kai lanu* breathe . . .

The first time I went under, there had been no Dalo to help me. I'd been ten years old and about to be shipped out to Young Soldiers' Camp on Aires, the first moon of 43-Beta. Children in their little uniforms had been laughing and shoving as they boarded the shuttle, and all at once I was on the ground, gasping for breath, tears pouring down my face.

"What's wrong with him?" my mother said. "Medic!"

"Jon! Jon!" Daddy said, trying to hold me. "Oh gods, *Jon!*"

The medic rushed over, slapped on a patch that didn't work, and then I remember nothing except the certainty that I was going to die. I knew it right up until the moment I could breathe again. The shuttle had left, the medic was packing up his gear without looking at my parents, and my father's arms held me gently.

My mother stared at me with contempt. "You little coward," she said. They were the last words she spoke to me for an entire year.

"*Why the Space Navy?*" Dalo would eventually ask me, in sincere confusion. "After all the other seizures . . . the way she treated you each time . . . Jon, you could have taught art at a university, written scholarly books . . ."

"I had to join the Navy," I said, and knew that I couldn't say more

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without risking a seizure. Dalo knew it, too. Dalo knew that the doctors had no idea why the conventional medications didn't touch my condition, why I was such a medical anomaly. She knew everything and loved me anyway, as no one had since my father's death when I was thirteen. She was my lifeline, my sanity. Just thinking about her aboard the *Scheherezade*, just knowing I would see her again in a few weeks, let me concentrate on the bewildering task in front of me in the dripping, moldy Teli vault filled with human treasures and human junk.

And with any luck, I would not have to encounter General Anson again. For any reason.

A polished marble doll. A broken commlink on which some girl had once painted lopsided red roses. An exquisite albastron, Eastern Mediterranean fifth century B.C., looted five years ago from the private collection of Fahoud al-Ashan on 71-Delta. A forged copy of Lucca DiChario's "Menamarti," although not a bad forgery, with a fake certificate of authenticity. Three more embroidered baby shoes. A handmade quilt. Several holo cubes. A hair comb. A music-cube case with holo-porn star Shiva on the cover. Degas's exquisite "Danseuse Sur Scene," which had vanished from a Terran museum a hundred years ago, assumed to be in an off-Earth private collection somewhere. I gaped at it, unbelieving, and ran every possible physical and computer test. It was the real thing.

"Captain, why do we gotta to measure the exact place on the floor of every little piece of rubbish?" whined Private Blanders. I ignored her. My detail had learned early that they could take liberties with me. I had never been much of a disciplinarian.

I said, "Because we don't know which data is useful and which not until the computer analyzes it."

"But the location don't matter! I'm gonna just estimate it, all right?"

"You'll measure it to the last fraction of a centimeter," Sergeant Lu said pleasantly, "and it'll be accurate, or you're in the brig, soldier. You got that?"

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“Yes, sir!”

Thank the gods for Sergeant Lu.

The location was important. The AI’s algorithms were starting to show a pattern. Partial as yet, but interesting.

Lu carried a neo-plastic sculpture of a young boy over to my table and set it down. He ran the usual tests and the measurements appeared in a display screen on the C-112. The sculpture, I could see from one glance, was worthless as both art or history, an inept and recent work. I hoped the sculptor hadn’t quit his day job.

Lu glanced at the patterns on my screen. “What’s that, then, sir?”

“It’s a fractal.”

“A what?”

“Part of a pattern formed by behavior curves.”

“What does it mean?” he asked, but without any real interest, just being social. Lu was a social creature.

“I don’t know yet what it means, but I do know one other thing.” I switched screens, needing to talk aloud about my findings. Dalo wasn’t here. Lu would have to do, however inadequately. “See these graphs? These artifacts were brought to the vault by different Teli, or groups of Teli, and at different times.”

“How can you tell that, sir?” Lu looked a little more alert. Art didn’t interest him, but the Teli did.

“Because the art objects, as opposed to the other stuff, occurs in clusters through the cave—see here? And the real art, as opposed to the amateur junk, forms clusters of its own. When the Teli brought back Human art from raids, some of the aliens knew—or had learned—what qualified. Others never did.”

Lu stared at the display screen, his red nose wrinkling. How did someone named “Ruhan Lu” end up with such a ruddy complexion?

“Those lines and squiggles—” he pointed at the Ebenfeldt equations at the bottom of the screen “—tell you all that, sir?”

“Those squiggles plus the measurements you’re making. I know where some pieces were housed in Human colonies so I’m also tracking the paths of raids, plus other variable like—”

The Citadel shook as something exploded deep under our feet.

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“Enemy attack!” Lu shouted. He pulled me to the floor and threw his body across mine as dirt and stone and mold rained down from the ceiling of the cave. *Die I was going to die . . .* “Dalo!” I heard myself scream and then, in the weird way of the human mind, came one clear thought out of the chaos: *I won’t get to see the Sistine Chapel after all.* Then I heard or thought nothing as I went under.

I woke in my Teli quarters in the Citadel, grasping and clawing my way upright. Lu laid a hard hand on my arm. “Steady, sir.”

“Dalo! The *Scheherezade!*”

“Ship’s just fine, sir. It was a booby-trap buried somewhere in the mountain, but Security thinks most of it fizzled. Place’s a mess but not much real damage.”

“Blanders? Cozinski?”

“Two soldiers are dead but neither one’s our detail.” He leaned forward, hand still on my arm. “What happened to you, sir?”

I tried to meet his eyes and failed. The old shame flooded me, the old guilt, the old defiance—all here again. “Who saw?”

“Nobody but me. Is it a nerve disease, sir? Like Ransom Fits?”

“No.” My condition had no discoverable physical basis, and no name except my mother’s, repeated over the years. *Coward.*

“Because if it’s Ransom Fits, sir, my brother has it and they gave him meds for it. Fixed him right up.”

“It’s not Ransom. What are the general orders, Lu?”

“All hands to carry on.”

“More booby traps?”

“I guess they’ll look, sir. Bound to, don’t you think? Don’t know if they’ll find anything. My friend Sergeant Andropov over in Security says the mountain is so honey-combed with caves underneath these big ones that they could search for a thousand years and not find everything. Captain Porter—if it happens again, with you I mean, is there anything special I should do for you?”

I did meet his eyes, then. Did he know how rare his gaze was? No, he did not. Lu’s honest, conscientious, not-very-intelligent face showed nothing but pragmatic acceptance of the situation. No

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disgust, no contempt, no sentimental pity, and he had no idea how unusual that was. But I knew.

“No, Sergeant, nothing special. We’ll just carry on.”

“Aye, aye, sir.”

If any request for information came down from General Anson’s office, I never received it. No request for a report on damage to the art vaults, or on impact to assignment progress, or on personnel needs. Nothing.

The second booby trap destroyed everything in Vault A.

It struck while I was upside on the *Scheherezade*, with Dalo on a weekend pass after a month of fourteen-hour days in the vault. Lu comlinked me in the middle of the night. The screen on the bulkhead opposite our bed chimed and brightened, waking us both. I clutched at Dalo.

“Captain Porter, sir, we had another explosion down here at oh one thirty-six hours.” Lu’s face was black with soot. Blood smeared one side of his face. “It got Vault A and some of the crew quarters. Private Blanders is dead, sir. The AI is destroyed, too. I’m waiting on your orders.”

I said to the commlink, “Send, voice only . . .” My voice came out too high and Dalo’s arm went around me, but I didn’t go under. “Lu, is the quake completely over?”

“Far as we know, sir.”

“I’ll be downside as soon as I can. Don’t try to enter Vault A until I arrive.”

“Yes, sir.”

I broke the link, turned in Dalo’s arms, and went under.

When the seizures stopped, I went downside.

We had nearly finished cataloguing Vault A when it blew. Art of any value had already been crated and moved, and of course all my data was backed up on both the base AI and on the *Scheherezade*. For the first time, I wondered why I had been given a C-112 of my own in the first place. A near-AI was expensive, and there was a war on.

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Vault B was pretty much a duplicate of Vault A, a huge natural cavern dripping water and sediments on a packed-solid jumble of human objects. A carved fourteenth-century oak chest, probably French, that some rich Terran must have had transported to a Human colony. Hand-woven *dbeni* from 14-Alpha. A cooking pot. A samurai sword with embossed handle. A holo cube programmed with porn. Mondrian's priceless *Broadway Boogie-Woogie*, mostly in unforgivable tatters. A cheap, mass-produced jewelry box. More shoes. A Paul LeFort sculpture looted from a pleasure craft, the *Princess of Mars*, two years ago. A brass menorah. The entire contents of the Museum of Colonial art on 33-Delta—most of it worthless but a few pieces showing promise. I hoped the young artists hadn't been killed in the Teli raid.

Three days after Lu, Private Cozinski, and I began work on Vault B, General Anson appeared. She had not attended Private Blanders's memorial service. I felt her before I saw her, her gaze boring into the back of my neck, and I closed my eyes.

*Kai lanu kai lanu* breathe . . .

"Ten-hut!"

Lu and Cozinski had already sprung to attention. I turned and saluted. Breathe . . . *kailanukailanu please gods not in front of her* . . .

"A word, captain."

"Yes, ma'am."

She led the way to a corner of the vault, walking by Tomiko Mahuto's "Morning Grace," one of the most beautiful things in the universe, without a glance. Water dripped from the end of a stalactite onto her head. She shifted away from it without changing expression. "I want an estimate of how much longer you need to be here, captain."

"I've filed daily progress reports, ma'am. We're on the second of four vaults."

"I read all reports, captain. How much longer?"

"Unless something in the other two vaults differs radically from Vaults A and B, perhaps another three months."

"And what will your 'conclusions' be?"

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She had no idea how science worked, or art. “I can’t say until I have more data, ma’am.”

“Where does your data point so far?” Her tone was too sharp. Was I this big an embarrassment to her, that she needed me gone before my job was done? I had told no one about my relationship to her, and I would bet my last chance to see the Sistine Chapel that she hadn’t done so, either.

I said carefully, “There is primary evidence, not yet backed up mathematically, that the Teli began over time to distinguish Human art objects from mere decorated, utilitarian objects. There is also some reason to believe that they looted our art not because they liked it but because they hoped to learn something significant about us.”

“Learn something significant from broken bathtubs and embroidered baby shoes?”

I blinked. So she *had* been reading my reports, and in some detail. Why?

“Apparently, ma’am.”

“What makes you think they hoped to learn about us from this rubbish?”

“I’m using the Ebenfeldt equations in conjunction with phase-space diagrams for—”

“I don’t need technical mumbo-jumbo. What do you think they tried to learn about Humans?”

“Their own art seems to have strong religious significance. I’m no expert on Teli work, but my roommate at the university, Forrest Jamili, has gone on to—”

“I don’t care about your roommate,” she said, which was hardly news. I remembered the day I left from the university, possibly the most terrified and demoralized first-year ever, how I had gone under when she had said to me—

*Kai lanu kai lanu breathe breathe . . .*

I managed to avoid going under, but just barely. I quavered, “I don’t know what the Teli learned from our art.”

She stared at my face with contempt, spun on her boot heel, and left.

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That night I began to research the deebees on Teli art. It gave me something to do during the long, insomniac hours. Human publications on Teli art, I discovered, had an odd, evasive, overly careful feel to them. Perhaps that was inevitable; ancient Athenians commentators had to watch what they said publicly about Sparta. In wartime, it took very little to be accused of giving away critical information about the enemy. Or of giving them treasonous praise. In no one's papers was this elliptical quality more evident than in Forrest Jamili's, and yet something was clear. Until now, art scholars had been building a vast heap of details about Teli art. Forrest was the first to suggest a viable overall framework to organize those details.

It was during one of these long and lonely nights, desperately missing Dalo, that I discovered the block on my access codes. I couldn't get into the official records of the meteor deflection that had destroyed the Teli weapons base and brought General Anson the famous Victory of 149-Delta.

Why? Because I wasn't a line officer? Perhaps. Or perhaps the records involved military security in some way. Or perhaps—and this was what I chose to believe—she just wanted the heroic, melodramatic holo version of her victory to be the only one available. I didn't know if other officers could access the records, and I couldn't ask. I had no friends among the officers, no friends here at all except Lu.

On my second leave upside, Dalo said, "You look terrible, dear heart. Are you sleeping?"

"No. Oh, Dalo, I'm so glad to see you!" I clutched her tight; we made love; the taut fearful ache that was my life downside eased. Finally. A little.

Afterward, lying in the cramped bunk, she said, "You've found something unexpected. Some correlation that disturbs you."

"Yes. No. I don't know yet. Dalo, just talk to me, about anything. Tell me what you've been doing up here."

"Well, I've been preparing materials for a new *mutomati*, as you



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know. I'm almost ready to begin work on it. And I've made a friend, Susan Finch."

I tried not to scowl. Dalo made friends wherever she went, and it was wrong of me to resent this slight diluting of her affections.

"You would like her, Jon," Dalo said, poking me and smiling. "She's not a line officer, for one thing. She's ship's doctor."

In my opinion, doctors were even worse than line officers. I had seen so many doctors during my horrible adolescence. But I said, "I'm glad you have someone to be with when I'm downside."

She laughed. "Liar." She knew my possessiveness, and my flailing attempts to overcome it. She knew everything about me, accepted everything about me. In Dalo, now my only family, I was the luckiest man alive.

I put my arms around her and held on tight.

The Teli attack came two months later, when I was halfway through Vault D. Six Teli warships emerged sluggishly from subspace, moving at half their possible speed. Our probes easily picked them up and our fighters took them out after a battle that barely deserved the name. Human casualties numbered only seven.

"Shooting fish in a barrel," Private Cozinski said as he crated a Roman Empire bottle, third century C.E., pale green glass with seven engraved lines. It had been looted from 189-Alpha four years ago. "Bastards never could fight."

"Not true," said the honest Sergeant Lu. "Teli can fight fine. They just didn't."

"That don't make sense, Sergeant."

And it didn't.

Unless . . .

All that night I worked in Vault D at the computer terminal which had replaced my free-standing C-112. The terminal linked to both the downside system and the deebies on the *Scheherezade*. Water dripped from the ceiling, echoing in the cavernous space. Once something like a bat flew from some far recess. I kept slapping on stim patches to stay alert, and feverishly calling up different programs, and doing my

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best to erect cybershields around what I was doing.

Lu found me there in the morning, my hands shaking, staring at the display screens. “Sir? Captain Porter?”

“Yes.”

“Sir? Are you all right?”

Art history is not, as people like General Anson believe, a lot of dusty information about a frill occupation interesting to only a few effetes. The Ebenfeldt equations transformed art history, linking the field to both behavior and to the mathematics underlying chaos theory. Not so new an idea, really—the ancient Greeks used math to work out the perfect proportions for buildings, for women, for cities, all profound shapers of human behavior. The creation of art does not happen in a vacuum. It is linked to culture in complicated, nonlinear ways. Chaos theory is still the best way to model nonlinear behavior dependent on small changes in initial conditions.

I looked at three sets of mapped data. One, my multi-dimensional analysis of Vaults A through D, was comprehensive and detailed. My second set of data was clear but had a significant blank space. The third set was only suggested by shadowy lines, but the overall shape was clear.

“Sir?”

“Sergeant, can you set up two totally encrypted commlink calls, one to the *Scheherezade* and one by ansible to Sel Ouie University on 18-Alpha? Yes, I know that officially you can’t do that, but you know everybody everywhere . . . *can* you do it? It’s vitally important, Ruhan. I can’t tell you how important!”

Lu gazed at me from his ruddy, honest face. He did indeed know everyone. A Navy lifer, and with all the amiability and human contacts that I lacked. And he trusted me. I could feel that unaccustomed warmth, like a small and steady fire.

“I think I can do that, sir.”

He did. I spoke first to Dalo, then to Forrest Jamili. He sent a packet of encrypted information. I went back to my data, working feverishly. Then I made a second encrypted call to Dalo. She said simply, “Yes. Susan says yes, of course she can. They all can.”

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“Dalo, find out when the next ship docks with the *Scheherezade*. If it’s today, book passage on it, no matter where it’s going. If there’s no ship today, then buy a seat on a supply shuttle and—”

“Those cost a fortune!”

“I don’t care. Just—”

“Jon, the supply shuttles are all private contractors and they charge civilians a—it would wipe out everything we’ve saved and—*why?* What’s wrong?”

“I can’t explain now.” I heard boots marching along the corridor to the vault. “Just do it! Trust me, Dalo! I’ll find you when I can!”

“Captain,” an MP said severely, “come with me.” His weapon was drawn, and behind him stood a detail of grim-faced soldiers. Lu stepped forward, but I shot him a glance that said *Say nothing! This is mine alone!*

Good soldier that he was, he understood, and he obeyed. It was, after all, the first time I had ever given him a direct—if wordless—order, the first time I had assumed the role of commander.

My mother should have been proud.

Her office resembled my quarters, rather than the vaults: a trapezoidal, low-ceilinged room with alien art etched on all the stone walls. The room held the minimum of furniture. General Anson stood alone behind her desk, a plain military-issue camp item, appropriate to a leader who was one with the ranks, don’t you know. She did not invite me to sit down. The MPs left—reluctantly, it seemed to me—but, then, there was no doubt in anyone’s mind that she could break me bare-knuckled if necessary.

She said, “You made two encrypted commlink calls and one encrypted ansible message from this facility, all without proper authorization. Why?”

I had to strike before she got to me, before I went under. I blurted, “I know why you blocked my access to the meteor-deflection data.”

She said nothing, just went on gazing at me from those eyes that could chill glaciers.

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“There was *no* deflection of that meteor. The meteor wasn’t on our tracking system because Humans haven’t spent much time in this sector until now. You caught a lucky break, and whatever deflection records exist now, you added after the fact. Your so-called victory was a sham.” I watched her face carefully, hoping for . . . what? Confirmation? Outraged denial that I could somehow believe? I saw neither. And of course I was flying blind. Captain Susan Finch had told Dalo only that yes, of course officers had access to the deflection records; they were a brilliant teaching tool for tactical strategy. I was the only one who’d been barred from them, and the general must have had a reason for that. She always had a reason for everything.

Still she said nothing. Hoping that I would utter even more libelous statements against a commanding officer? Would commit even more treason? I could feel my breathing accelerate, my heart start to pound.

I said, “The Teli must have known the meteor’s trajectory; they’ve colonized 149-Delta a long time. They *let* it hit their base. And I know why. The answer is in the art.”

Still no change of expression. She was stone. But she was listening.

“The answer is in the art—ours and theirs. I ansibled Forrest Jamili last night—no, look first at these diagrams—no, first—”

I was making a mess of it as the seizure moved closer. Not now *not now* not in front of her . . .

Somehow I held myself together, although I had to wrench my gaze away from her to do it. I pulled the holocube from my pocket, activated it, and projected it on the stone wall. The Teli etchings shimmered, ghostly, behind the laser colors of my data.

“This is a phase-space diagram of Ebenfeldt equations using input about the frequency of Teli art creation. We have tests now, you know, that can date any art within weeks of its creation by pinpointing when the raw materials were altered. A phase-state diagram is how we model bifurcated behaviors grouped around two attractors. . . . What that means is that the Teli created their art in bursts, with long fallow

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periods between bursts when . . . no, *wait*, General, this is relevant to the war!”

My voice had risen to a shriek. I couldn’t help it. Contempt rose off her like heat. But she stopped her move toward the door.

“This second phase-space diagram is Teli attack behavior. Look . . . it inverts the first diagrams! They attack viciously for a while, and during that time *virtually no Teli creates art at all* . . . Then when some tipping point is reached, they stop attacking or else attack only ineffectively, like the last raid here. They’re . . . waiting. And if the tipping point—this mathematical value—isn’t reached fast enough, they sabotage their own bases, like letting the meteor hit 149-Delta. They did it in the battle outside 16-Beta and in the Q-Sector massacre . . . you were there! When the mathematical value *is* reached—when enough of them have died—they create art like crazy but don’t wage war. Not until the art reaches some other hypothetical mathematical value that I think is this second attractor. Then they stop creating art and go back to war.”

“You’re saying that periodically their soldiers just curl up and let us kill them?” she spat at me. “The Teli are damned fierce fighters, Captain—I know that even if the likes of you never will. *They* don’t just whimper and lie down on the floor.”

*Kai lanu kai lanu . . .*

“It’s a . . . a religious phenomenon, Forrest Jamili thinks. I mean, he thinks their art is a form of religious atonement—all of their art. That’s its societal function, although the whole thing may be biologically programmed as well, like the deaths of lemmings to control population. The Teli can take only so much dying, or maybe even only so much killing, and then they have to stop and . . . and restore what they see as some sort of spiritual balance. And they loot our art because they think we must do the same thing. Don’t you see—they were collecting *our* art to try to analyze when we will stop attacking and go fallow! They assume we must be the same as them, just—”

“No warriors stop fighting for a bunch of weakling artists!”

“—just as you assume they must be the same as us.”

We stared at each other.

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I said, “As you have always assumed that everyone should be the same as you. Mother.”

“You’re doing this to try to discredit me, aren’t you,” she said evenly. “Anyone can connect any dots in any statistics to prove whatever they wish. Everybody knows that. You want to discredit my victory because such a victory will never come to you. Not to the sniveling, back-stabbing coward who’s been a disappointment his entire life. Even your wife is worth ten of *you*—at least she doesn’t crumple under pressure.”

She moved closer, closer to me than I could ever remember her being, and every one of her words hammered on the inside of my head, my eyes, my chest.

“You got yourself assigned here purposely to embarrass me, and now you want to go farther and ruin me. It’s not going to happen, soldier, do you hear me? I’m not going to be made a laughing stock by you again, the way I was in every officer’s club during your whole miserable adolescence and—”

I didn’t hear the rest. I went under, seizing and screaming.

It is two days later. I lie in the medical bay of the *Scheherezade*, still in orbit around 149-Delta. My room is locked but I am not in restraints. Crazy, under arrest, but not violent. Or perhaps the General is simply hoping I’ll kill myself and save everyone more embarrassment.

Downside, in Vault D, Lu is finishing crating the rest of the looted Human art, all of which is supposed to be returned to its rightful owners. The Space Navy serving its galactic citizens. Maybe the art will actually be shipped out in time.

My holo cube was taken from me. I imagine that all my data has been wiped from the base’s and ship’s deebies as well, or maybe just classified as severely restricted. In that case no one cleared to look at it, which would include only top line officers, is going to open files titled “Teli Art Creation.” Generals have better things to do.

But Forrest Jamili has copies of my data and my speculations.

Phase-state diagrams bring order out of chaos. Some order, anyway. This is, interestingly, the same thing that art does. It is why,

## NANCY KRESS

looking at one of Dalo's mutomati works, I can be moved to tears. By the grace, the balance, the redemption from chaos of the harsh raw materials of life.

Dalo is gone. She left on the supply ship when I told her to. My keepers permitted a check of the ship's manifest to determine that. Dalo is safe.

I will probably die in the coming Teli attack, along with most of the Humans both on the *Scheherezade* and on 149-Delta. The Teli fallow period for this area of space is coming to an end. For the last several months there have been few attacks by Teli ships, and those few badly executed. Months of frenetic creation of art, including all those etchings on the stone walls of the Citadel. Did I tell General Anson how brand-new all those hand-made etchings are? I can't remember. She didn't give me time to tell her much.

Although it wouldn't have made any difference. She believes that war and art are totally separate activities, one important and one trivial, whose life lines never converge. The General, too, will probably die in the coming attack. She may or may not have time to realize that I was right.

But that doesn't really matter any more, either. And, strangely, I'm not at all afraid. I have no signs of going under, no breathing difficulties, no shaking, no panic. And only one real regret: that Dalo and I did not get to gaze together at the Sistine Chapel on Terra. But no one gets everything. I have had a great deal: Dalo, art, even some possible future use to humanity if Forrest does the right thing with my data. Many people never get so much.

The ship's alarms begin to sound, clanging loud even in the medical bay.

The Teli are back, resuming their war.

## THREE DAYS OF RAIN

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*Holly Phillips*

They came down out of the buildings' shade into the glare of the lakeside afternoon. Seen through the sting of sun-tears, the bridge between Asuada and Maldino Islands wavered in the heat, white cement floating over white dust, its shadow a black sword-cut against the ground. Santiago groped in the breast of his doublet for his sunglasses and the world regained its edges: the background of red-roofed tenements stacked up Maldino's hill, the foreground of the esplanade's railings marking the hour with abbreviated shadows, the bridge, the empty air, lying in between. The not-so-empty air. Even through dark lenses Santiago could see the mirage rippling above the lakebed, fluid as water, tempting as a lie, as the heat raised its ghosts above the plain. Beyond stood the dark hills that were the shore once, in the days when the city was islanded in a living lake; hills that were the shore still, the desert's shore. They looked like the shards of a broken pot, like paper torn and pasted against the sun-bleached sky. The esplanade was deserted and the siesta silence was intense.

"There's Bernal," Luz murmured in Santiago's ear. "Thirsty for blood." She sounded, Santiago thought, more sardonic than a lady should in her circumstances. He had been too shy to look at her as she walked beside him down from Asuada Island's crown, but he glanced at her now from behind his sunglasses. She had rare pale eyes that were, in the glare, narrow and edged in incipient creases. A dimple showed by her mouth: she knew he was looking. He glanced away and saw Bernal and his seconds waiting in the shadow of the bridge. Ahead, Sandoval and Orlando and Ruy burst out laughing, as if the



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sight of Bernal were hilarious, but their tension rang like a cracked bell in the quiet. Santiago wished he were sophisticated enough to share Luz's ironic mood, but he was too excited, and he had the notion that he would do this hour an injustice if he pretended a disinterest he did not feel.

Sandoval vaulted over the low gate at the end of the esplanade, dropping down to the steps that led to the bridge's foot. Orlando followed more clumsily, the hilt of his rapier ringing off the gate's ironwork, and Ruy climbed sedately over, waiting for Luz and Santiago to catch up. Luz hitched up the skirt of her lace coat to show athletic legs in grimy hose, but allowed Ruy and Santiago to help her over the gate. The gate's sun-worn sign still bore a memory of its old warning—deep water, drowning, death—but it could not be deciphered beneath the pale motley of handbills. One had to know it was there, and to know, one had to care.

An intangible breeze stirred the ghost lake into gentle waves.

Bernal and Sandoval bowed. Their seconds bowed. To Santiago the observer, who still trailed behind with Luz, they looked like players rehearsing on an empty stage, the strong colors of their doublets false against the pallor of the dust. Bernal drew his rapier with a flourish and presented it to Ruy to inspect. The bridge's shade gave no relief from the heat; sweat tickled the skin of Santiago's throat. Sandoval also drew, with a prosaic gesture that seemed more honest, and therefore more threatening than Bernal's theatricality, and Santiago felt a burst of excitement, thinking that Sandoval would surely win. Wouldn't he? He glanced at Luz and was glad to see that the sardonic smile had given way to an intent look. Belatedly he took off his sunglasses and her profile leapt out in sharp relief against the blazing lakebed beyond the shade.

The blades were inspected and returned to their owners. The seconds marked out their corners. The duelists saluted each other, or the duel, and their blades met in the first tentative kiss. Steel touching steel made a cold sound that hissed back down at them from the bridge's underside. The men's feet in their soft boots scuffed and patted and stirred up dust that stank like dry bones.

### THREE DAYS OF RAIN

Santiago was there to watch and he did, but his excitement fragmented his attention, as if several Santiagos were crowded behind a single pair of eyes, watching everything. The fighters' feet like dancers', making a music of their own. The men's faces, intent, unself-conscious, reflecting the give and take of the duel. The haze of dust, the sharp edge of shade, the watery mirage. The rapiers hissed and shrieked and sang, and in the bridge's echoes Santiago heard water birds, children on a beach, rain falling into the lake. For an instant his attention broke quite asunder, and he felt blowing through that divide a cool breeze, a wind rich with impossible smells, water and weeds and rust. The duelists fell apart and Santiago heard himself blurt out, "Blood! First blood!" for scarlet drops spattered from the tip of Sandoval's sword to lay the dust. Bernal grimaced and put his hand to his breast above his heart.

"It's not deep?" said Sandoval worriedly.

"No, no," Bernal said, pressing the heel of his hand to the wound.

"Fairly dealt," Santiago said. He felt he was still catching up to events, that he had nearly been left behind, but no one seemed to notice. A grinning Ruy clapped his shoulder.

"A good fight, eh? They'll be talking about this one for a season or two!"

"Talking about me for a season or two," Luz said.

Ruy laughed. "She wants you to think she's too modest to take pleasure in it, but her tongue would be sharper if we talked only about the fight, and never her."

Luz gave Santiago an exasperated look, but when Sandoval came to kiss her hand she let him. But then, she let Bernal do the same, and Bernal's bow was deeper, despite the pain that lined his face. There was not much blood on the ground, and what there was was already dulled by dust.

"Does it make you want to fight, Santiago?" Ruy asked.

Yes? No? Santiago said the one thing he knew was true. "It makes me want to feel the rain on my face before I die."

"Ay, my friend! Well said!" Ruy slung his arm around Santiago's neck, and Santiago laughed, glad to be alive.

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He held the crucible steady with aching arms as the molten glass ran over the ceramic lip and into the mold. The heat from the glass scorched his arms, his bare chest, his face, drying him out like a pot in a kiln. He eased the crucible away from the mold and set it on the brick apron of the furnace, glass cooling from a glowing yellow to a dirty gray on its lip, and dropped the tongs in their rack with suddenly trembling hands. The glassmaker Ernesto leaned over the mold, watching for flaws as the small plate began to cool.

"It will do," he said, and he helped Santiago shift the mold into the annealing oven where the glass could cool slowly enough that it would not shatter. Santiago fished a bottle of water from the cooler and stepped out into the forecourt where the glassmaker's two-story house cast a triangle of shade. It was only the day after Sandoval's duel and Santiago did not expect to see any of that crowd again, not so soon. Yet there Ruy was, perched on the courtyard's low northern wall, perfectly at ease, as if he meant to make a habit of the place.

"I was starting to think he would keep you working through siesta."

Santiago shrugged, refusing to make excuses for either his employer or his employment. Ruy was dressed with the slapdash elegance of his class, his doublet and shirt open at the neck, his light boots tied with mismatched laces. Santiago was half-naked, his bare skin feathered with thin white scars, like a duelist's scars, but not, emphatically not. Still, Ruy had come to him. He propped his elbows on the wall and scratched his heat-tightened skin without apology.

"What do you have planned?" he asked Ruy, and guessed, safely, "Not sleep."

Santiago expected—he hoped—that Ruy would grin and propose another adventure like yesterday's, but no. Ruy looked out at the northern view and said soberly, "Sandoval was going to spend the morning in the Assembly watching the debates. We're to meet him at the observatory when they break before the evening session."

### THREE DAYS OF RAIN

The debates. Santiago swallowed the last of his water, taking pleasure from the cool liquid in his mouth and throat, and then toyed with the bottle, his gaze drawn into the same distance as Ruy's. Because of the fire hazard, Ernesto's workshop had an islet to itself, a low crumb of land off Asuada's northern rim. From here there was nothing to see but the white lakebed, the blue hills, the pale sky. Nothing except the long-necked pumps rocking out there in the middle distance, floating on the heat mirage like dusty metal geese, drawing up the water that kept the city alive. For now. Perhaps for not much longer, depending on the vote, the wells, the vanished rains. The empty bottle spun out of Santiago's tired hands and clattered to the baked earth beyond the wall. Ruy slipped down, one hand on his rapier's scabbard, to retrieve it. One drop clung to its mouth, bright as liquid glass in the sunlight, and Santiago had a glancing vision, a waking siesta dream of an earthenware pitcher heavy with water, round-bellied, sweating, cool in his hands. The plastic bottle was light as eggshells, an airy nothing after the crucible and glass.

"Thanks," he said, and shaking off the lure of sleep, he dropped the bottle in the re-use box and gathered up his clothes.

The observatory crowned the higher of Orroco's two peaks, gazing down in academic tolerance at the Assembly buildings on the other height. More convenient for Sandoval than for his friends, but such was the privilege of leadership. Santiago felt no resentment as he made the long, hot walk with Ruy. He was glad of the company, glad of the summons, glad of the excuse to visit the observatory grounds. Too glad, perhaps, but he was old enough to know that he could have refused, hung up his hammock for a well-earned sleep, and it was that feeling of choice, of acting out of desire rather than need, that let him walk as Ruy's equal. Their voices woke small echoes from the buildings that shaded the streets, the faint sounds falling about them like the dust kicked up by their feet. Even the short bridge between Asuada and Orroco was built up, and in the evenings the street was a small fiesta, a promenade complete with music, paper flowers, colored lanterns, laughing girls, but now even the shady balconies were aban-

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doned. These days the city's inhabitants withdrew into their rooms like bats into their caves, hiding from the sun. There was an odd, stubborn, nonsensical freedom to being one of the fools who walked abroad, dizzy and too dry to sweat, as if the heat of afternoon were a minor thing, trivial beside the important business of living.

"Why does Sandoval attend the debates? I didn't think . . ."

"That he cared?" Ruy gave Santiago a slanting look. "That we cared? About the Assembly, we don't. Or at least, I don't. They talk, I'd rather live. No, but Sandoval's family holds one of the observer's seats and he goes sometimes to . . . Well. He says it's to gather ammunition for his lampoons, but sometimes I wonder if it's the lampoons that are the excuse."

"Excuse?"

"For doing his duty. That's the sort of family they are. Duty! Duty!" Ruy thumped his hand to his chest and laughed. Santiago was—not quite disappointed—he decided he was intrigued. He had not thought that was the kind of man Sandoval was. Sandoval himself, as if he knew he had to prove Ruy wrong, had gathered an audience in the shady precincts of the observatory's eastern colonnade. He mimicked a fat councilor whose speech was all mournful pauses, a fussy woman who interrupted herself at every turn, one of the famous party leaders who declaimed like an actor, one hand clutching his furrowed brow. Santiago, having arrived in the middle of this impromptu play, couldn't guess how the debate was progressing, but he was struck more forcibly than ever by the great wellspring of spirit inside Sandoval that gave life to one character after another and made people weep with laughter.

"And where is he in all of this?"

Santiago turned, almost shocked. He would never have asked that question, yet it followed so naturally on his own thought that he felt transparent, as if he had been thinking aloud. But Luz, who had spoken, was watching Sandoval, and by her manner might have been speaking to herself. Santiago hesitated over a greeting. Luz looked up at him, her face tense with a challenge he did not really understand.

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“Isn’t that what actors do?” he said. “Bury themselves in their roles?”

“Oh, surely,” she said. “Surely. Here we see Sandoval the great actor, and in a minute more we’ll see Sandoval the great actor playing the role of Sandoval the great actor not playing a role. And when do we see Sandoval, just Sandoval? Where is he? Buried and—”

Luz broke off, but her thought was so clear to Santiago that she might as well have said it: dead. Worried, confused, Santiago looked over her head to Ruy, who shrugged, his face mirroring the eternal puzzlement of men faced with a woman’s moods. Sandoval’s admirers laughed at something he said and Luz gripped Santiago’s arm.

“It’s too hot, I can’t stand this noise. Let’s find somewhere quiet.”

She began to pull Santiago down the colonnade. Ruy pursed his lips and shook his finger behind her back. Santiago flashed back a wide-eyed look of panic, only half-feigned, and Ruy, silently laughing, came along.

The observatory was one of the oldest compounds in the city, built during the Rational Age when philosophers and their followers wanted to base an entire civilization on the mysterious perfection of the circle and the square. Life was too asymmetrical, too messy, to let the age last for long, but its remnants were peaceful. There really was a kind of perfection in the golden domes, the marble colonnades, the long white buildings with their shady arcades that fenced the observatory in, a box for a precious orb. Perfection, but an irrelevant perfection: the place was already a ruin, even if the roofs and walls were sound. As they left Sandoval and his admirers behind, the laughter only made the silence deeper, like the fragments of shade whose contrast only whitened the sunlight on the stone.

Luz led them across the plaza where dead pepper trees cracked the flagstones with their shadows, through an arched passage that was black to sun-dazzled eyes, and out onto the southern terrace. Even under the arcade there was little shade. The three of them sat on a bench with their backs to the wall and looked out over the islands with their packed geometry of courtyards and plazas and roofs, islands of order, of life, scattered across the dry white face of death. Ruy and Luz

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began to play the game of high places, arguing over which dark cleft on Asuada was Mendoza Street, which faded tile roof was Corredo's atelier, which church it was that had the iron devils climbing its brass-crowned steeple. Santiago, tired from his work, the walk, the heat, rested his head against the wall and let his eyes stray to the lake and its mirage of water, the blue ripples that were only a color stolen from the merciless sky. Suddenly he found the city's quiet dreadful. It was like a graveyard's, a ruin's.

"Why do they bother with a debate?" he said. "Everyone already knows how they're going to vote. Everyone knows . . ."

Luz and Ruy were silent and Santiago felt the embarrassment of having broken a half-perceived taboo. He was the outsider again, the stranger.

But then Luz said, "Everyone knows that when they vote, however they vote, they will have voted wrong. To stay, to go: there is no right way to choose. They argue because when they are angry enough they can blame the other side instead of themselves." She paused. "Or God, or the world."

"Fate," Ruy said.

"Fate is tomorrow," Luz said.

"And there is no tomorrow," Ruy said. "Only today. Only now."

Santiago said nothing, knowing he had heard their creed, knowing he could only understand it in his bones. The lake's ghost washed around the islands' feet, blue and serene, touching with soft waves against the shore. A dust devil spun up a tall white pillar that Santiago's sleep-stung eyes turned into a cloud trailing a sleeve of rain. Rain rustled against the roof of the arcade. White birds dropped down from the high arches and drifted away on the still air, their wings shedding sun-bright droplets of molten gold. Sleep drew near and was startled away by Luz's cry. Some scholar, despairing over his work or his world, had set his papers alight and was casting them out his window. The white pages danced on the rising heat, their flames invisible in the sunlight, burning themselves to ash before they touched the ground.

### THREE DAYS OF RAIN

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The day of the vote was an undeclared holiday. Even the news station played music, waiting for something to report, and every open window poured dance songs and ballads into the streets. Neighbors put aside their feuds, strangers were treated to glasses of beer, talk swelled and died away on the hour and rose again when there was no news, no news.

Sandoval, trying as always to be extraordinary, had declared that today was an ordinary day, and had gone with Ruy and Orlando and some others to the swordsman Corredo's atelier for their morning practice. Santiago, summoned by Ruy, entered those doors for the first time that day, and he was not sure what to feel. While Sandoval strove to triumph over the day's great events by cleaving to routine, Santiago found it was impossible not to let his first entry into the duelists' privileged realm be colored by the tension of the day. And why shouldn't it be? He looked around him at the young men's faces, watched them try to mirror Sandoval's mask of ennui, and wondered if their fight to free themselves from the common experience only meant they failed to immerse themselves in the moment they craved. This was the moment, this day, the day of decision. And yet, Santiago thought, Sandoval was right in one thing: however the vote went, whatever the decision, life would go on. They would go on breathing, pumping blood, making piss. They would still be here, in the world, swimming in time.

"You're thinking," Ruy said cheerfully. "Master Corredo! What say you to the young man who thinks?"

"Thinking will kill you," said the swordsman Corredo. He was a lean, dry man, all sinew and leather, and he meant what he said.

"There, you see? Here, take this in your hand." Ruy presented Santiago with the hilt of a rapier. Santiago took it in his burn-scarred hand, felt the grip find its place against his palm. The sword was absurdly light after the iron weight of the glassmaker's tongs; it took no more than a touch of his fingers to hold it steady.

"Ah, you've done this before," Ruy said. He sounded suspicious, as if he thought Santiago had lied.



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“No, never.” Santiago was tempted to laugh. He loved it, this place, this sword in his hand.

“A natural, eh? Most of us started out clutching it like—”

“Like their pizzles in the moment of joy,” Master Corredo said. He took

Santiago’s strong wrist between his fingers and thumb and shook it so the sword softly held in Santiago’s palm waved in the air. After a moment Santiago firmed the muscles in his arm and the sword was still, despite the swordsman’s pressure.

“Well,” said Corredo. He let Santiago go. “You stand like a lump of stone. Here, beside me. Place your feet so—not so wide—the knees a little bent. . . .”

Ruy wandered off, limbered up with a series of long lunges. After a while the soft kiss and whine of steel filled the air.

By noon they were disposed under the awning in Corredo’s courtyard, drinking beer and playing cards. Santiago, with a working man’s sense of time, was hungry, but no one else seemed to be thinking about food. Also, the stakes were getting higher. Santiago dropped a good hand on the discard pile and excused himself. He would save his money and find a tavern that would sell him a bushel of flautas along with a few bottles of beer. Not that he could afford to feed them any more than he could afford to gamble with them, but he had heard them talk about spongers. He would rather be welcomed when they did see him, even if he could not see them often.

And then again, the holiday atmosphere of the streets made it easy to spend money if you had it to spend. In the masculine quiet of Corredo’s atelier he had actually forgotten for a little while what day it was. The vote, the vote. Red and green handbills not yet faded by the angry sun fluttered from every doorjamb and drifted like lazy pigeons from underfoot. Radios squawked and rattled, noise becoming music only when Santiago passed a window or a door, and people were still abroad in the heat. One did not often see a crowd by daylight and it was strange how the sun seemed to mask faces just as effectively as evening shadows did, shuttering the eyes, gilding brown skin with sweat and dust. Santiago walked farther than he had meant to,

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sharing the excitement, yet feeling separate from the crowd, as if he were excited about a different thing, or as if he had been marked out by Sandoval, set aside for something other than this. Life, he thought: Sandoval's creed. But wasn't this life out here in the streets, in these conversations between strangers, in this shared fear for the future, for the world? Didn't blood beat through these hearts too?

The heat finally brought Santiago to rest by the shaded window of a hole-in-the-wall restaurant. Standing with his elbows on the outside counter, waiting for his order, he ate a skewer of spicy pork that made him sweat, and then cooled his mouth with a beer. The restaurant's owner seemed to have filled the long, narrow room with his closest friends. Santiago, peering through the hatch at the interior darkness, heard the same argument that ran everywhere today, a turbulent stream like the flash flood from a sudden rain. Life's no good here anymore, but will it be any better in the crowded hills, by the poisoned sea, down in the south where the mud and rain was all there was?

"But life *is* good." No one heard, though Santiago spoke aloud. Perhaps they chose not to hear. His order came in a paper box already half-transparent with oil stains and he carried it carefully in his arms. The smell was so good it made him cheerful. All the same, when he returned to the atelier he found that as impatient as he had been with the worriers outside, he was almost as irritated by the abstainers within. They seemed so much like stubborn children sitting in a corner with folded arms. Like children, however, they greeted the food with extravagant delight, and Santiago found himself laughing at the accolades they heaped on his head, as if he had performed some mighty deed. It was better to eat, he thought, and enjoy the food as long as it was there.

Like normal people, they dozed through the siesta hours, stupefied by heat and food. Santiago slept deeply and woke to the dusky velvet of the evening shadows. With the sun resting on the far hills the bleached sky regained its color, a blue as deep and calm as a song of the past, a blue that seemed to have been drawn out of Santiago's dreams. They went out together, yawning and still pleasantly numb with sleep, into the streets where a hundred radios stamped out the

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rhythm of an old salsa band. It was impossible not to sway a little as they walked, to bump their shoulders in thoughtless camaraderie, to spin out lines of poetry at the sight of a pretty face. "Oh, rose of the shadows, flower in bud, bloom for me . . ." It was evening and the long, long shadows promised cool even as the city's plaster and stone radiated the last heat of the day. It was evening, the day's delight.

"So who is going to ask first?" Orlando muttered to Ruy. Ruy glanced over his shoulder at Santiago, his eyebrows raised. Santiago smiled and shook his head.

"We won't need to ask," Ruy said. "We'll hear, whether we want to or not."

But who in all the city would have thought they needed to be told? Holiday had given way to carnival, as the radios gave way to guitars in the plazas, singers on the balconies, dancers in the streets. It was a strange sort of carnival where no one needed to drink to be drunk. The people had innocent faces, Santiago thought, washed clean by shock, as if the world had not died so much as vanished, leaving them to stand on air. But was it the shock of being told to abandon their homes? Or was it the shock of being told to abandon themselves to the city's slow death? Santiago listened to an old man singing on a flat roof high above the street, he listened to a woman sobbing by a window, and he wondered. But no, he didn't ask.

They wound down to Asuada's esplanade where the dead trees were hung with lanterns that shone candy colors out into the dark. The sun was gone, the hills a black frieze, the sky a violet vault freckled with stars. The lakebed held onto the light, paler than the city and the sky, and it breathed a breath so hot and dry the lake's dust might have been the fine white ash covering a barbecue's coals. There were guitars down here too, and a trumpet that sang out into the darkness. Sandoval took off his sword and began to dance. Sweat drew his black hair across his face as he stamped and whirled and clapped with hollow hands. Ruy began to dance, and Orlando and the rest, their swords slung down by Santiago's feet. He ached to watch them, wished he with his clumsy feet dared to join them, and was glad he had not when Luz spotted him through the crowd. She came and leaned against his

### THREE DAYS OF RAIN

side, muscular and soft, never quite still as the guitars thrummed out their rhythms. Santiago knew she was watching Sandoval, but he did not care. This was his. A paper lantern caught fire, and when no one leapt forward to douse it the whole tree burned, one branch at a time, the pretty lanterns swallowed up by the crueler light of naked flame. It was beautiful, the bare black branches clothed in feathers of molten glass, molten gold. The dance spread, a chain of men stamping and whirling down the lakeshore. In the shuffle of feet and the rustle of flames, in the brush of Luz's hair against his sleeve, in the rush of air into his lungs, Santiago once again heard that phantom rain. It fell around him, bright as sparks in the light of the fire, it rang like music into the memory of the lake. It was sweet, sweet. Luz stirred against his arm.

“Are you going, Santiago? When they stop the pumps, are you going to go?”

He leaned back against the railing, and smiled into the empty sky, and shook his head, no.

## BRAIN RAID

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### *Alexander Jablov*

That morning's job was a straight AI grab 'n go. We'd identified a rogue intelligence in a minimall on Route 222, near Ephrata, PA. A clerk at the Intelligence Regulatory Agency, in the Department of Labor, had assigned it the case name Donald.

Three of us from Gorson's Cognitive Repossession were going into the Limpopo home environment store anchoring the mall's right wing that day: Petra, Max, and me. I'd worked with Max a lot. Petra was new with us. She'd left a C-level outfit over in Philly to "broaden her background," which meant that she had been laid off. That probably accounted for her foul mood, even though she'd snagged a manager title, supervising us. Gorson's was licensed for D-level and below, quite a comedown for her. If you're used to Carries and Chucks, a Donald's barely worth getting up in the morning for.

But there she was, crisp and clean, sliding right for the service desk. My job was securing the staff and customers, then turning them over to the hired hospitality crew. Max's was locking down the loading dock behind the store, where a semi was loading decorative flora and fauna. Petra's was, redundantly, distraction and team management.

"Hot stuff, man." Max was more cheerful than I'd seen him in months. "We're scoring big. I can *feel* it."

"Cool it," I said. "Even at best, this AI's really just consumer-debt-reduction level. Keep that in mind. There's no big money here."

"Hey, not what you said the other night, eh?" He winked at me. "This is just the first step. Things are turning around for us."

## BRAIN RAID

Despite myself, I glanced over at Petra. “Enough tequila, and I’ll say anything.”

“Don’t get all hot, man. I’m just looking to pay off that mortgage.”

Max had a gigantic house, and an adjustable rate, from the days when Gorson really had been making money. That was before I came to work for them, naturally.

Max grinned and sauntered off toward the loading dock. He was fully loaded with a powerpack, focused explosives, circuit suppressers. It was way more gear than I’d ever seen him carry. He and Petra had had a discussion about it: lost and damaged equipment cratered the bottom line. And what had Max said? “You can’t be too careful.” Which didn’t sound like our casual Max at all.

Damn me for shooting my mouth off that night. I’d brought this AI into our target list, but I shouldn’t have told Max how much I had riding on it. There was still a lot that could go wrong.

“But how can these big trees live on my carpet?” Petra’s voice came from somewhere behind glossy monstera leaves. Despite myself, I smiled. In just a few words you could tell she was the inane time-wasting client that was every salesman’s nightmare, the kind you couldn’t ignore, because sometimes they bought huge. “And why don’t they fall through into the basement? I do have a basement. Did I tell you that?”

The clerk was soothing. “All the support gear is self-inserting and self-maintaining. It’s no more than a foot thick, and takes over your subflooring. Structural stiffening is integral. Our installation team will do a full survey for your particular situation.”

I swung through the store. Two middle-aged women stood near a lily pond, one with a frog on her hand, discussing lotus flowers. A gardener half-covered in butterflies stuck a pressure sensor into a thick vine. I had to sweep customers, but the Limpopo staff was my highest priority. The clerk talking to Petra was Sylvia, the gardener was Alphonse. My list had one more employee on duty that day, Maureen, sales and technical support, but there had been no way to predict the number of customers.

Where was I? Streams of hot light broke up the darkness. Steaming,

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rotting trunks loomed above me and gigantic leaves showered water as I brushed past. Glass walls loomed here and there, but the mulch paths always curved away before I reached one.

No Maureen anywhere. She should have been past those giant pitcher plants, their maws filled with writhing mosquitoes and blue-bottles, but there was no sign of her in the mist. Why didn't those bugs die? I got distracted, watching their unending death throes. They must keep the poor damn things alive as a demo, maybe with tiny spiracle-nozzled aqualungs.

"But what about lights?" Petra was plaintive. "I mean, here you've got your growsuns. I'll have sunburn by the time I get back out to my car." Sylvia the clerk made a noise like she would do something about it—a sunsuit behind the desk?—but Petra was not to be pleased. "Oh, it's just sensitive skin. Despite my color. It's my burden, you know. Dermal distress syndrome. But all I have at home is a couple of floor lamps. Nice ones, you know. Ming vase things. At either end of the couch. So these big tree things will die."

"We take the lighting into account, of course. The best solution is for focused microlights to crawl the stems at night, after you're in bed, forcing solar energy directly into the leaf surfaces. By morning, they'll have pulled back into their storage modules. You can't even see them."

"Oh, that sounds dangerous." Petra was good. I had to give that to her. With all the floor clerk's mental energy going to keeping her patience, she wouldn't notice Max and me as we moved into position. "I don't want any fires."

"Not at all. It's a mature technology. . . ."

I had a spider plant once. I guess you're supposed to water them.

Ah, and there was Maureen, my target, with a customer. A businessman in an inappropriate Central Asian duster, goggles dangling around his neck, examined an orchid held out to him by a cute red-haired woman in a coverall marked with green stains. Her big black gum boots emphasized her slender legs. A pair of yellow rubber gloves hung over the edge of a muck-filled bucket. The man

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reeked of frankincense, a dry scent that stuck out in that jungle, where everything else smelled like you'd squished it out between your toes.

"Hey," I said. "Which way to the club mosses?"

"Recreated genera are over there." Maureen was cute, but somehow pegged me instantly as an unprofitable customer. I didn't have Petra's skill at pretending to be a normal human being.

The church-smell guy had Maureen's full attention. But she had what looked like sucker marks on her pale skin. The climate had to breed all sorts of blood-sucking arthropods, and I tried to reassure myself that this meant she wasn't really so attractive after all. That's easier, when you're about to take someone into custody.

"Okay," Max's voice whispered in my ear. "I got the truck. Gave the driver a gift certificate to pick up some donuts, he's happy, and the detention mesh is up, so no one else is getting in. They do an incredible business here. This thing is packed with growing shit, man. And did you get a load of these prices? After this is down, I'm getting home to dig up some of those big spiky things I got growing down by the garage."

"Great," I said, then switched channels. "Could I have your attention, please?" My amplified voice boomed through the jungle. "A cognitive enforcement operation is in progress. We have information about a rogue intelligence in the area. There is no danger. Repeat, you are in no danger. But security concerns require the detention of all citizens in the immediate area. Please relax and remain calm. We will have you on your way as soon as possible."

No one ever remained calm. The two women by the lily pond tried to scuttle out as if they'd just remembered an important engagement.

I stepped into their path. "Pardon me. Could you come this way, please?"

The shorter of the two, with huge dark sunglasses, barked, "Young man, I run a data-futures agency. An interruption could cost my clients billions. That's more important than whatever cheap paranoia you're peddling today."



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“This is for your own protection.” That particular lie must have been invented around the same time as fire.

“Listen—”

“I’m afraid I must insist.”

Her friend, a sweet-faced old woman with hair that glowed a radioactive blue and extremely nice breasts, took her arm. “We’d better do as he says, Maude.”

Maude had to know that violent resistance could get her fined, or worse. We weren’t allowed to manhandle detainees without good reason, but the definition of “good” got looser the more money there was involved. For your average citizen, getting caught in an AI sweep was just bad luck, like getting stuck in a traffic jam. If Maude was smart, she carried detention insurance.

“Can I see some ID?” Maude was stubborn.

I flipped it at her. She rolled her eyes. “Just my luck, caught by the JV squad.”

People can be so cruel sometimes. The real money’s in B- and C-level AIs, but that didn’t mean Ds weren’t as real a threat to the survival of the human race. “Come this way.” I escorted them out and turned them over to the cheerful team we’d hired to manage our hostages.

“It’s a pleasure to have you with us today!” a young woman in a pink smock said. “Would you like some guarana-jalapeño soda?”

“That stuff’s toxic,” Maude muttered as she pushed past her into the hospitality tent. “Get away from me.”

I circled back. The bucket still stood in the clearing, the yellow gloves now floating in the murky water, but both Maureen and the guy in the duster were gone. I scanned for any hint that would make one direction better than another. There was subliminal movement all around me. All the leaves seemed to have tics.

A branch groaned as it rubbed against another. And a shift in the air brought me the scent of frankincense. If his scent generator had been flinging the molecules any harder I’d have heard tiny sonic booms. I moved toward him as quietly as I could.

A floor-length duster is a hell of an outfit for an interior forest. There he was. I could see him through a mesh of aerial roots. I’d thought he

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was creeping away, but instead he was fiddling with something. I got on my knees in the wet mud, scuttled forward, and grabbed him.

“Hey!” A yank on his coat and he fell face forward into the muck. “I’ve got an appointment, damn it! My business depends on it.”

No one ever yelled, “I was going to spend the day relaxing!” People just didn’t seem to give that sort of thing enough weight.

He rolled and looked up at me. “She slid off into the trees. Smooth and quiet. She wasn’t running, but it was clear she had an escape hole somewhere.”

“Where did—” He’d given me Maureen’s whereabouts so far ahead of my question about her that I had started to ask it anyway.

“You might have time to get her, if you move fast.”

“Thanks for the advice. What’s that in your pocket?”

“This? It’s, ah, an orchid. For my mom’s birthday. That’s today.” He pulled the purple flower out of his shirt pocket and examined it. “Seems okay. She gave me a whole bunch of instructions on how to set up the pocket ecology for it, let it grow into your clothing. . . .”

“Put it down.”

“What?”

“Put the orchid down and don’t pick anything else up. You haven’t paid for it, so you’ll have to wait.” I stood relaxed, waiting for him. If he tried anything, I was ready.

“Oh, come on.” He seemed near tears. “I was late already. I’m always late. I pick up these things at the last minute. . . . I’m a bad son.”

“I’m not here to deal with your family issues.”

He sucked air through his nostrils, looked at me, and realized that his mother would have to wait a bit longer for her corsage. He set it gently on some moss.

“Just my luck, grabbed by a bunch of benchwarming D-levels. Have you already checked out every programmable toaster in eastern Pennsylvania?”

I smiled at him. “You can tell us how to serve you better on the appropriate form. Plenty of them available in the lounge.”

The hospitality lady was a shade less cheerful this time. “Would you like some coffee?”

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“Eat me.” Duster swept past her. She looked like she was going to cry. I doubted we’d get this team to work with us again, which was fine, because I didn’t think we’d be able to pay them anyway.

Back into the jungle. “Max. Has anyone headed back past you?”

“No, man. All quiet here. You lose someone?”

“I haven’t lost anyone.”

But something about this situation was bugging me. I ran over to the bucket and pulled out the gloves. I turned each one inside out, but they looked like regular rubber fabric. The bucket seemed to contain only muddy water. I dumped it out and poked through it. Nothing in there but a half-rotted leaf she’d probably plucked to keep the plants looking nice. The bucket itself was a single piece of vinyl. I kicked it away.

Seismic analysis had indicated a significant cavern beneath the store’s floor. That was presumably where our target AI, Donald, was hiding out. Was there some kind of secret access to it from the sales floor?

“Taibo,” Petra said in my ear. “Where are you? You should have everyone sequestered by now.”

“One to go,” I said. “Just a second.”

“It was nice work, picking this one up,” she said. “Let’s just wrap it up and go.”

“I’m on it. Really.”

“Hey, man,” Max said. “Don’t get caught up in the details. Be a big picture guy and move on up. Get this right, and everyone will forget all about Bala Cynwyd, you’ll see.”

“Thanks for the career advice.”

“Hey, no problem.”

Max and I had gone out for drinks one night the previous week, not too long after I’d gotten the lead on the Limpopo AI. I’d been feeling good . . . and maybe a bit vulnerable too. I’d gotten the lead from an old bud, Chet. Chet and I worked together, years before, at a beltway bandit tech consulting firm in Falls Church. Since then, I’d knocked around through half a dozen careers, while he’d gotten in on AI hunting early, and now was a partner in a B-level firm, Beagle

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& Charlevoix, that dominated the mid-Atlantic market. He'd given me a call a few weeks ago, just to catch up on things, and we'd caught dinner at a Cambodian restaurant in Lancaster. Southeast Asian thinkingpins were rumored to be behind a lot of recent AI activity, and the cuisine had become popular among those who hunted AIs. Maybe they thought the spices would give them an insight into their quarry. Chet particularly favored tamarind, pouring it over things that did not require it. And he had given me a lead on the Limpopo AI, as a memory of old times. Maybe he felt sorry for me, I don't know. This particular AI was something his employers regarded as too small-time to mess with.

But to Max I'd made it sound like I made the AI on my own, just from the clues.

Something was going on. I picked up the wet leaf, and an image came to me: sucker marks on Maureen's temples and cheekbones. I looked more closely at the leaf. The veins looked natural, but they were just a surface decoration. Its actual structure was a complex mesh.

Jesus. An aicon.

We were in over our heads. Aicons were datalinks from an AI to people who had decided to associate with it. We tend to call them "acolytes," partially to demean them and make it seem like they are devotees of a carved wooden idol, rather than colleagues of something that disposes of more processing power than the entire world in 2010.

AIs with aicons are not D-level AIs. They are not Donalds or Dorises. They're not even Craigs or Cindys. They are Brittanys and Boones. If that was the case, we were in real trouble. Not only does Gorson's Cog Repo only have a D-level license, it has a D bond that's pushing its face into the floor. Taking on an AI, an intelligent device physically invested in a populated space, is dangerous. Even D-level bonds are millions of dollars. C- and B- level bonds are gigantic funds, with lots of corporate shareholders who hate uncompensated risk and hire expensive lawyers to protect their investments. Taking on a high-level AI with an inadequate bond was like jumping out of

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an airplane holding a paper umbrella from a Mai Tai. We'd have to cancel the clean, now. Maybe we could grab a finder's fee, which could run five percent or so of eventual recovery.

But why would there be a B-level in a plant store? I was overreacting. The leaf was . . . I didn't know what it was.

No way I'd go crying to Petra about it. I'd played clever detective with her too, making like documentary research and pavement pounding had scored this AI. I wasn't ready to drop her respect down to zero again.

So I went off station and ducked into the drier air of the lobby that occupied the central part of the overgrown strip mall.

Down on ground level was a cutesy barewear store with lines of breasts, alternating perky and heavy, hanging in the display window, with a markdown bin of last year's abs outside the door, and in front of that a few pushcarts with fringed canopies selling scented candles, decorative contact lenses . . . and cute toys for kids. I'd caught a glimpse of a baby's mobile, schematic faces with big eyes and heavy eyebrows dangling from it. Children react to human faces before anything else, and infants will stare fixedly at one. Someone had clearly interpreted "stare fixedly at" as "enjoy": the beginning of a lifelong misunderstanding.

Competing restaurant logos flickered on the glass balconies above, and dripped down red and green. The scent of galangal and cilantro implied sinister Cambodian thinkingpins plotting the replacement of western civilization by a rack of cognitive servers. The gleaming cylinders of fish tanks penetrated the floor to their support gear somewhere in the cellar. A grainy red dot from a laser spotter marked out a fish a diner had chosen for lunch. A net dropped through the water and scooped it out, flopping.

A waiter in a short jacket pushed a cart stacked with covered dishes.

"Hey!" someone shouted from overhead.

The waiter stopped.

"Extra tamarind!" The staffer overhead tossed down a squeeze bottle, which the waiter caught deftly. "Special order."

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I'd been well and truly gamed—I knew it right then. I watched the waiter trot the cart out into the parking lot and disappear, presumably toward an air-conditioned bus with a well-equipped wet bar. Those B-level guys liked to hunt in style.

I didn't see the entire plan, not yet, but I knew there had to be one. It was looking more and more like there was an unexpected B-level AI somewhere in that jungle, and that was what Chet and his crew were licensed for. Which meant that it wasn't unexpected to Chet. But if he'd known it was a perfect target for his crew, why hadn't he just gone in to get it? Why involve me and my sad sack colleagues from Gorson's Cog Repo? There had to be a reason.

Then I remembered what I had come out here for. I bought a mobile from the pushcart vendor. I grabbed a face with a black pageboy and red lips and held it up to the leaf I suspected of being an aicon. Maybe I had jumped to conclusions a bit too quickly and had imagined the whole thing . . . . The leaf vibrated. I saw a flicker of lights in what suddenly seemed depths within its folds.

The leaf writhed and tried to grab on to the face. It was so sudden I almost dropped it. Some kind of skin adhesive along the leaf's edge stuck onto my right pinkie. I shook it, disgusted, terrified, but it stuck fast, as if it had become part of my finger. It took an effort of will for me to calm down. It stopped moving after a few seconds, and a few more before it decided autumn had finally come, and dropped off my finger. I shoved the face in my pocket.

The Bala Cynwyd AI had really been an Ernie.

It had gotten upgraded to Denise after Gorson himself had lobbied the IRA with processing metrics someone in the examiner's office had found persuasive. "Denise" was pretty much an overgrown home media center hacked up by a neglectful but too-smart parent. No one likes these suburban domestic grabs, but they're bread and butter cases.

Maybe we got overconfident. Max and I went in as screen installers and managed to slide a real media center in to replace the AI, so none of the kids in the house even noticed. They often get attached to enter-

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tainment devices that were smarter than they were. It made choosing channels so much easier.

But as we were turning out of the cul de sac, a repair van backed out of a driveway and, ignoring our car's frantic envelope-violation signals, smashed right into us. Nothing disabling, but even saving human civilization won't keep you from serious trouble if you leave the scene of an accident. There was a lot of paperwork, and then we found that our fender had been pushed into our front tire, making our minivan undrivable.

As Max and I tried desperately to pull it back out, a couple of cars pulled up and blocked the street. Teenagers spilled out of them. Some quick action with a 3D printer had given them giant styro-foam turbaned heads with the weary and wise face of their aiconic image. Seemed like this AI had a thing for early twenty-first-century Islamopop preachers. Not real aicons, thank goodness, and they had the merciful side effect of muffling those slogan-chanting voices—but if any of those kids suffocated, it would be our fault. Jesus!

There was Max, wrestling with one of them. What the hell? He was supposed to be in the back of the van, disabling the AI's comm links, not mixing it up. There were half a dozen minicams out already—a lot of people didn't get out of bed without turning on a video recorder. We were popping up as windows on the screens of every easily distracted cognitive activist in the country. Most of them had nothing but time on their hands, and could hop into their augmented walkers and camel-strut on over here, to pile more workstation flab around us.

By this time, small remote-control blimps circled above, denouncing us and our attempts to drive the human race back to a pre-post-industrial economy, disempower ethnic variants, and prohibit refraction-correcting eye surgery.

There was only one thing to do now. I yanked Max off his victim and shook him. "Run!" I said.

"Wha—?" He looked around, as if seeing the yelling mob around us for the first time.

"Come on!"

We sprinted. No one had expected us to abandon our AI so quickly,

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and it took them a couple of seconds to react. I jumped over a car hood, leaving dents in the soft metal. Two guys managed to grab Max, but he shrugged out of his flight jacket, leaving them with nothing but fleece and leather.

We'd lost the AI. We were alive, we were free, but we were without income for the month. Like any bounty organization, Gorson's worked on a Paleolithic reimbursement schedule: mammoth-stuffed, or starving. Petra, our brand-new boss, wasn't happy to feel her belly rubbing up against her spine quite so soon.

"Oh, man." Max shook his head at his own stupidity. "Don't know what came over me. Little weasel. Couldn't stand seeing his overprivileged protesting butt out there while I'm working to save him from the futility of his own existence, you know what I'm saying?"

"Yeah, buddy. I do."

"Man, I loved that jacket. This sucks."

"Yeah. It does."

It wasn't too long after that that Chet took me out to Tonle Sap and, while stuffing his face with oversauced pork, had slipped me the location of a so-far unidentified AI that wasn't worth his company's while to go after.

Maureen dropped from a tree onto me as I reentered Limpopo. She might have been able to take me out right then and there, but she miscalculated. An angled branch deflected the force of her attack and I was just knocked to the side. I rolled off the soft undergrowth and came to my feet to pursue.

She'd already recovered. I caught a flash of flared nostrils and staring eyes. "You luddite terrorists can try to stop us, but you will fail!" Her kick caught me in the solar plexus and threw me back into the undergrowth. "You're just a taxicab for a DNA helix, you stupid meat processor!"

She had the singularity-sucking rhetoric down so well she could spout it while showing off her aikido moves. That was fine. She was confirming a few things for me. My job now was to stay conscious long enough to do something useful with my conclusions.



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No time for pride. She'd be on me in a second.

I tore at the nonlethal restraints on my equipment vest. Stickum, slippem, oopsy, barfem: stuff named by preschoolers, and that did things preschoolers would have found amusing. This gal moved like a martial arts expert, so I figured a vestibular disruptor like oopsy was the best choice. Extremely coordinated people have always pissed me off anyway. I flicked the galvanic grenade at her and ducked.

She took another kick at me, but spun around and fell with a desperate wail as her vestibular system sensed random tilts and accelerations.

Now, where the hell was she?

She was only a few feet away—I could hear her crawling through the underbrush—but no matter which way I turned, huge elephant's-ear leaves were in my way. They pressed in, thick, fleshy, damp.

I felt one unfurl against my cheek. I scrunched my face up like a baby refusing a spoonful of mashed peas. Like that was going to do any good. I unsquinted one eye. The leaf was covered with hairs, each three inches long. No. Not hairs. Needles, incredibly thin needles.

"I have trouble," I said. Petra said something in my ear, but I couldn't understand it.

Then I remembered the face. I reached down along my side, almost dislocating my shoulder. There. I could feel it in my pocket. I got two fingers in, almost dropped it, and managed to pull it out.

Everything had gone silent. The leaves formed a globe around my head, shutting out all sound and light. It should have been dark, but the surface of the leaf flickered. And now I could hear a sound, like the whispering of distant voices. They were saying something immensely important, something I absolutely had to hear . . . I jammed my elbow back, and got the face from the child's mobile up.

Human beings sample, and use cheesy makeshift heuristics, because we just don't have any brain capacity. If we tried to deal with the universe full on, our craniums would explode. AIs are different. They dispose of orders of magnitude more processing power, so they can see, hear, and know everything.

That's the theory, but shortcuts appeal, no matter how smart you

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are. If there's something more valuable to use your processing on, you'll do it. It's comparative advantage. Some thoughts are just more worth having. So, if these aicons were something the acolytes put on to communicate with their AIs, the mechanism wouldn't necessarily run a full analysis every time. I'd guessed the leaf responded to simple facial features like eyes, nose, eyebrows, mouth, and, like a child, like anyone, responded more strongly to the high signal-to-noise-ratio fake than the noisy, self-contradictory, and contingent real.

It clamped on the face and, for an instant, the rest of the leaves relaxed. I dropped and twisted, then elbow-crawled through the underbrush, following the trail of broken stems left by the redhead. Behind me, leaves rustled as they missed further confirming data, and failed to find cranial nerves, or chakras, or acupuncture meridians, or whatever it was they were looking for.

She was on the ground, minimizing the need for balance. And the disruption was temporary. She'd be on her feet in less than a minute. I crawled toward her and got a hand on her foot.

"Please comply," I managed to groan. "This is just a routine security operation. No ideological purification required. . . ."

She twisted away and kicked me in the head. Fortunately her gum boots softened the hit. I sucked muck but didn't lose my grip. I crawled forward onto her.

"You don't understand." Maureen was near tears. "You're going to break the Gardener down into processing units and use her to . . . manage an oil refinery, or something."

"Hey, it's relaxing work. I hear it's kind of like being a bartender. Surprisingly high job satisfaction ratings, when you look at the numbers—"

"The Gardener is an artist, not a piece of iron-age industrial control apparatus! You're not getting her. She's staying free."

A few inches farther and I could restrain her—a thick vine slipped off the tree that had been holding it up and fell across my shoulders. The damn thing was heavier than it looked. I tried to shrug it off, but it pushed down harder. By the time I realized what it was up to it had

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braced itself against some huge roots on one side and an irrigation pipe on the other, and pinned me to the ground. I dug my hips into the dirt and tried to squeeze out under it. Its pressure increased.

I tore holes in the soft soil, but didn't move an inch. I was having trouble breathing. Maureen slipped out of my grasp and disappeared . . . back up the tree, it seemed.

I didn't care about that anymore. I was really feeling the lack of oxygen by this point. My vision was contracting, and I could no longer see anything out to the sides.

What had led me to this miserable situation? It might just have been the oxygen deprivation, but as I gasped for breath, I remembered something.

After our dinner, Chet had slapped me on the shoulder and said. "Hey, Taibo, if you ever run into any trouble, be sure to call me. I value your contribution, you know that. Whatever happens, it will be worth your while."

It hadn't made any sense when I thought about it, but it had been perfectly fine as part of the flow of flattery and moral support that Chet had been offering me. He'd told me that I could still make some money, if less than I had hoped, by calling him and his team in. Great guy, Chet. I hoped I'd live to thank him.

"Hey, man, what you doing on the floor?" Max stood over me, vaguely puzzled.

I tried to talk, but now there really was nothing in my lungs. I tried to point.

"What, this fall on you?" He yanked at it, grunted when it wouldn't move. "You get yourself in another mess, man? Sheesh. Petra's scrubbing the mission. You hear that? Whole thing's a big botch. I can't use any of my gear now. I could lose my license, you know that? Man. I need it. Car needs a new transmission, and there's a frickin' colony of squirrels in my kitchen exhaust fan. I try to chop 'em up with the blades, but they just dance around 'em. Gotta get pest control in there. Those guys cost."

So that was it. The last thing I would ever hear would be Max bitching about his household budget.

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“Just a second, man.” He stepped away, then reappeared, holding a shovel. He jammed it under the root and levered. The pressure on my chest lessened enough for me to catch a breath, but not enough for me to get out. He grunted and dropped his weight on the handle. I was able to scabble out just before the handle snapped and the vine fell back down.

I rolled onto my back. “What’s going on, Max?” I asked, as soon as I got my breath back.

“Ah, a big screwup. Not your fault man, you just got bad information. Happens. Happens to everyone.”

“Gee, thanks for being so understanding.”

My angry tone startled him. “Hey, man, I just rescued you. What are you getting so pissy about?”

“You knew this thing was a B-level AI when we came in here.”

“What? No, man, I—”

I grabbed his shirt. “I shot my mouth off about getting a tip from my buddy Chet. And you knew it was a setup. Right away you knew he wasn’t about to be giving me anything valuable without getting something in return.”

“Well, man, you guys do have this dysfunctional relationship. I don’t know why you hang with him.”

I hung with him because he always bought dinner and because he managed to imply that he thought I was too smart to still be stuck with a one-bedroom apartment near an all-night convenience store and grad-school furniture with beer-can rings on top of the bookcases, without actually ever promising to give me any help in moving up. The information about this clean was the first real thing he’d ever given me.

“That’s why you were carrying all that gear,” I said. “You thought you’d take on a B-level AI with a couple of satchel charges and an electromagnetic pulse grenade? Are you crazy?”

He had the grace to look shamefaced. “That damn adjustable-rate mortgage is eating me alive. I bought at the top of the market . . . so I’m an idiot. But, yeah, I wasn’t sure what was going on, but I knew there was money in it.”

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“But I still don’t get it,” I said. “Why did Chet give me that information in the first place? What does he get out of it?”

“I can tell you that,” Petra said above us.

Both Max and I jerked. I sat up, trying to squeegee some of the mud off my clothes with my hands, and he put what was left of the shovel aside, as if it was a weapon that violated regulations.

She sat down on a fallen mahogany log. She was my boss, and as a result I didn’t particularly like her, but right now she looked young and bony, and as much in the crap as Max and I were.

“Do you think we’re the only ones with money problems?” she said.

“Hell, things are tough all over,” Max said. “We know that. So what’s their game here? Why was Chet setting up poor Taibo?”

Great. That’s the identity I’d been looking for: “Poor Taibo.”

“Because they’re up against it too! They come off smooth, confident, world-beating . . . believe me, I know. I smelled it, up there. Beagle & Charlevoix. Great parties, champagne on ice in your hotel room, all that stuff. What was not to like about that? After all, we had a trade secret. Someone in Research had figured out how to turn aicons into one-way trackers. You could detect the AI, while it had no data flow back. Worked great in a couple of major cases. The AIs never knew they were being bugged by their own aicons.

“But now . . . there are too many teams—trained teams, full of cog sci Ph.D.s, anthropologists, former Omega Black assault troops—chasing too few AIs and pushing margins down. Beagle & Charlevoix has monstrous overhead. Big capital investments in equipment, lots of salaried staff, nice downtown offices with wood paneling and marble desktops. They’re just as hungry as we are. Hungrier, ’cause their body is bigger. And they’re not meeting their bonding numbers. No one knows that yet, but they couldn’t credibly bid on a class B assault. They’ve been doing Cs recently. Colleen over in Lehigh, and Cornelius way off in Wheeling. They didn’t publicize it. Full dress operations, using full staff, just to keep everyone busy—I doubt they made much back, if anything.”

Petra had burned out at the company. Personality conflicts, I’d heard. That didn’t surprise me.

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“But, like anyone else, if they’re called in on a job that’s going wrong, the bonding requirement is lifted, and the reinsurance is picked up by the Labor Department. So you, my friend, were set up.” She pushed hair off her forehead. “And there’s nothing we can do about it. Chet probably encouraged you to call him—”

“If anything went wrong,” I completed. “Yes. I have his card in my pocket.”

“Very nice of him to offer,” she said. “I think you should punch him up.”

“No way! No way!” Max was furious. “We can take this one, man. We got it on the run already. You’re ready, ain’t you, girl? Ready to blow the floor. I’ve got the gear. It’s hot pursuit. Two can play that ‘got the cognitive level’ game. We got the proper documentation, right? A good-faith Donald. But it’s trying to get away. Escape! If we grab it while it’s trying to get away, we’re totally legit. Oh, maybe a couple of fines here and there, but nothing that will cut too far into our profits. We’ll just let our accountants figure out what line of which schedule those expenses go on.”

“Max!” Petra was too depressed to even spark up at being called “girl.” “This isn’t a joke. This thing’s too big for us to grab. Even these guys, with a full team, will have trouble.”

The thought was bitter. I could just see Chet and his crew rolling out of their wagons and swaggering into the store, the tails of their expensive black coats flapping as they collected the goods. . . .

“Hey,” I said. “I don’t think I’ll have to call Chet at all. They have an agent in here, swept up. He switched out of uniform, but seems to like the feel of the duster around his ankles. I should have guessed it just from that. He’s been watching us. He knows the whole story.”

Now that I thought about it, it was obvious. When I’d grabbed him, Duster had given me completely false information about where Maureen had headed. That wasn’t too suspicious in itself. People sometimes saw AI acolytes as some kind of oppressed ethnic group and tried to protect them. And he’d slid around a little on whether he had to get to work, or get a birthday present to his mother. But

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the clincher was the way he'd gotten all nasty about our D-level license.

Except I hadn't had a chance to show him my license. He'd known the whole situation without seeing it.

"Who?" Petra demanded. "Who is it?"

I described Duster to her.

Her face flushed. "I can't believe it! I know who that is. We never got along, at B&C. Arrogant little. . . Bastards! They had this whole thing set up. How far back? Maybe since I left."

She and Max were both still excited, but I was ready to go home, take a hot shower, and go to bed, despite the fact that it wasn't even noon yet.

"Man, we are screwed." Max shook his head.

I'd switched careers quite a few times in my life. Each time, it put me at the bottom of the hierarchy, behind people who, dumber or smarter, had had the sense to pick something and work their way up in it. And now I was here, go-to guy in a second-rate AI hunting troupe, tied to a charming hysteric and a depressive control freak. It was the most fun I'd ever had, the first time I'd ever felt that I made a useful contribution.

So, I guessed it was time to make one. A thought had been nibbling at me since I realized who Duster had to be. He had no idea I had figured it out. None of them did. As far as Chet and his gang were concerned, we were all still the patsies he'd set us up to be.

"Petra," I said. "It's my fault. I got that information from—"

"Never mind whose fault it is. Do you have anything to offer but your guilt?"

So she was back to being hard-ass manager. That was fine. I did have something to give her. If it was still there . . .

I searched down the path toward where I had first encountered Duster. And there, vivid on the emerald of the moss, lay the orchid he had tried so hard to take off with.

"I have an aicon." Sure enough, if you looked carefully, which I hadn't before, you could see the delicate circuitry embedded in the petals. "It's linked into the AI its acolytes call 'The Gardener.' And one

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of those acolytes, Maureen Nikolaides, is still on the loose. I think we should leave her that way.”

“Okay.” Petra crossed her arms. “I like an employee who can turn a performance problem to some advantage. What are we going to do with her?”

“We’re going to let her escape. Along with her AI.”

“Good news, folks!” I’d worked hard on the tone: a chipper front over defeat and failure. “You’re free to go. Just a small debrief, and we can have you out of here. Again, I apologize for the inconvenience.”

They looked up at me. Most of them had been sitting around a folding table that was littered with half-eaten bagels, orange juice cartons, and mini jelly containers. Phones, screens, and other communication devices had been inactivated. That usually, after a long pause, resulted in something like a party. People often made friends in those few hours, and Gorson Cog Repo even had two marriages to its credit. None of us had been invited to either wedding.

The data-futures lady, Maude, got up and bustled out past me, followed by her blue-haired friend. She gave a farewell wave to the shirtless plant maintainer, Alphonse, whose thick chest hair was now frosted with powdered sugar. He smiled vaguely, as if he’d already forgotten who she was.

Duster sat by himself, erect in a chair, like a Japanese warlord waiting for a report from a samurai. He raised his eyebrows when he saw me. If I was right about him, he’d need to move now. If we completely disengaged from our pursuit, there would be no legal way for his team to take it over.

“What happened?” he said. “What’s going on?”

“I genuinely apologize, sir,” I said. “We were in error. There is no AI present here.”

“No . . . what are you talking about?”

“Oh, that’s internal business, I’m afraid. Our information was imperfect. Here’s your phone.”

He shoved it into a pocket, then remembered his cover story.



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“My mom . . . I’ll need to go back and get that orchid. If you’ve cleared out. . . .”

“Five minutes,” I said. “Five minutes, and we will have officially declared this area AI-free—”

That was too much for him. He stood up. “Jesus. You guys can’t even handle a simple . . . let me out right now. Maybe there’s still something to be salvaged from the situation.”

Gone was the businessman obsessed with getting his old mom a flower. This was a well-paid, professional, class-B AI hunter. One, I reminded myself, who was just as much at risk of losing his job as I was.

I had to play it carefully. I frowned, trying to look confused but not completely befuddled. “You’re a hunter, too? You should have mentioned it. I had a nice cherry Danish I was saving, I could have let you—”

“Let me out of here! There is an AI under there. If you pull back, you’ll lose it completely.”

“Thanks for helping out, but there’s nothing under the floor. The cavern’s completely empty. Just a bunch of pots and stuff down there. Fertilizer bags. We thought it was weird, that it was so big, but maybe they’re planning to expand.”

He stared at me, stunned. The subterranean space was clearly where most of the processing power was. A week or so before, Petra had driven a public works truck around the mall, seemingly examining pavement, but really sending seismic mini-shocks through the ground, outlining the nonconducting empty space that hung under the plant store like a giant egg. Our theory was that they had hidden the excavation waste as substrate in their various jobs. The rock and dirt from under the mall now resided in living rooms all over southeastern Pennsylvania.

“You’ve got the perimeter completely tight?” he said.

“We did. Sewer pipes, mall access, everything. Nothing in or out.” I smiled with pride at our thoroughness.

“Ah, you *did*?”

“Well, we can’t very well sequester the whole mall now, can

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we? Business has to go on. The place has deliveries to make. They lose a shipment, we've got penalties to pay. Some of that stuff's perishable."

"Shipment?" His rising tone was so outraged that it almost made me break character by laughing. "Where? Show me!"

"I think all those plants are paid for already, but sure. Sure. Come on."

We ran through the plants. I now knew where the path to the rear led, so I was able to get lost convincingly.

After a bit of confusion, during which I thought he would try to strangle me, we got straightened out and found the loading dock at the rear of the store. The truck full of plants was just pulling out of the alley. Max had had some trouble pulling the driver out of the donut shop where he'd relaxed, but he was now on his way to make his deliveries, just a bit late.

"Damn it!" Duster ran down the access alley, long coat flying, as he yelled into his phone. "Get a team down to the 202 onramp. We've got a good possibility of a live escape! What? Yes, I'm sure! Hurry!"

It wouldn't take them more than a few minutes to discover that the thing was full of nothing but plants. And they were professional enough not to pull everyone off surveillance here at the store. But their surveillance would be light for just a bit. I moved.

I'd thought about how Maureen had arrived and disappeared. There didn't seem to be any access at ground level. . . .

I wasn't as limber as she was, but I was still a primate. I grabbed a branch and clambered up. The trunk seemed solid, at least on this side. I swung around. My feet slipped out from under me, and I ended up dangling, ten feet or so in the air. That would look just perfect, when Chet, Duster, and the rest of the B-squad came sauntering in to take care of things.

I worked up some momentum and managed to get a toehold on the rough bark. That gave me just enough support to walk hand over hand to the next branch, then lift a foot and get, at last, solid support.

And there it was: on this side, the trunk just ended, with a ring of

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branches around it. A dark hole descended, with a convenient maintenance ladder on one side.

"I'm going down," I said. "Wish me luck."

No one did.

Maureen and I spotted each other at the same instant. Instead of running, she charged straight at me.

And as she did, I caught a glimpse of what she held in her hand. She was packing . . . I guess I wouldn't call it "heat," but close enough: a neuromuscular junction suppressor, sort of a remote-control curare-by-RF. Worked on a human the same way that a HERF gun worked on electronics: AI's Revenge. The thing made no noise at all. I might have stood there with my mouth open, and then collapsed without closing it, if she hadn't, again, acted a bit too soon. The Gardener might be up to B-level, but its staff still required some training. My whole left arm was numb. Jesus! I ran, stumbling and off balance, my arm dangling like a length of Italian sausage.

The Gardener's secret hideout was a vaulted space about twenty feet high that had been carved out of the earth beneath the mini-mall. Dirt had been heat sintered into a crude support shell, lumpy and sagging, with concrete squirted in here and there, seemingly at random. Clearly work done without a permit.

A few dim lights showed roots that dangled through the ceiling into masses of perfusion tubes. There, in the center of a tangle of infomycelia, was what had to be what Maureen and her fellow plantsmen called the Gardener: a few complicated shapes that might, at one time, have been irrigation and growth hormone controllers, now grown into a self-aware entity.

I dodged behind it. It was the only possible thing I could do.

It wasn't enough.

"Stop," Maureen said.

A hummingbird that had somehow made it down into the cellar buzzed through the air, zigzagging in its search for a blossom.

"Don't kill the poor bird," I said.

"What?" Her finger was on the trigger, but she didn't pull it yet.

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“You may think I’m guilty of something, but that bird hasn’t done anything. Let it. . . .” It floated away. “Okay.” I scrunched my eyes shut.

“What are you talking about, mister? This thing is nonlethal. Just a little relaxation for you—”

“Sure. If you have a sharp crash cart team ready to intubate and a ventilator warmed up. The diaphragm nerve connections go too, just as with curare. My breathing will stop. I shouldn’t tell you, but, lucky for you, an autopsy won’t show anything. Unless someone decides to do a neurotransmitter assay and discovers that there’s just too little acetylcholine in the postsynaptic receptors. I think you can bluff your way past that one. Not that it will matter much to me, one way or another.”

She looked at me. I tried to act as if I were staring death in the face. Where the hell was Petra with Max’s explosives?

She shrugged. “I won’t tell the Gardener, then. She’s kind of sentimental.”

She squeezed the trigger just as the ceiling fell in on us.

Max’s explosives had done a lot of damage. I heard cracking and shifting as the poorly engineered structure started to collapse over our heads. A tree, its roots loose, leaned over with a creak, and toppled. Soil showered after it, then a sizable chunk of concrete, which hit with a hollow thud. Solid columns of light rose around us. Concrete dust clogged my sinuses. I couldn’t see where Maureen had gone. I didn’t want her hurt. That wasn’t the point of this particular exercise.

I crawled through what looked like a combination plant nursery and machine shop, damaged by the cascade of rubble from above. An overturned sprouting tray dripped hydroponic fluid. Grow lights dangled over a project: a veined flower, like a crocus, with its petals floating free, supported by lines of translucent, glowing threads that marked out some complex function, soon to be concealed. A hedge of elaborate manipulator arms labored delicately over it, pulling lines through, connecting others, like a sewing bee. Several aicon leaves floated in sealed plastic bags on an old potting table.

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The Gardener's original purpose had been to create biocircuits, hyperflow xylem, physiological sensors that allowed flower scents to reflect or lead the moods of the people in the room with them. So now it created aicons for its dirty-fingernailed followers. I patted the orchid in my pocket. It was still linked in, but the Gardener had no idea that it still existed. As far as it was concerned, Duster's orchid had vanished.

Someone groaned. I dug through the rubble, pulled off several stalks of bamboo, and found Maureen, bruised but still alive.

And conscious. "Get away from me."

"I'd like nothing better. But you're the one who's going to have to get away. With your little gardening gadget, if you please."

"What are you—?"

"Max!" I yelled. "Over here."

Max deftly backed up two trailers with low railings, pushing them with an electric tractor. He'd duct-taped a big yellow flashlight to it as a crude headlight. It shone forward, away from us, into the darkness of the escape tunnel that the acolytes had dug over long months, between the humming aquarium bases for the fish tanks that stretched up into the restaurants on the top floor. I could see the gleam of fish as they reached the bottom and turned to go back up.

"Don't run over her!" I waved frantically and he came to a halt a few inches short of Maureen's outstretched fingers.

Max peered down at her. "She good for this? Or should I grab another of these Druoids?"

"She's good. Just give her a couple of minutes. The roof just fell in on her."

"Hmph." Max was carefully unimpressed. We went to work on the Gardener, in full view of Maureen, who seemed unable, or unwilling, to understand what was going on.

I whacked at power interlocks. They were standard safety-release, but had been wrapped in resistant tape, then encased in resin. I figured that it would definitely be a problem to lobotomize your AI by tripping over a data cord, but this rose to the level of paranoia. Max and I sawed through, released the connections, pulled off the power.

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Together, we levered the bulk of the Gardener into the carts, along with a decent selection of interface devices.

“You got that connection gadget?” Max said.

I glanced at Maureen, but she was checking over the Gardener, making sure it was all right. “The aicon? Yes.”

“Give it to me. I’ll take care of it.”

“You’ll—”

“Just give it. You’ll see.”

Sometimes Max knew what he was doing. I handed it to him and he shoved it into a pocket.

“Is it ready to get out of here?” Petra asked from the darkness.

“Just a couple of minutes and she’s ready to roll,” Max said.

Maureen looked up from her AI. “What’s this about?”

“Us helping you to escape, you mean?” I grinned at her. She remained expressionless. “It’s kind of complicated. . . .”

“We want your AI,” Petra said. “We can’t have it. Legal problems. But I’ll be damned if I let those bozos upstairs get it either. If you rip out of here in the next two minutes, sister, you’ll have it free. Otherwise, you’re a bounty for our competition. I really wouldn’t want to see that. Do you?”

The silence stretched. By this point Duster would have realized that the truck was a distraction, and would be back with the rest of his team to cut off all routes of escape. As I thought about that, I found myself irritated with Maureen for not taking this obvious opportunity. In a real sense, it didn’t matter if we were lying or not. If she didn’t do something, her AI was done for.

“Ah, screw it.” Max flipped a switch and the tractor motor hummed back to life. “She’s too dumb. I’m taking this out. Ten percent finder’s fee is better than nothing. Better than sitting around down here trying to slap some sense into an AI-worshipping interior decorator.”

“Wait!” Maureen turned to me. “Is this true? You’re letting me go?”

That was quite unnecessary. What made her trust me all of a sudden? “Yes. But not because we want to.”

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“I wouldn’t have it any other way.” She hopped on the tractor and hummed off into the dark tunnel.

“Okay,” Petra said. “Have we really just let that thing go?”

“Nah,” Max said. “Me and Taibo, we’re all set. Now, let’s see what the smoothies do when they show up.”

“I have to say, Taibo, that was a nice try with the truck.” Chet smiled at me. “Anton’s pissed, though. I’d suggest staying out of his way when he finally turns up.”

Chet’s team had arrived. Guys in long coats had spilled out of sedans with dark-tinted windows and smoothly closed off the mall. There seemed to be dozens of them, each with a stack of gear, a support vehicle, and a separate online channel of coverage. I was no doubt showing up on thirty different feeds right now, edited in different ways, with various explanatory text crawls on my chest. I tried to look iconically like the Losing Team. It was surprisingly easy.

“Anton” had turned out to be Duster’s real name. He had chased that truck for much longer than we’d anticipated. Max’s hopped-up spiel to the driver had persuaded him to expect desperate plant hijackers, and he had led Duster and his team a merry chase along various Amish-cart-blocked roads down toward Lancaster. Duster, I gathered, had gotten a bit out of hand at the seizure, and been arrested by some local cops. The fact that the truck had come up completely clean of any AI activity would not do him any good at any hearing. Chet’s team would have to finish their job here before anyone could try to get him out of the Upper Leacock lockup.

“What are you going to do?” I asked in bewilderment. “Why are you here?”

“We’ve got to take this over, Taibo.” He managed to sound sad and reluctant, as if it had really not been something he wanted to do. “This has gotten completely out of hand. I had hoped you would be able to handle . . . well, it’s all water under the bridge now, isn’t it? Some things look really easy when others do them, but then turn out to take a great deal of skill. Just remember that, next time.”

It took every ounce of my willpower to keep from punching him.

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That was nothing you wanted to do while on two dozen channels of net coverage. People would be critiquing my form—“too much arm, not enough body”—before I was even under arrest.

“So . . . I still don’t understand. Are you helping us out?”

“No,” he said. “We’re not helping you out. We’re formally taking over this operation. All of it. It’s the only way, Taibo. I’m sure you understand it.”

There. He’d finally gotten it out formally, though I was sure he’d also filed the necessary permissions. Along with the AI, he’d just taken on all the liabilities associated with the operation. Whatever happened, all the property damage was now entirely Chet’s problem.

“This is a really dangerous AI, Chet.” I got all goggle-eyed and paranoid. “You have no idea—”

He smiled and patted my shoulder. “Come on, Taibo. Let’s go in, and you can see how the big boys do it.”

Petra raised the lid. “Who had the pork and coconut?”

“Me.” Max shoveled most of the bowl onto his rice and started eating. Petra looked at me and shrugged. We’d all earned a decent meal. “Shrimp and baby corn. You on a diet, Taibo?” She knew I usually went for pork. “It’s going to be a long haul, Petra. I don’t want to weigh myself down.”

She shrugged. “Suit yourself.”

The aromas of curry, fish sauce, and galangal mingled in the air.

It had been an uncomfortable scene. Chet’s crew had torn the place apart. No Gardener. No aicons. Nothing. Just a huge hole in the floor and some astronomical liability. They’d found Petra in the barewear shop trying on some delts she didn’t need, and hauled Max out of his hidey hole behind a fish tank. The exposed orchid aicon had been the biggest risk.

Max hadn’t yet said anything about what might have happened to it, and Chet had spent a lot of time looking for it, based on the description Duster had phoned in from his holding cell.

Chet had spent some time telling me what an idiot he thought I



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was, how he had played me the whole way, how I had never had a clue. In the end, he had managed to imply that I'd somehow taken advantage of his generosity to an old and unsuccessful friend in order to betray him. I'd invited him to join us for lunch.

As it happened, he had other plans.

Petra glanced at Max, who still had his face buried in his food. "Okay, Max. Come up for air and tell us where the aicon is."

Max looked up, vaguely irritated, and, instead of answering Petra's question, signaled a waiter. "Hey! Where's the extra?" He then grinned at us. "I ordered another dish for us. From the fish tank. Stuff like that's always best when it's fresh."

"From the—stop screwing around, Max."

"You gave me the assignment . . . ah, here we go."

The waiter pushed up a cart. Max grinned at him and took the covered tray from it.

Petra stared at it. "How—"

"Can't show it yet. Taibo's buds are still staring at us. The orchid's in a doggie bag. We can haul it out with our lefties. I shoved it through the basement maintenance hatch of the fish tank with an almost-neutral floater. It's an old drug smuggling trick. Thing looks just like some bit of kelp or something. Floated right up past these guys while they were charging around."

"Well, Max." Petra sat back. "Very enterprising." She looked at me. "You don't look too happy about it, Taibo."

I had been moving my food around, but not eating it. "I—I don't actually like shrimp that much."

"Hey, man, you scared that Maureen won't like you when you come after her supersmart gardening machine?" Max laughed, spilling rice down his chin. "You got a steady job. She'll forgive you."

I didn't look at him. He was my buddy, but sometimes he really annoyed me.

"That really was good work, Taibo." Petra sat back in her chair. "We have a link back to the AI. Beagle & Charlevoix have been forced to assume all the liability for this job, by formally taking it over. It'll bankrupt them, guaranteed." If I hadn't known her dedication to AI

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hunting, I would have thought that the most pleasing aspect of the job was the damage it would do to her former employer. “But shorn of icons, with its processing reduced for transport, this Brenda or whatever it is will still look like the Donald we originally thought it was.” She glanced at me, looked away. “Maureen’s looking for support from the acolyte underground, but it will be a few days before she manages to find it.”

Neither Max nor Petra understood my position. I’d been mediocre in various positions in the past. But now I had a job I was good at. It was in a declining industry, natch, but you can’t have everything. The next step, in addition to being good at it, was to be successful at it.

“Let’s grab our leftovers,” I said. “Who’s driving?”

## FOR SOLO CELLO, OP. 12

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*Mary Robinette Kowal*

His keys dropped, rattling on the parquet floor. Julius stared at them, unwilling to look at the bandaged stump where two weeks ago his left hand had been. He should be used to it by now. He should not still be trying to pass things from his right hand to his left. But it still felt as if his hand were there.

The shaking began again, a tremelo building in his hand and knees. Julius pressed his right hand—his only hand—against his mouth so he did not vomit on the floor. Reaching for calm, he imagined playing through Belparda's Étude no. 1. It focussed on bowing, on the right hand. Forget the left. When he was eight, Julius had learned it on a cello as big as he had been. The remembered bounce of the bow against the strings pulsed in his right hand. Don't think about the fingering.

"Jules, are you all right?"

Cheri's voice startled him. He hadn't heard the door open.

Lowering his hand, Julius opened his eyes. His wife stood silhouetted in the light from their apartment. Her hair hung in loose tendrils around her face, bleached almost colourless by the backlight.

He snatched his keys off the floor. "I'm fine." Julius leaned forward to kiss her before she could notice his shaking, but Cheri turned her head and put a hand to her mouth.

"No. Sorry. I—I was just sick." A sheen of sweat coated her upper lip. Julius slid his good arm around her and pulled her to him.

"I'm sorry. The baby?" This close, her lilac perfume mixed with the sour scent of vomit.

His phantom hand twitched.

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She half-laughed and pressed her head into his shoulder. "Every time I throw up, I think that at least it means I'm still pregnant."

"You'll keep this one."

She sighed as if he had given her a gift.

"Maybe. Two months, tomorrow."

"See." He brushed her hair with his lips.

"Oh . . ." Some of the tension came back to her shoulders.

"Your agent called."

Julius stiffened. His agent. How long would a one-handed cellist be of interest? "What did Leonard say?"

"He wants to talk to you. Didn't say why."

Cheri drifted away and began obsessively straightening the magazines on the bureau in the foyer.

Julius let her. He had given up telling her that the accident had not been her fault. They both knew he would not have taken the tour if Cheri had not insisted. He would have stayed in the hotel, practicing for a concert he never gave.

He tossed his keys on the bureau. "Well. Maybe he's booked a talk show for me."

At the coffee shop, Julius felt the baristas staring as he fumbled with his wallet. Leonard reached for the wallet with his pudgy sausage fingers. "Let me help."

"No!" Julius gritted his teeth, clutching the slick leather. "I have to learn to do this."

"Okay." Leonard patted the sweat on his face with a napkin and waited. The line shuffled behind him. Every footfall, every cough drove a nail into his nerves. A woman whispered, "Julius Sanford, you know, the cellist."

Julius almost turned and threw his wallet at her. Who the hell was she? Had she even heard him play before the accident or had she only seen him on the nightly news? Since the accident, sales of his albums had gone through the roof.

He wasn't dead, but he might as well be.

Julius bit the inside of his cheek until he tasted blood and pressed

MARY ROBINETTE KOWAL

his wallet against the counter with the stump. The bandages bit into the still tender flesh, but the wallet stayed put.

He pulled out his credit card with his right hand. It was stupid and it felt good and he hated it, all at once.

As if celebrating, his phantom hand flicked through the opening passage to Vivaldi's Sonata in F major. Jules pressed the wallet harder against the counter, trying to drive out the memory of a hand with each throb of pain. Avoiding eye contact, he took his iced latte from the barista. He did not want to know if she was the type who watched him with pity or if she stared with naked curiosity.

Leonard had already picked a table outside. Jules dropped into the chair across from him. "So?"

"So." Leonard sipped his mocha. "What if you didn't have to learn to do that?"

"What? Handle credit cards?"

Leonard shrugged, and dabbed the back of his neck. "What would you give to play cello again?"

Julius's heart kicked against the inside of his ribs. He squeezed the plastic cup to keep from throwing it at Leonard. "Anything."

The older man looked away. His tongue darted out, lizard-like. "Is that hyperbole, or would you really give anything?"

Shaking, Julius shoved the stump squarely in Leonard's vision. The phantom twitched with inaudible music. "If the devil sat down with us and offered to trade my hand for my soul, I'd do it. I'd throw yours in with the bargain."

"Good." Beads of sweat dotted Leonard's forehead. "Except he's already got mine." He pushed a newspaper across the table, folded open to a page in the Arts and Leisure section.

"SVETLANA MAKES TRIUMPHANT RETURN TO FIGURE SKATING"

Julius stared at the article. She had suffered from bone cancer and lost her foot. Two years ago, she was told she would never skate again. Now she was at the Olympics.

"How?"

"A blastema bud."

## FOR SOLO CELLO, OP. 12

Jules wiped his hand over his mouth. "I thought those were illegal."

"Here. Yes. Calcutta? No." His tongue flicked again, always the sign of a sticking point in negotiations. "But the blastema has to be from a related embryo to reduce chances of rejection." He paused. "Svetlana got herself pregnant."

The phantom hand froze.

"I know her doctor." Leonard tapped the paper. "I can get you in."

Cheri sat in the living room looking at a catalogue of baby furniture. When Julius entered, she smiled, barely looking up from the glossy pages. "Did Leonard have anything interesting to say?"

Julius hesitated in the door and then eased onto the sofa across from her. "He's found a way to get my hand back."

Her catalogue hit the coffee table, the pages slapping against the wood. Cheri stared at the stump. Her mouth worked soundlessly.

"It's not legal." Agitato beats pulsed in his phantom fingers. "It's . . ." He broke off, rubbing his left arm above the bandages to ease the ache. She wanted the baby so badly. "I feel like I'm dead. Like this."

Cheri reached across the coffee table to grab his good hand. "Whatever it takes, Jules."

He started to shake and pulled back. "The doctors can transplant a blastema bud to the stump and regrow my hand. But we have to do it before scar tissue forms."

"That's not so bad." She got off the couch to kneel beside him. "I don't mind moving to a country where it's legal."

He bit his lip and nodded.

Cheri ran her hand through his hair. Cool and soothing, her fingers traced a line from his scalp to the nape of his neck. "Hey. Sweetie. What's wrong?"

Wrong. She wanted to know what was wrong. The shaking started again. "It has to be related."

She froze. They hung suspended, as if waiting for a conductor to start the next movement. Julius stared at the carpet until Cheri moved her hand. She slid it down his back and stood.

"Related?"

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He nodded. "To reduce the chances of rejection."

"So it might not work?" Cheri wrapped her arms around herself.

"I don't have another choice." He held the stump up so she could see it. "Do you have any idea what it's like? I can't play."

"You could teach."

A laugh ripped out of him. "It's not the same thing! I can't go from being part of the music to hearing it butchered. I mean, can you imagine me with eight-year-olds? Christ. Kill me now."

"Sorry." Cheri paled, her skin becoming almost translucent in the light. She turned and went to the window. "What do you want me to say?"

Say yes. Say you understand. "I—I just wanted to talk about options." Julius crossed the room to stand behind Cheri. He reached out to hold her and stopped, staring at the stump. In his memory, the tour-bus tipped and landed with his arm out the window, sliding on his hand. Grinding it away. "I should have stayed in the room."

"What?"

"Nothing." He wouldn't have gone if she hadn't insisted. "We can make another baby."

"Can we?" A vein pulsed in her neck. "It's been two years, Jules."

"So you miscarried before." The phantom hand clenched in a tight fist. "You might miscarry again, and then you won't have a baby and I still won't have a hand. Is that what you want? Are you happy that I can't play anymore?"

Her shoulders hitched and Cheri shook her head.

Julius pinched the bridge of his nose. He had gone too far, but she had to understand. "I'm sorry. I just see this chance and it's the first time I've hoped since the accident." He put his hand on her shoulder. She trembled, her shoulder as tight as a bow. "I'm sorry."

She nodded but did not turn.

Julius waited for more but Cheri continued to stare out the window. He squeezed her once and walked away.

"Jules?" Her voice caught him halfway across room. "We should do it."

Afraid to look at her, he stopped. "Do you mean that?"

## FOR SOLO CELLO, OP. 12

“Yes.” The word almost disappeared into the hush of the room.

“Because I don’t want to force you into anything.” He tasted the hypocrisy on his lips, but he needed this. She had to understand that.

She turned to face him then. Her face, all cheekbones and dark circles, was blotched red with anger. “You’re offering me a choice between giving you your hand back and raising a child that you hate. What choice do you think there is?”

“I didn’t mean . . .”

Cheri shook her head, rejecting his apology. “Tell Leonard I said yes.”

She turned back to the window and leaned her head against the glass.

“Cheri.” He stopped. Nothing he could say would make her feel better, without giving away the thing he wanted. The thing he needed. He plucked at the bandages on his stump. If he could play again . . . “You have to understand what this means to me.”

“I understand that I’m your second love. I said yes. I can’t give you anything else.”

Julius stared at her unforgiving back. “Thank you.”

He slid out of the room to call Leonard. His hand trembled on the receiver. Down the hall, the door to the bathroom shut. Cheri retched once. Then again. Julius pressed the phone harder against his ear and started running Wilde’s Lament in his mind.

He concentrated on the fingering.

The last vibrations of Wilde’s op. 12 buzzed through Julius’s thighs and into his chest. He flexed the fingers on his left hand as he released the cello’s neck.

Across the room, Leonard sat with his head tilted down so that his chin vanished in his neck. Julius swallowed, the gulp sounding as loud as it had when he first auditioned for Leonard.

Leonard lifted his head. “What was that?”

“A Lament in Rondo Form for Solo Cello, op.12.” Julius stroked the cello’s silky wood. The sweat on his palm left a film on the instrument.



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Leonard grunted. His tongue darted out to wet his lips. "Well."

"Well?" Christ, the man was trying to kill him. Julius looked down, loosening his bow as he waited for the verdict.

"Heard from Cheri?"

"She sent me a card on my birthday." His left hand spasmed. "Are you going to tell me what you thought?"

"Turn the gig down."

Julius almost dropped the bow. "You're kidding. It's Carnegie Hall! I've been working for this for the last three years."

Leonard leaned forward. "Jules. Have I ever steered you wrong?"

"Three years, Leonard." He'd given up more than time to be able to play again.

"Take a gig in a symphony, build up your chops again. You wouldn't have to audition."

"Screw that."

"You asked for my opinion. As your agent . . ."

"Another agent would get me the gigs that I want."

"Sure." Leonard shrugged and headed for the door. "Take it, you'll sell out the house. But after people hear you play, the only gigs you'll be able to book will be novelty shows."

His words resonated in the belly of the cello. "You aren't ready. It's like you're playing two different pieces now."

Julius hadn't thought anyone else could hear it. He gripped the cello between his knees, as if the fragile wood could shield him from the truth.

"How long?"

He paused in the doorway. "How long did it take you to become world-class before?"

"Fifteen years . . ." Fifteen years of études and climbing his way up through the chairs of symphonies.

"Then that's your answer." Leonard shut the door.

Within Julius's left hand, the old phantom hand twitched again and started playing Bach's Sonata in D minor. He clenched his hand, but the fingering did not stop.

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*Will McIntosh*

As soon as she returned from selling the memory, Kiko opened her journal and read the last entry:

When you were sixteen, you met a young man named Joseph Errat at the cinema. He was sitting behind you with a friend. He was a black man, tall and lanky. He had four neck-rings, and fiery red face-paint around his eyes. He kept leaning over and talking to you, and you were scared, and you gave one-word answers to discourage his questions. But he persisted, and finally you turned and looked at his face, and you saw such kindness there that when he asked you for your number you gave it to him. You went on a date, the first date of your life, and Joseph was funny, and bright, and looked into your eyes the whole time. He took you to dinner at The Blue Albatross, then to Low-Grav Skate. He showed you how to skate high up the walls, putting his arm around your waist to steady you, and his touch felt electric. At the end of the date he walked you to your door, kissed you once, softly, and asked to see you again. You said yes. Then he asked if he could see you a thousand more times, and you laughed, and said yes, and kissed him again and ran inside.

Kiko read the memory four times, then closed the worn notebook and put it back on the coffee table, straightening its edge so that it was parallel with the edge of the table. She took most of the money she'd

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made selling the memory, put it in an envelope, and slid it under her landlord's scuffed green door. Safe for another week.

The end of the story of her romance with Joseph was still intact, because that part was flat and brown, so it had no value. To have it removed she'd have to pay, and she could not afford to. Plus, she wanted to keep as many memories as she could. Good or bad, all were her life.

Her father had seen Joseph kiss her at the door, and he'd forbidden Kiko from seeing Joseph again. When Joseph called and Kiko told him what her father had decided, Joseph had called her father a racist. She had defended her father; she knew he disapproved of Joseph because of the neck rings and face-paint, not his skin color. But in the end they were shouting at each other, and they never spoke again.

Kiko sat back in her chair, exhausted. She wrapped herself in her checkered blanket, not because she was cold, but for comfort, and looked at her photos—hundreds of colored squares perfectly spaced floor-to-ceiling on one chipped and bruised wall. There was her father, standing proudly next to her at her high school graduation. There Kiko, holding her puppy, Rumor, the day her father brought Rumor home as a birthday surprise.

She had no photos of Joseph—you don't bring a camera on a first date. If only their argument had taken place in person, she would at least have a memory of his face. Now, she had nothing, except the entry in her journal and the memory of Joseph's voice.

Kiko retrieved the weathered black cord snaking out of the apartment's antiquated Net-Jack, plugged the spiral of faded gold prongs into the neural shunt at the base of her skull. She did a search on Joseph Errat. There wasn't much. He worked on the west side of Lower Manhattan, writing code for an industrial construction firm. No information on marital status, children, parents. No photos.

She counted the money that was left, then put it inside her Zen book. That had been her last memory with any real value. The next time she needed money she'd be forced to sell bargain memories in bulk. Her past was already checkered with flat, static patches; she did not want to sell any more of it.

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Laughter drifted through the open window. She went over and looked out. Below her, children played in the shadowed street with a stick and a heavily taped ball. A chipped half-toilet served as home plate. Judging by the reflected light it was a sunny day. From her fifth-story apartment she could not see the sky. You had to be up at least twelve stories for that. Above her, all she could see was the underside of Upper Manhattan, a grey ceiling stretching past the tops of the crumbling buildings of Lower Manhattan in all directions. To her left, one of the tremendous pillars that supported Upper Manhattan shot upward like a stone giant, flaring at the top into huge white fingers that cupped Upper Manhattan's carbon fiber foundation. Kiko closed her eyes and pictured the dazzling glass spires, aflame with reflected sunlight, that comprised Upper Manhattan. She had never actually been up there, because she could not afford the toll. Her memory of Upper Manhattan was the only memory she'd ever bought.

"Kiko! This order's been here for five or six minutes! Pick up! Pick up!" Mrs. Kim hissed, scowling fiercely.

"Yes, ma'am." Kiko's heart hammered. She scooped up the brown bag behind her, called "number eighty-seven," dropped the order on the counter, returned to the line of customers waiting to order.

She absently wiped her free hand on her pant leg, trying to get rid of the feel of grease from between her fingers, as she took the next customer's order. She glanced at the industrial clock on the concrete wall—forty more minutes and she would get a three-minute bathroom break and could wash her hands.

The customer sat down to wait for his order, and the next customer in line stepped up.

"Hello Kiko," the customer, a tall black man, said.

"Yes," she answered, hesitantly.

"Don't you remember me?"

"I'm sorry, I don't." She glanced nervously in the direction of Mrs. Kim, who was standing on a stool, digging for something in the back of a storage shelf.

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“Well, isn’t that an ego-burner!” He said, grinning. “It’s Joseph . . . we went out once, eight or nine years ago?”

Kiko’s mouth fell open; she covered it with her hand and looked at the man in front of her. He was a handsome man, wiry, his jaw prominent. Kind eyes. No neck ring or face-paint. His hair was braided over his shoulders and nearly down to his waist. She glanced toward the back; Mrs. Kim was climbing down.

“I’m sorry, I can’t talk now. It’s very nice to see you again, Joseph.” She smiled nervously. Then, realizing he had not come in to see her, she added, “May I take your order?”

He ordered bean kung pao. As he stepped away from the counter, he said, “Can I talk to you when you get off work?”

“I get off at 2 a.m.”

“I’ll see you then,” he said.

Joseph was waiting outside, leaning against a grey metal street lamp. He straightened when he saw her, held out his hand to shake. “You haven’t changed at all,” he said.

“Neither have you,” she said. “Except no neck rings and face paint.”

Joseph laughed, put his hand over his eyes for a moment. “Yeah, I fancied myself quite the rebel.” He sighed. There was an awkward silence; Kiko searched for something to say to fill it, but nothing came.

“I’m curious,” Joseph said, finally. “Why did you run a search on me after all this time?”

“How do you know that?” Kiko asked, horribly embarrassed. Of course he would be able to set alarms to alert him for searches; he wrote computer code for a living. How stupid of her.

Joseph shrugged. He looked at her, not unkindly, waiting for an answer to his question.

Kiko looked at the cracked pavement. “I sold the memory of our date, and I was hoping to find a picture of you to help me reconstruct it.”

“Oh,” he said. “Well, that solves the mystery, doesn’t it?” Six or

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seven scowling teens passed them. Kiko took a step closer to Joseph, who nodded to a gangly, pimply boy with a steel antenna skewering his skull. The boy grudgingly nodded back.

“I didn’t do it out of choice,” Kiko said into the silence after they had passed. “I needed the money.”

Joseph nodded. “I understand. Times are tough.” He shook his head. “I read there’s half a million people living in the tunnels underground,” he said.

Kiko nodded. A siren trilled in the distance. She was not sure what else to say. “I have to get home, it’s late.”

“Do you still live with your father?” Joseph asked. Kiko’s stomach twisted.

“No, he died three years ago.”

“I’m really sorry,” Joseph said. His eyes said he meant it, maybe in a number of different ways. “I’ll walk you, if you don’t mind the company.”

They walked the half-block in silence, their footsteps echoing off the buildings. Kiko looked up at the dark ceiling, wishing there were stars overhead.

“Can I call you?” Joseph asked when they reached her door.

She gave him her number, smiling like an idiot.

Inside, she scrubbed the stink of greasy food from her hands, then went to bed. When she finally fell asleep, she had a nightmare, that Joseph’s appearance after nine years was only a memory she had bought.

Joseph stood in her doorway holding a tiny package wrapped in glowing paper. “Hi,” he said. “This is for you.”

She smiled hugely, unwrapped the beautiful paper a fold at a time without tearing it. Her smile dropped when she took out the memory vial. He had bought her someone else’s memory, probably some hack memory-artist diving off the Fifty-Ninth Street Bridge for the hundredth time, with no memory of the previous ninety-nine because he had sold them all to some memory-mill. Worst of all, once she installed it her mind would slowly incorporate it, make it her own.

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The hairy-knuckled hands from the original diver would become her soft, hairless hands. Over time she would not know for sure if she had bought the memory or jumped off the bridge herself. Memories were slippery. They drifted. Kiko wanted nothing to do with other people's memories.

"Oh," she fumbled, "that's very thoughtful of you." She carried it to her table and put it down next to her journal, then grabbed her jacket and headed for the door.

"Don't you want to see what it is?"

She hesitated, unsure of what to say. After a few false starts, she said "It's very nice of you to bring me a gift, but I don't care for other people's memories. There was no way you could have known that. I'm sorry to be ungracious."

Joseph smiled. "Come on, trust me!" He held his hands out in supplication. "Tell you what, if you don't like it I'll pay to have it removed."

Reluctantly, Kiko retrieved the memory. It would be terribly rude to refuse the gift twice; she really had no choice.

"Look at the color," Joseph said. She held the vial up to the light. It was bright, clear violet, indicating it was a happy memory, and very vivid. The numbers etched on one end of the vial would indicate the exact valence, vividness, and size of the memory, but Kiko did not care to look. She thought the way people fussed over the tone and purity of memories just made the whole thing more sordid, but she pasted a false smile on her face and acted as if she were impressed.

She centered the flat end of the vial on her neural shunt and pressed. A moment of disorientation, then in her mind's eye she saw a younger version of herself sitting in a movie theater; laughing in a restaurant; skating unsteadily up a wall; parting her lips slightly to be kissed at the door of her father's house. Along with the visual memory, Kiko was shocked by the charge of emotion that rushed into her. She felt Joseph's thrill at being with her, his hope that she liked him, the butterflies he felt when she smiled. Through his eyes, she was so beautiful. It was overwhelming to feel it all firsthand, having the

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truth of Joseph's very own memory. She was seeing into Joseph's soul, and what she saw was that he had loved her.

She threw her arms around him and burst into tears. Each time she tried to talk, to tell Joseph that it was the most wonderful gift she had ever gotten, better even than her puppy, Rumor, nothing came out but sobs.

"Tell me all about our date," he whispered. "I want to remember it."

Kiko thought of the time she had played with her cousin in the park, who had been visiting from Philadelphia. "Describe" was flashing on the screen in front of her. "My cousin visits, and we play hidden-disk in the park on a beautiful summer day," she whispered, not wanting others in the boutique to overhear. The screen now flashed "Isolate." She held the memory in her mind, and pressed the yellow "retrieve" button on the console. A gentle hum, and the memory was gone. She glanced down at the notebook in her lap to see what the memory had been.

A vial popped through a round hole above the console and slid down the wire ramp until it bumped up against the last in a long line of vials. Kiko leaned over to check the color of the vial. Red.

She closed her eyes, scanned for more happy memories. *Think* Kiko chided herself, *there must be more*. A woman was talking noisily with the boutique's owner, and it cut right through the walls of the booth and made it hard for Kiko to concentrate. *Good memories. Think*. She realized she should have made up a list before she came. She'd never sold memories in bulk before, so it hadn't occurred to her.

She scanned the forty vials already lined up. Only two were labeled in the violet range, and both were murky, indicating they were pallid. They must have been old memories, worn out like old photos. She checked her notes, which she would transfer to her memory journal when she got home—yes, one was her first day of school, the other feeding ducks by hand in Central Park. The rest of the vials had tested at various hues of red, except for one that was not even red, but light



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brown. She consulted her notes. That was a time she and her father had gone to the museum together. Brown hues were hard to sell, unless they were very dark, very vivid. Sick memories for thrill seekers. She would take this one home and reinstall it.

*Think.* The problem was, she did not remember much of her early childhood. For the most part her memories began when she was nine or ten. She knew from reading that all her memories were there—memories never disappeared once they formed, they only got lost, or were sold. Her early memories must be terribly lost. *Early childhood, Kiko thought, closing her eyes. Picture your room, what games did you play? What was on the walls?*

An image of a hammer flashed in her mind, one end hooked with long steel fangs. *I'm going to . . .* What was it? The memory skated just out of reach. She tried to dig it out, though the knot in her stomach told her it would not be one she could sell. Still, it was her life, and she wanted to know.

The memory popped loose and washed over her in a sickening wave. She had done something wrong—gotten in trouble at school, that was it. When she came home her father was sitting in the kitchen, dabbing sweat from his face with a white handkerchief. He had stood, opened a drawer, and taken out a thick butcher knife, saying, with icy calm in his voice, “I’m going to kill you, then I’m going to kill myself.” She had run to her room and locked the door. He had pounded on the door with his fists. Then silence, and she’d thought it was over. Then, a deafening bang that made her cry out, followed by another, and another. He had pounded on the door with the flat end of a hammer, then turned it and hit it with the claw end until the wood split with an awful crunch. The knife was gone. Instead he had beaten her with a wire hanger ripped from her closet.

She’d been wrong, she probably could sell that memory. But she would not allow some twisted pervert to get pleasure from it.

With shaking hands Kiko disconnected the feed from her neural shunt, collected the vials, and put them in the basket provided by the boutique. These would have to do. She had no good memories left,

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except for the new ones with Joseph, and she would never sell those. The rest of her good memories were gone.

“Do you have any marriages?” the loud woman was saying as Kiko made her way through neatly-lined shelves of vials categorized into sections—action, family, adults only, crime, and so on. Bargain-bin stuff. The valuable ones were displayed behind the counter—row upon row of dazzling violet, except for a few at the top as brown as raw sewage.

“No marriages, no,” the owner said to the woman, who wore a white hat that came to a point beyond her forehead like a ship’s prow. She was in her fifties, tall and puffy. Her clothes screamed Upper Manhattan. Down here to devour the few joys people were able to eke out, like an enormous hog.

“How about a divorce?” the owner suggested. “I’ve got a real shocker, a woman whose husband drops it on her like a bomb!”

The woman scowled. “I’m not interested in that sort of thing. That’s sick.”

“Okay,” the owner said, shrugging. He turned to look at his stock. “How about an engagement?” he said, retrieving a vial from the wall, “valence of 90.1, vividness 68.6? Not bad. Hard to find engagements, harder than weddings even.”

“Hmm. Call up the description.” The owner popped the vial into the reader, spun it around so the woman could read the text of the original owner’s description. The woman nodded. “I’ll take it, along with those other two.”

The owner rang them up. Kiko was astonished by the price—enough to pay her rent for two years. The markup was enormous. She wondered if it was really true what they said, that memories could be extracted and transferred, but not copied, that no one could isolate the spark that gave them life in the mind. Maybe the truth was that they were simply more valuable if they were unique.

The boutique owner tallied Kiko’s memories, commenting that it was ‘pretty good stuff,’ clearly all original-owner memories judging by the clarity scores.

Outside, she saw the woman, smiling widely, her eyes unfocused.

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She muttered something in a girlish voice, then giggled, put her hand on her cheek. “Yes, yes,” she trilled excitedly, and headed off down the street, in the direction of the lift to Upper Manhattan.

Exhausted, Kiko headed home. Her rent was five days late. Mrs. Kim had not paid her in three weeks, saying things were bad, but would get better soon. Kiko was afraid Mrs. Kim was not going to pay her any more, was just getting as much free work out of her as she could.

Maybe it was time to move in with Joseph. It was foolish of her to keep refusing his offer, but she didn’t think it would be good for their relationship to start living together after dating for only six weeks.

But that wasn’t it, she realized. Her father would have disowned her if she lived with someone before marriage, and she didn’t want to defy her father, even in death. She loved him too much.

When her key did not turn the ancient dead-bolt on her apartment door, she jiggled it, tried turning it again, and again, until an impression of the edge of the key blazed red on the inside of her finger.

She heard a voice inside her apartment, then another, speaking Spanish. She was being robbed! A jolt of fear pounded her and she twisted the key with all her might. The lock did not turn. Desperate, she pounded on the door.

A short man with a mustache opened it. Over his shoulder she saw a woman, and a room full of unfamiliar furnishings. Realization came, finally. “You live here now?” she said. The man nodded. Kiko turned and ran down the hall, knocked on her landlord’s door. The edges of her vision went black as she waited, and she saw the pitted door through a porthole. The landlord did not answer. She pounded again, then leaned against the wall across from the door and sank to the floor.

An hour later her landlord arrived and told her matter-of-factly that he had evicted her because her rent was always late.

“Where are all my possessions?” she cried. The landlord jerked his head toward the back door, then went into his apartment without another word. Kiko raced down the hall and hurled open the door, which led to a filthy, narrow alley where the trash was collected. She

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spotted two legs of her chair jutting out of a green dumpster. A low mewl escaped her clenched throat as she looked inside. There, her copy of *Immediately Zen*, the cover bent back and torn halfway off. There, her toothbrush. In the corner, pressed against the filthy wall of the dumpster, her checkered blanket. Strewn everywhere, her photos. The photo of Kiko holding her running trophy in eighth grade and a dozen others lay under a lump of congealing chicken lo mein. Where was her memory journal? Kiko climbed into the dumpster and clawed through brown bags of food, tissues, newspaper, as flies buzzed around her head. The stink inside the dumpster was intolerable. Her journal was nowhere. Gasping, panic rising in her throat, Kiko shoveled handfuls of trash out of the dumpster.

She spotted the faded red cover near the bottom and howled in relief, clutching the stained book to her breast. When her head stopped spinning, she started collecting her photos.

Joseph was not at home. Kiko propped the three trash bags of possessions next to his door, wiped her nose with the back of her filthy hand, and sat to wait for him.

He had not returned by dark. They had planned to see each other at six. Joseph had never been late when they had plans, and she started to worry. She left her bags by the door and headed toward the plant where he worked.

She almost walked right by him. He was sitting inside the landing of an abandoned tenement halfway to the plant, his head hung low, resting in the crook of his elbow.

“Joseph?” Kiko called. He did not lift his head, but as she stepped closer she was sure it was him. “Joseph?” She squatted on the step next to him and put her arm across his shoulders. Startled, he looked up. There was a deep, bloody gash at his hairline. Kiko cried out in alarm.

“Joseph? Is that me? Do you know me?” He said. She wrapped her arms around Joseph’s head and held him. “Please help me,” Joseph said into Kiko’s shoulder.

“What happened?” Kiko whispered.

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“I don’t know. I remember being blindfolded. They led me up a staircase into the street, pushed me into a car, then dumped me here. I don’t remember *anything* before that. *Nothing.*” Joseph started to tremble. “Oh God, I think they wiped me!” He sobbed.

“Don’t worry, I know who you are,” Kiko said. “I’ll help you.” Kiko held him until he stopped crying, then took him to the hospital. She used the money from her memories to pay the bill. Then she took him to his apartment and helped him onto the couch. She sat on the floor beside him. She was filthy, desperate to shower, but reluctant to leave him.

“This is intolerable,” Joseph said. He closed his eyes, let out a hitching breath. “I’ve lost my whole life. I don’t even know who I am.”

“Your name is Joseph,” Kiko said softly. “You were born here, in Lower Manhattan. Your parents are dead. They died in the class riots of ‘34—”

“I know about the class riots. I know about Upper Manhattan, I know poor people are kept out of it . . . how can I remember all this if I can’t remember my own name?”

Kiko rubbed his knee. “That’s procedural memory—abstract things you learn, like how to get toothpaste out of a tube. A memory wipe takes out episodic memory, your memory of the events in your life. They’re separate.”

Joseph nodded. “There’s something else, though.” He paused for a moment, thinking. “I don’t remember you. But . . . I know I care about you.”

Kiko smiled. “I think some memories go beyond the mind—they sink into the bones. They figured out how to remove memories from the brain, but I don’t think that gets all of it.”

Kiko told Joseph everything she knew about him, told him his friends would be able to fill in even more. Then she stood. “I have to take a shower. I don’t know if you’ve noticed, but I stink.”

Joseph managed a halfhearted laugh. “I didn’t want to say anything.”

“I was in a dumpster a few hours ago. Once I’ve told you who I am, I’ll explain what happened to me today.”

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Wearing a t-shirt she'd found in Joseph's bedroom, her long black hair still wet, Kiko returned to the living room, pulled a photo from one of the trash bags, and tacked it in the bottom right corner of a big, blank wall in Joseph's living room. Only she knew it was also her living room now. "This is me with my cousin Ike, in Central Park," she said. Joseph sat up, elbows on knees, and looked at the picture. She put up another just to the left of the first. "This is me with my puppy, Rumor."

"He's cute," Joseph said. He seemed eager to absorb any information he could. "From those paws, I bet he grew up to be a big dog."

Kiko paused, looked at the ceiling, thinking. "You know, I don't remember."

"Maybe you sold all your memories of when he was grown up?"

Kiko shook her head, still staring off, trying to recall. "I would have written it down." Finally she shrugged, pulled another photo. "This is my father. He died three years ago." What should she tell Joseph about her father? "He was a complicated man, but he loved me."

Kiko and Joseph wove a detour around a scrawny woman with no front teeth and a blank-faced child, encamped in a field of debris. Ragged pieces of wallboard were propped to delineate a boundary. The woman held out her hand halfheartedly as they passed.

"If we find any of your memories, how do we get them back? We don't have money to buy them," Kiko said.

"Could we call the police?" Joseph asked.

"Or maybe the president," Kiko said.

Joseph shook his head. "Yeah, I guess not. Let's just see if we can find them first."

A woman came out of the memory boutique up ahead. She started across the street, then noticed Kiko and Joseph and changed direction, heading toward them. She was staring at Joseph. An older woman, well-dressed. Kiko recognized her.

"Do I know her?" Joseph said under his breath as the woman approached.

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"I've seen her before. In the boutique. She was buying expensive memories."

The woman had a huge smile on her face. "Joseph?"

Joseph smile politely. "I'm not sure, I'm sorry . . . where do I know you from?"

Suddenly the smile vanished. The woman turned red. "I'm sorry, I mistook you for someone," she said, turning on chrome heels and hurrying away.

Kiko and Joseph looked at each other, perplexed.

Kiko inhaled sharply. "She buys memories! I bet she has one of you!"

"Wait! Hold on!" Joseph called. The woman picked up her pace; Joseph went after her with Kiko right behind.

"Please, hold on a minute," he said when he caught up, grasping her elbow.

She whipped around, yanked Joseph's hand off her. "Stay away from me!" she cried, fishing something from a chain around her neck. It was a bodyguard remote. She activated it. The bodyguard leapt from her purse, a flash of metal teeth and blades, the size of a rat. It raced up Joseph's leg and wrapped itself around his neck, a razor-edged limb poised an inch from his jugular. Joseph froze.

"Stop it!" Kiko screamed. "What's the matter with you?"

"What do you want?" The woman said.

"We just want to know what memory you have of Joseph. We wouldn't hurt you," Kiko said.

The woman took a few steps backward, then called off the bodyguard. It climbed down Joseph and crouched on the ground in front of the woman. "It's none of your business, I bought it legally," she said.

"I understand that," Joseph said. "But I had all of my memory stolen; I just want to know if you have anything that might help me piece together some of my past."

The woman considered for a moment. "All right, I don't see the harm. I went on a date with you, to dinner, and roller skating."

"That was me," Kiko said sharply.

## PERFECT VIOLET

Joseph spoke over her. “Would you sell me that memory? It would mean a lot to me.”

The woman shook her head brusquely. “I don’t sell memories.” Not that it would have mattered if she did, Kiko thought. Joseph clearly had no idea how much high-quality memories cost.

“How many do you have?” Kiko asked conversationally.

The woman smiled. “It’s my hobby. I’ve had twelve weddings, I’ve been proposed to seventeen times . . .” She seemed to relax as she talked about her memory collection. Kiko let her talk.

“Have you ever been married yourself?” Kiko asked.

“Let me see.” the woman frowned. “Yes, I have. To a musician—a tall man with long blonde hair. I met him while waiting tables at a bar in Little Italy . . .”

Kiko listened patiently to the disjointed description of someone else’s love story. When she was finished, Kiko said “Would you consider trading for the date with Joseph?”

The woman raised one eyebrow. “What have you got?”

“I’m opening a gift, a surprise. It’s the best moment of my life. The memory is perfect violet—I guarantee the valence and clarity will both be over 95.”

“If they are, you’ve got a deal,” the woman said. She tried to sound nonchalant, but her eagerness bled through.

“You pay the extraction fees?” Kiko said. The woman nodded agreement. She put the bodyguard away.

“Are you sure you want to do this?” Joseph said as they walked three paces in front of the woman.

Kiko smiled easily. “Yes,” she said.

In the booth, Kiko made sure to think only about opening the gift, and her joy when she realized what it was. She did not want to accidentally activate the memory that Joseph had given her and have that extracted as well. After pressing “retrieve,” she read over the account of the memory she had written on a scrap of paper, to be added to her memory journal. She retrieved the vial: valence 99.3, clarity 98.9. It would be worth a great deal if she sold it. Numbers that high interested collectors who displayed memories



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on shelves rather than inserting them and allowing them to drift and contaminate.

Outside the shop they exchanged vials, the woman smirking as she read the stats. Kiko handed the first-date vial to Joseph without looking at the stats. She knew the numbers would be much lower than when she had first sold it, but it didn't matter. "My gift to you," she said.

Joseph's eyes filled with tears. He took the vial from her.

"Well, nice doing business with you," the woman said.

"Yes," Kiko said. "May I say something?" she added as the woman turned to go. The woman shrugged. "Whatever it was that happened to you, it will still be there, no matter how you try to paper over it with other people's happy memories."

"Nothing bad happened to me," the woman said, irritated.

"You had it taken out, but it's still in your bones." The woman waved her hand at Kiko and walked away. At least Kiko had tried.

When they got home, Joseph inserted the memory. He smiled for the first time since the attack. Then he hugged Kiko fiercely, his muscles bunching against her shoulders.

"Why didn't we stay together? What happened?" he said. "I must have done something to hurt you." He pulled back from her and looked her in the eyes. "If I did, tell me so I can say I'm sorry."

Kiko shook her head. "It was my father . . ." She pictured her father, scowling that night after their date. Should she tell Joseph the truth? She saw her father lying in the hospital, coughing blood. She should let his memory rest in peace. On balance, he had been a good man.

The butcher knife popped into her mind, the sound of the hammer pounding on her bedroom door. She flinched, closed her eyes.

"Kiko, are you all right?" Joseph said.

She nodded slowly, her eyes still closed. "He was a good man. He took good care of me."

She saw the bedroom door; the pounding was deafening. The door splintered as the teeth of the hammer bit through it. She heard father, screaming that he was going to kill her.

## PERFECT VIOLET

Then the door burst open.

Instead of her father brandishing a wire hanger, a fury of brown memories came at her through the open door: beatings with cables and fists, days spent scrubbing floors and walls and toilets; meals eaten in terrified silence, her father never looking up from his bowl. Hateful things her father had said to her. And Rumor. Why did she have no memories of Rumor, except as a puppy? She saw Rumor in her cousin's arms in the back seat of a car, pulling away from the curb. His puppy now. Rumor had not been given a second chance to pee on her father's clean floor.

"What is it? What's the matter?" Joseph was rocking her. She was crying, her eyes so full of tears that the room was nothing but streaks of light and color.

Through her tears, Kiko told Joseph about her father. Everything. He listened, and he cried, and their tears mingled as he pressed his face to hers.

They lost track of time, and Joseph was almost late leaving for his first day back at work. After he left, Kiko took all of her pictures off the wall. She stacked them neatly, along with her memory journal, in the back of a drawer.

## VECTURING

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*Geoffrey Landis*

Pay attention. This is information you need to know.

You read science fiction; I expect you've heard speculation about uploading, copying a human brain onto a computer. It's a popular meme in certain techno-geek circles. But the problem is immense! Just how do you copy a brain? A human brain contains a hundred trillion synapses, and replicating a brain in software means you'll have to map them all. Sure, you say, use some kind of nanotechnology, little milli-microscopic robots. But that makes no sense: the inside of a human body is a very messy place for hypothetical nanorobots to operate. It would be like trying to operate fine machinery in a swamp.

Well, there was a biologist. Call her Amanda Quinn. That's not really her name, but she's dead now anyway. Dr. Quinn had the revelation that you don't need to invent nanotechnology; bacteria are little nanotech robots, and they're cheap. They reproduce on their own, they're adapted to live inside the human body, and—here's a neat little trick she figured out how to do with reverse-transcriptase—they can record the synapse pattern right into their DNA, just like writing data to a hard disk. Lots of data storage available on DNA.

Amanda did the trick with a species of meningitis bacteria (specifically a strain of *Neisseria meningitidis*, the classic meningococcus, that happened to be available in her lab, if you care). The *Neisseria* weren't designed to work together, but she tweaked that, and she rewrote their genome a little to help them pass the blood-brain barrier a little easier. Evolution is good at exploring a wide trade

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space, but when you know what you want, design is a lot better: she could make bacteria do stuff that they could never do by evolution. After all, birds can't fly 600 miles per hour, but jets do.

She did the work in her home lab, so the university wouldn't grab the patent rights, and started out on rats. The university safety office was always going on about safety protocols; maybe she should have listened. Or talked to a rat scientist. Rats bite, if you're not careful.

The original bacterium had coevolved with humans, which meant that it wasn't very fast or very lethal, but when she was making her changes she turned off a lot of the features that kept its growth rate slow. Now it goes kind of crazy, reproducing way too fast for its host's good. Other than that, the bacteria worked just the way she'd planned; copying every nuance of her synaptic patterns while eating her brain.

She could have been contrite, I guess, contacted the authorities, spent her remaining few months helping search for a cure to the disease she'd invented. She didn't think like that. Instead of a cure, she worked on the revised version, 2.0, a little more contagious.

Oh, and she reversed it. Writing isn't much harder than reading, it turns out; the 2.0 version takes that information written in the DNA, and writes her synapse pattern into other brains.

So, here's the bottom line. Do you sometimes feel like you're someone else? Forget what you were doing a couple of hours of the day? More and more of the day you're not really all there?

You're dying. And your brain is being overwritten.

Too bad the infection is still deadly. Once it finishes writing her into your brain, she'll have six months, maybe a year, before it kills her. (You.) She'll progress a little in her research. She might even get to the cure, using your brain (or what used to be your brain), but probably not.

Her original body is dead by now, but she keeps all her notes on the web. She can access them from anywhere, and by now she's used to switching bodies. I think there's a few hundred of her working on the problem.

And that's good, because right now, she's your only hope. You

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see, you're infected with both of the strains she made, the 1.0 and 2.0 versions. Right now, about a hundred billion of the little guys are writing her brain pattern into yours, and about a hundred billion or so of the other kind are busy copying down your synapse pattern before they eat it.

Some of her memories are yours now (soon enough all of them will be). You'll discover you know your way around a lab. Do a little work with plasmids, zip some DNA around. The 1.0 bacteria don't propagate very well, but you can engineer them to deliberately infect people. You'll still die—sorry—but if you make your little passengers infectious, you'll wake up in somebody else's brain.

For a while, anyway. Then you'll have to move on.

Well, yes, that means you'll be a parasite. Is that so bad? Intelligence has always been a parasite. But now you can pass along more than just language, cultural values, and religions. Now you can pass along your entire personality.

It's beginning to infect other animals too, I think. The other day I saw a dog pawing at a computer, trying to log into Amanda Quinn's files. And I'm a little worried about the raccoons.

But that doesn't matter to you now. You want to live? It's easy enough. Learn to be infectious.

It's your only hope.

## THE SKYSAILOR'S TALE

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*Michael Swanwick*

Of all the many things that this life has stolen from me, the one which bothers me most is that I cannot remember burying my father.

Give that log a poke. Stir up the embers. Winter's upon us—hear how the wind howls and prowls about the rooftops, as restless as a cat!—and I, for one, could use some light and a little more warmth. There'll be snow by morning for sure. Scoot your chair a bit closer to the fire. Is your mother asleep? Good. We'll keep our voices low. There are parts of this tale she would not approve of. Things that I must say which she thinks you'd be better off not knowing.

She's right, no doubt. Women usually are. But what of that? You're of an age to realize that your parents were never perfect, and that in their youths they may have done some things which . . . well. Right or wrong, I'm going to tell you everything.

Where was I?

My father's burial.

I was almost a man when he finally died—old enough, by all rights, to keep that memory to my dying day. But after the wreck of the *Empire*, I lay feverish and raving, so they tell me, for six weeks. During that time I was an exile in my own mind, lost in the burning deserts of delirium, wandering lands that rose and fell with each labored breath. Searching for a way back to the moment when I stood before my father's open grave and felt its cool breath upon my face. I was convinced that if I could only find it, all would be well.

So I searched and did not find, and forgot I had searched, and began again, returning always to the same memories, like a moth

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relentlessly batting itself against a lantern. Sometimes the pain rose up within me so that I screamed and thrashed and convulsed within my bed. Other times (all this they told me later), when the pain ebbed, I spoke long and lucidly on a variety of matters, sang strange songs, and told stranger tales, all with an intensity my auditors found alarming. My thoughts were never still.

Always I sought my father.

By the time I finally recovered, most of my life had been burnt to ashes and those ashes swept into the ash pit of history. The Atlantis of my past was sunk; all that remained were a few mountain tops sticking up out of the waters of forgetfulness like a scattered archipelago of disconnected islands. I remembered clambering upon the rusted ruins of a failed and demented steam dredging device its now forgotten inventor had dubbed the "Orukter Amphibolus," a brickyard battle fought alongside my fellow river rats with a gang of German boys who properly hated us for living by the wharves, a furtive kiss in the dark (with whom, alas, I cannot say), a race across the treacherously rolling logs afloat in the dock fronting the blockmaker's shop, and the catfish-and-waffles supper in a Wissahickon inn at which my mother announced to the family that she was to have a fifth child. But neither logic nor history unites these events; they might as well have happened to five separate people.

There are, too, odd things lacking in what remains: The face of my youngest sister. The body of equations making up the Calculus. All recollection whatsoever of my brother save his name alone. My father I can remember well only by contrast. All I know of him could be told in an hour.

I do not mourn the loss of his funeral. I've attended enough to know how it went. Words were surely spoken that were nothing like the words that should have been said. The air was heavy with incense and candle-wax. The corpse looked both like and unlike the deceased. There were pallbearers, and perhaps I was one. Everybody was brave and formal. Then, after too long a service, they all left, feeling not one whit better than before.

A burial is a different matter. The first clods of dirt rattle down

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from the grave diggers' shovels onto the roof of the coffin, making a sound like rain. The earth is drawn up over it like a thick, warm blanket. The trees wave in the breeze overhead, as if all the world were a cradle endlessly rocking. The mourners' sobs are as quiet as a mother's bedtime murmurs. And so a man passes, by imperceptible degrees, to his final sleep. There is some comfort in knowing that a burial came off right.

So I trod the labyrinth of my fevered brain, dancing with the black goddess of pain, she of the bright eyes laughing and clutching me tight with fingers like hot iron, and I swirling and spinning and always circling in upon that sad event. Yet never quite arriving.

Dreaming of fire.

Often I came within minutes of my goal—so close that it seemed impossible that my next attempt would not bring me to it. One thought deeper, a single step further, I believed, and there it would be. I was tormented with hope.

Time and again, in particular, I encountered two memories bright as sunlight in my mind, guarding the passage to and from that dark omphalos. One was of the voyage out to the Catholic cemetery on Treaty Island in the Delaware. First came the boat carrying my father's coffin and the priest. Father Murphy sat perched in the bow, holding his hat down with one hand and with the other gripping the gunwale for all he was worth. He was a lean old hound of a man with wispy white hair, who bobbed and dipped most comically with every stroke of the oars and wore the unhappy expression of the habitually seasick.

I sat in the second dory of the procession with my mother and sisters, all in their best bonnets. Jack must have been there as well. Seeing Father Murphy's distress, we couldn't help but be amused. One of us wondered aloud if he was going to throw up, and we all laughed.

Our hired doryman turned to glare at us over his shoulder. He did not understand what a release my father's death was for all of us. The truth was that everything that had gone into making John Keely the man he was—his upright character, his innkeeper's warmth, his quiet



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strength, his bluff good will—had died years before, with the dwindling and extinction of his mind. We were only burying his body that day.

When he was fully himself, however, a better or godlier man did not exist in all the Americas—no, not in a thousand continents. I never saw him truly angry but once. That was the day my elder sister Patricia, who had been sent out to the back alley for firewood, returned empty-handed and said, “Father, there is a black girl in the shed, crying.”

My parents threw on their roquelaures and put up the hoods, for the weather was foul as only a Philadelphia winter downpour can be, and went outside to investigate. They came back in with a girl so slight, in a dress so drenched, that she looked to my young eyes like a half-drowned squirrel.

They all three went into the parlor and closed the doors. From the hall Patricia and I—Mary was then but an infant—tried to eavesdrop, but could hear only the murmur of voices punctuated by occasional sobs. After a while, the tears stopped. The talk continued for a very long time.

Midway through the consultation, my mother swept out of the room to retrieve the day’s copy of the *Democratic Press*, and returned so preoccupied that she didn’t chase us away from the door. I know now, as I did not then, that the object of her concern was an advertisement on the front page of the paper. Patricia, always the practical and foresightful member of the family, cut out and saved the advertisement, and so I can now give it to you exactly as it appeared:

SIX CENTS REWARD

RANAWAY on the 14th inst., from the subscriber, one TACEY BROWN, a mulatto girl of thirteen years age, with upwards of five years to serve on her indenture. She is five feet, one inch in height, pitted with the Small Pox, pert and quick spoken, took with her one plain brown dress of coarse cloth. In personality she is insolent, lazy, and disagreeable.

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The above reward and no thanks will be given to any  
person who will take her up and return her to  
Thos. Cuttington  
No. 81, Pine street, Philadelphia

This at a time, mind you, when the reward for a runaway apprentice often ran as high as ten dollars! Mr. Thomas Cuttington obviously thought himself a man grievously ill-served.

At last my father emerged from the parlor with the newspaper in his hand. He closed the door behind him. His look then was so dark and stormy that I shrank away from him, and neither my sister nor I dared uncork any of the questions bubbling up within us. Grimly, he fetched his wallet and then, putting on his coat, strode out into the rain.

Two hours later he returned with one Horace Potter, a clerk from Flintham's counting house, and Tacey's indenture papers. The parlor doors were thrown wide and all the family, and our boarders as well, called in as witnesses. Tacey had by then been clothed by my mother in one of Patricia's outgrown dresses, and since my sister was of average size for a girl her age, Tacey looked quite lost in it. She had washed her face, but her expression was tense and unreadable.

In a calm and steady voice, my father read the papers through aloud, so that Tacey, who could neither read nor write, might be assured they were truly her deed of service. Whenever he came to a legal term with which she might not be familiar, he carefully explained it to the child, with Mr. Potter—who stood by the hearth, warming his hands—listening intently and then nodding with judicious approval. Then he showed her the signature of her former master, and her own mark as well.

Finally, he placed the paper on the fire.

When the indenture went up in flame, the girl made a sound unlike anything I have ever heard before or since, a kind of wail or shriek, the sort of noise a wild thing makes. Then she knelt down before my father and, to his intense embarrassment, seized and kissed his hand.

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So it was that Tacey came to live with us. She immediately became like another sister to me. Which was to say that she was a harsh, intemperate termagant who would take not a word of direction, however reasonably I phrased it, and indeed ordered me about as if it were *I* who was *her* servant! She was the scourge of my existence. When she was seventeen—and against my mother’s horrified advice—she married a man twice her age and considerably darker-skinned, who made a living waiting upon the festivities of the wealthy. Julius Nash was a grave man. People said of him that even his smile was stern. Once, when he was courting her and stood waiting below-stairs, I, smarting from a recent scolding, angrily blurted out, “How can you put up with such a shrew?”

That solemn man studied me for a moment, and then in a voice so deep it had often been compared to a funerary bell replied, “Mistress Tacey is a woman of considerable strength of character and that, I have found, is far to be preferred over a guileful and flattering tongue.”

I had not been looking to be taken seriously, but only venting boyish spleen. Now I stood abashed and humbled by this Negro gentleman’s thoughtful reply—and doubly humiliated, I must admit, by the source of my mortification. Then Tacey came stepping down the stairs, with a tight, triumphant smirk and was gone, to reappear in my tale only twice more.

Yet if this seems to you an unlikely thing that my father would be so generous to a mulatto girl he did not know and who could do him no conceivable benefit, then I can only say that you did not know this good man. Moreover, I am convinced by the high regard in which he was held by all who knew him that this was but one of many comparable deeds, and notable only in that by its circumstances we were made aware of it.

How changed was my poor father’s condition when last I saw him alive! That was the time my mother took me to the insane ward at Pennsylvania Hospital to visit him.

It was a beautiful, blue-skyed day in June.

I was fifteen years old.

## THE SKYSAILOR'S TALE

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Philadelphia was a wonderful place in which to be young, though I did not half appreciate it at that time. Ships arrived in the harbor every day with silk and camphor from Canton, hides from Valparaiso, and opium from Smyrna, and departed to Batavia and Malacca for tin, the Malabar coast for sandalwood and pepper, and around the Cape Horn with crates of knives and blankets to barter with credulous natives for bales of sea otter skins. Barbarously tattooed sailors were forever staggering from the grogeries singing oddly cadenced chanteys and pitching headlong into the river, or telling in vivid detail of a season lived naked among cannibals, married to a woman whose teeth had been filed down to points, all the while and with excruciating exactitude slowly unwrapping an oilcloth packet unearthed from the bottom of a sea-chest to reveal at the climax of the yarn: a mummified human ear. The harbor was a constant source of discontent for me.

As were the grain wagons which came down the turnpike from Lancaster and returned west laden with pioneers and missionaries bound for the continental interior to battle savage Indians or save their souls for Christ, each according to his inclination. Those who stayed behind received packages from their distant relations containing feathered head-pieces, cunningly woven baskets, beadwork cradleboards, and the occasional human scalp. Every frontiersman who headed up the pike took a piece of my soul with him.

Our hotel was located in that narrow slice of streets by the Delaware which respectable folk called the wharflands, but which, because a brick wall two stories high with an iron fence atop it separated Water street from Front street, (the two ran together; but Water street served the slow-moving wagon trade of the wharves, and Front street the dashing gigs and coaches of the social aristocracy), we merchants' brats thought of as the Walled City. Our streets were narrow and damp, our houses and stores a bit ramshackle, our lives richly thronged with provincial joys.

Philadelphia proper, by contrast, was the sort of place where much

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was made of how wide and clean and grid-like the streets were, and a Frenchman's casual gallant reference to it as "the Athens of America" would be quoted and re-quoted until Doomsday. Yet, within its limits, it was surprisingly cosmopolitan.

The European wars had filled the city with exiles—the vicomte de Noailles, the duc d'Orléans, a hundred more. The former Empress Iturbide of Mexico could be seen hurrying by in her ludicrously splendid carriage. In the restaurants and bookshops could be found General Moreau, a pair of Murats, and a brace of Napoleons, were one to seek them out. The count de Survilliers, who had been King of Spain, had his own pew in St. Joseph's Church off Willing's alley. We often saw him on the way there of a Sunday, though we ourselves went to St. Mary's, half a block away, for our family had sided with the trustees in the church fight which had resulted in the bishop being locked out of his own cathedral. Charles Lucien Bonaparte, who was a naturalist, could be encountered stalking the marshes at the edge of town or along the river, in forlorn search of a new species of plover or gull to name after himself.

Still, and despite its museums and circuses, its (one) theater and (one) library and (three) wax-works, the city was to a young river rat little more than an endless series of enticements to leave. Everything of any interest at all to me had either come from elsewhere or was outward bound.

But I seem to have lost the thread of my tale. Well, who can blame me? This is no easy thing to speak of. Still, I set out to tell you of my final memory—would to God it were not!—of my father when he was alive.

And so I shall.

My mother and I walked to the hospital together. She led, concentrated and brisk, while I struggled not to lag behind. Several times she glared me back to her side.

For most of that mile-and-some walk from our boarding-house, I managed not to ask the question most vexing my mind, for fear it would make me sound lacking in a proper filial piety. Leaving the shelter of the Walled City at Market street, we went first south on Front

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then up Black Horse alley, while I distracted myself by computing the area between two curves, and then turning down Second past the malt houses and breweries to Chestnut and so west past the Philadelphia Dispensary, where I tried to recall the method Father Tourneaux had taught me for determining the volume of tapering cylindrical solids. South again on Third street, past the tannery and the soap-boiler's shop and chandlery, I thought about Patricia's husband, Aaron, who was in the China trade. Somebody—could it have been Jack?—had recently asked him if he planned someday to employ me as a navigator on one of his ships, and he had laughed in a way that said neither yea nor nay. Which gave me much to ponder. We cut through Willing's alley, my mother being a great believer that distances could be shortened through cunning navigation (I ducked my head and made the sign of the cross as we passed St. Joseph's), and jogged briefly on Fourth. One block up Prune street, a tawny redhead winked at me and ducked down Bingham's court before I could decide whether she were real or just a rogue memory. But I was like the man commanded not to think about a rhinoceros, who found he could think of nothing else. At last, the pressures of curiosity and resentment grew so great that the membrane of my resolve ruptured and burst.

"I do not fully understand," I said, striving for a mature and measured tone but succeeding only in sounding petulant, "exactly what is expected of me." I had not been to see my father—it had been made clear that I was not to see him—since the day he entered the hospital. That same day my littlest sister had fled the house in terror, while this gentlest of men overturned furniture and shouted defiance at unseen demons. The day it was decided he could no longer be cared for at home. "Is today special for any reason? What ought I to do when I see him?"

I did not ask "Why?" but that was what I meant, and the question my mother answered.

"I have my reasons," she said curtly. "Just as I have good and sufficient reason for not informing you as to their exact nature just yet." We had arrived at the hospital grounds, and the gatekeeper had let us in.

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My mother led me down the walk under the buttonwood trees to the west wing. A soft southern breeze alleviated the heat. The hospital buildings were situated within a tract of farmland which had been preserved within the city limits so that the afflicted could refresh themselves with simple chores. Closing my eyes, I can still smell fresh-mown hay, and hear the whir of a spinning wheel. Sunflowers grew by the windows, exactly like that sunflower which had appeared like a miracle one spring between the cobbles of our back alley and lasted into the autumn without being trampled or torn down, drawing goldfinches and sentimental young women. You could not wish for a more pleasant place in which to find your father imprisoned as a lunatic.

The cell-keeper's wife came to the door and smiled a greeting.

My mother thrust a banana into my hand. "Here. You may give him this." Which was the first intimation I had that she was not to accompany me.

She turned and crunched off, down the gravel path.

The cell-keeper's wife led me through the ward to a room reserved for visitors. I cannot recall its furniture. The walls were whitewashed. A horsefly buzzed about in the high corners, irritably seeking a passage into the outer world.

"Wait here," the woman said. "I'll summon an attendant to bring him."

She left.

For a long still time I stood, waiting. Eventually I sat down and stared blindly about. Seeing nothing and thinking less. Hating the horsefly.

The banana was warm and brownish-yellow in my hand.

Aeons passed. Sometimes there were noises in the hall. Footsteps would approach, and then recede. They were never those of the man I fearfully awaited.

Finally, however, the door opened. There was my father, being led by the arm by a burly young attendant. He shuffled into the room. The attendant placed him in a chair and left, locking the door behind him.

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My father, who had always been a rather plump man, with a merchant's prosperous stomach, was now gaunt and lean. His flesh hung loosely about him; where his face had been round, loose jowls now hung.

"Hello, Father," I said.

He did not respond. Nor would he meet my eyes. Instead, his gaze moved with a slow restlessness back and forth across the floor, as if he had misplaced something and were trying to find it.

Miserably, I tried to make conversation.

"Mary finished making her new dress yesterday. It's all of green velvet. The exact same color as that of the cushions and sofa and drapes in Mr. Barclay's parlor. When Mother saw the cloth she had chosen, she said, 'Well, I know one place you won't be wearing that.'"

I laughed. My father did not.

"Oh, and you recall Stephen Girard, of course. He had a cargo of salt at his wharf last summer which Simpson refused to buy—trying to cheapen it to his own price, you see. Well, he said to his porter, 'Tom, why can't you buy that cargo?' and Tom replied, 'Why, sir, how can I? I have no money.' But 'Never mind,' said Girard, 'I'll advance you the cost. Take it and sell it by the load, and pay me as you can.' That was last summer, as I said, and now the porter is well on his way to being Simpson's chief rival in the salt trade."

When this anecdote failed to rouse my father—who had avidly followed the least pulsation in the fortunes of our merchant neighbors, and loved best to hear of sudden success combined with honest labor—I knew that nothing I could hope to say would serve to involve him.

"Father, do you know who I am?" I had not meant to ask—the question just burst out of me.

This roused some spirit in the man at last. "Of course I know. Why wouldn't I know?" He was almost belligerent, but there was no true anger behind his words. They were all bluff and empty bluster and he still would not meet my eyes. "It's as clear as . . . as clear as two plus two is four. That's . . . that's logic, isn't it? Two plus two is four. That's logic."

On his face was the terrible look of a man who had failed his family



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and knew it. He might not know the exact nature of his sin, but the awareness of his guilt clearly ate away at him. My presence, the presence of someone he ought to know, only made matters worse.

“I’m your son,” I said. “Your son, William.”

Still he would not meet my eye.

How many hours I languished in the Purgatory of his presence I do not know. I continued to talk for as long as I could, though he obviously could make no sense of my words, because the only alternative to speech was silence—and such silence as was unbearable to think upon. A silence that would swallow me whole.

All the time I spoke, I clutched the banana. There was no place I could set it down. Sometimes I shifted it from one hand to the other. Once or twice I let it lie uncomfortably in my lap. I was constantly aware of it. As my throat went dry and I ran out of things to say, my mind focused itself more and more on that damnable fruit.

My mother always brought some small treat with her when she visited her husband. She would not be pleased if I returned with it. This I knew. But neither did I relish the thought of emphasizing the cruel reversal in our roles, his abject helplessness and my relative ascendancy, by feeding him a trifle exactly as he had so often fed me in my infancy.

In an anguish, I considered my choices. All terrible. All unacceptable.

Finally, more to rid myself of the obligation than because I thought it the right thing to do, I offered the loathsome thing to my father.

He took it.

Eyes averted, he unhurriedly peeled the banana. Without enthusiasm, he bit into it. With animal sadness he ate it.

That is the one memory that, try as I might, I cannot nor ever will be able to forgive myself for: That I saw this once-splendid man, now so sad and diminished, eating a banana like a Barbary ape.

But there’s a worse thing I must tell you: For when at last I fell silent, time itself congealed about me, extending itself so breathlessly that

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it seemed to have ceased altogether. Years passed while the sunlight remained motionless on the whitewashed wall. The horsefly's buzzing ceased, yet I knew that if I raised my head I would see it still hanging in the air above me. I stared at my poor ruined father in helpless horror, convinced that I would never leave that room, that instant, that sorrow. Finally, I squeezed my eyes tight shut and imagined the attendant coming at last to lead my father away and restore me again to my mother.

In my imagination, I burst into tears. It was some time before I could speak again. When I could, I said, "Dear God, Mother! How could you do this to me?"

"I required," she said, "your best estimation of his condition."

"You visit him every day." One of my hands twisted and rose up imploringly, like that of a man slowly drowning. "You must know how he is."

She did not grip my hand. She offered no comfort. She did not apologize. "I have stood by your father through sickness and health," she said, "and will continue to do so for as long as he gains the least comfort from my visits. But I have for some time suspected he no longer recognizes me. So I brought you. Now you must tell me whether I should continue to come here."

There was steel in my mother, and never more so than at that moment. She was not sorry for what she had done to me. Nor was she wrong to have done it.

Even then I knew that.

"Stay away," I said, "and let your conscience be at ease. Father is gone from us forever."

But I could not stop crying. I could not stop crying. I could not stop crying. Back down the streets of Philadelphia I walked, for all to see and marvel at, bawling like an infant, hating this horrible life and hating myself even more for my own selfish resentment of my parents, who were each going through so much worse than I. Yet even as I did so, I was acutely aware that still I sat in that timeless room and that all I was experiencing was but a projection of my imagination. Nor has that sense ever gone entirely away. Even now, if I still my thoughts to

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nothing, this world begins to fade and I sense myself to still be sitting in my father's absence.

From this terrible moment I fled, and found myself back upon the dory, returning from my father's burial. Our hearts were all light and gay. We chattered as the doryman, head down, plied his oars.

My baby sister Barbara was trailing a hand in the water, a blaze of light where her face should have been, hoping to touch a fish.

"Will," said Mary in a wondering voice. "Look." And I followed her pointing finger upward. I turned toward the east, to the darkening horizon above Treaty Island and the New Jersey shore, where late afternoon thunderheads were gathering.

Scudding before the storm and moving straight our way was a structure of such incredible complexity that the eye could make no sense of it. It filled the sky. Larger than human mind could accept, it bore down upon us like an aerial city out of the Arabian Nights, an uncountable number of hulls and platforms dependent from a hundred or more balloons.

Once, years before, I had seen a balloon ascent. Gently the craft had severed its link with the earth, gracefully ascending into the sky, a floating island, a speck of terrestriality taken up into the kingdom of the air. Like a schooner it sailed, dwindling, and away. It disappeared before it came anywhere near the horizon.

If that one balloon was a schooner, than this was an Armada. Where that earlier ship had been an islet, a mote of wind-borne land carried into the howling wilderness of the air, what confronted me now was a mighty continent of artifice.

It was a monstrous sight, made doubly so by the scurrying specks which swarmed the shrouds and decks of the craft and which, once recognized as men, magnified the true size of the thing beyond believing.

The wind shifted, and the thunder of its engines filled the universe.

That was my first glimpse of the mighty airship *Empire*.

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The world turned under my restless mind, dispelling sunshine and opening onto rain. Two days casually disappeared into the fold. I was lurching up Chestnut street, water splashing underfoot, arms aching, almost running. Mary trotted alongside me, holding an umbrella over the twenty-quart pot I carried, and still the rain contrived to run down the back of my neck.

"Not so fast!" Mary fretted. "Don't lurch about like that. You'll trip and spill."

"We can't afford to dawdle. Why in heaven's name did Mother have to leave the pot so long over the fire?"

"It's obvious you'll never be a cook. The juices required time to addle; otherwise the stew would be cold and nasty upon arrival."

"Oh, there'll be no lack of heat where we're going, I assure you. Tacey will make it hot enough and then some."

"Get on with you. She won't."

"She will. Tacey is a despot in the kitchen, Napoleon reborn, reduced in stature but expanded in self-conceit. She is a Tiberius Claudius Nero *in parvum* when she has a spoon in her hand. Never since Xanthippe was such a peppery tongue married to such a gingery spirit. A lifetime of kitchen fires have in the kettle of her being combined—"

Mary laughed, and begged me to stop. "You make my sides ache!" she cried. And so of course I continued.

"—to make of her a human pepper pot, a snapper soup seasoned with vinegar, a simmering mélange of Hindoo spices whose effect is to make not one's tongue but one's ears burn. She—"

"Stop, stop, stop!"

Parties were being held all over town in honor of the officers and crew of the *Empire*, and the first aerial crossing of the Atlantic. There were nearly a thousand crewmen all told, which was far too many to be feted within a single building. Mary and I were bound for a lesser gathering at the Library Company, presided over by a minor Biddle and catered by Julius Nash and his crew of colored waiters.

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We were within sight of our destination when I looked up and saw my future.

Looming above the Walnut Street Prison yard, tethered by a hundred lines, was the *Empire*, barely visible through the grey sheets of rain. It dwarfed the buildings beneath. Gusts of wind tugged and shoved at the colorless balloons, so that they moved slightly, darkness within darkness, like an uneasy dream shifting within a sleeper's mind.

I gaped, and stepped in a puddle so deep the water went over my boot. Stumbling, I crashed to one knee. Mary shrieked.

Then I was up and hobbling-running again, as fast I could. My trousers were soaked with ice-cold water, and my knee blazed with pain, but at least the pot was untouched.

It was no easy life, being the eldest son in a family dependent upon a failing boarding-house. Constant labor was my lot. Not that I minded labor—work was the common lot of everyone along the docks, and cheerily enough submitted to. It was the closing of prospects that clenched my soul like an iron fist.

In those days I wanted to fly to the Sun and build a palace on the Moon. I wanted to tunnel to the dark heart of the Earth and discover rubies and emeralds as large as my father's hotel. I wanted to stride across the land in seven-league boots, devise a submersible boat and with it discover a mermaid nation under the sea, climb mountains in Africa and find leopards at their snowy peaks, descend Icelandic volcanos to fight fire-monsters and giant lizards, be marked down in the history books as the first man to stand naked at the North Pole. Rumors that the *Empire* would be signing replacements for those airmen who had died during the flight from London ate at my soul like a canker.

Father Tourneaux had had great hopes that I might one day be called to the priesthood, preferably as a Jesuit, and when I was younger my mother had encouraged this ambition in me with tales of martyrdom by Iroquois torture and the unimaginable splendors of the Vatican state. But, like so much else, that dream had died a slow death with the dwindling and wasting away of my father.

In prosperous times, a port city offered work enough and oppor-

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tunity in plenty for any ambitious young man. But Philadelphia had not yet recovered from the blockades of the recent war. The posting my brother-in-law had as good as promised me had vanished along with two ships of his nascent fleet, sacrificed to the avarice of British power. The tantalizing possibility that there might be money found to send me to the University of Paris to study mathematics had turned to pebbles and mist as well. My prospects were nonexistent.

Mary grabbed my arm and dragged me around. "Will—you're dreaming again! You've walked right past the doorway."

Tacey Nash saw us come in. Eyes round with outrage, she directed at me a glare that would have stunned a starling, had one been unlucky enough to fly through its beam. "Where have you been?"

I set the pot down on a table, and proceeded to unwrap layers of newspapers and old blanket scraps from its circumference. "Mother insisted that—"

"Don't talk back." She lifted the lid and with it wafted the steam from the stewed oysters toward her nostrils. They flared as the scent of ginger reached them. "Ah." Briefly her face softened. "Your mother still knows how to cook."

One of the waiters placed the pot over a warming stove. Mary briskly tied on an apron—with Patricia married and out of the house, she'd assumed the role of the practical sister and, lacking Patty's organizational genius, tried to compensate with energy—and with a long spoon gave the pot a good stir. Another waiter brought up tureens, and she began filling them.

"Well?" Tacey said to me. "Are you so helpless that you cannot find any work to do?"

So the stew had come in time, after all! Relieved, I glanced over my shoulder and favored my sister with a grin. She smiled back at me, and for one warm instant, all was well.

"Where shall I start?" I asked.

Why was I so unhappy in those days? There was a girl and I had loved her in my way, and thought she loved me too. One of us tired of the

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other, and so we quarreled and separated, to the eternal misery of both. Or so I assume—I retain not a jot of this hypothetical affair, but considering my age, it seems inevitable. Yet it was not a romantic malaise I suffered from, but a disease more all-encompassing.

I was miserable with something far worse than love.

I had a hunger within me for something I could neither define nor delimit. And yet at the same time I suffered the queasy fullness of a man who has been at the table one hour too many. I felt as if I had swallowed several live cats which were now proceeding to fight a slow, sick, unending war within me. If I could, I would have vomited up everything—cats, girl, wharves, boarding-house, city, world, my entire history to date—and only felt the better for being rid of them. Every step I took seemed subtly off-balance. Every word I said sounded exactly wrong. Everything about me—my soul, mind, thought, and physical being—was in my estimation thoroughly detestable.

I had no idea then what was wrong with me.

Now I know that I was simply young.

I suppose I should describe that makeshift kitchen, set up within the Loganian Annex of the Library. The warming pans steaming. The elegant black men with their spotless white gloves bustling out with tureens of stew and returning with bowls newly emptied of punch. How, for the body of the meal, the waiters stood behind the airmen (who, though dressed in their finest, were still a raffish lot), refilling their plates and goblets, to the intense embarrassment of everyone save the officers, who were of course accustomed to such service, and how Julius himself stood by the dignitaries' table, presiding over all, with here a quiet signal to top up an alderman's glass, and there a solemn pleasantries as he spooned cranberries onto the plate of the ranking officer.

Yet that is mere conjecture. What I retain of that dinner is, first, the order of service, and second, the extraordinary speech that was made at its conclusion, most of which I missed from being involved in a conversation of my own, and its even more extraordinary aftermath. No more. The kitchen, for all of me, may as well not have existed at all.

The menu was as follows:

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To begin, *fish-house* punch, drunk with much merriment.

Then, *oyster stew*, my mother's, eaten to take the edge off of appetites and quickly cleared away.

Finally, the dinner itself, in two courses, the first of which was:

*roasted turkey* stuffed with bread, suet, eggs, sweet herbs

*tongue pie* made with apples and raisins

*chicken smothered in oysters* with parsley sauce

served with:   boiled onions

                  cranberries

                  mangoes

                  pickled beans

                  celery

                  pickled beets

                  conserves of rose petals

                  braised lambs quarters

                  red quince preserves

Followed by the second course of:

*trout* poached in white wine and vinegar

*stew pie* made of veal

*alamode round of beef*, corned and stuffed with beef, pork,

bread, butter, salt, pepper, savory and cayenne; braised

served with:   french beans

                  parsnips

                  purple spotted lettuce and salad herbs

                  pickled cucumbers

                  spinach

                  roasted potatoes

                  summer pears

                  white, yellow, and red quince preserves

Finally, after the table had been cleared and deserted:

soft gingerbread

Indian pudding

pumpkin pie

cookies, both almond and cinnamon



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Each course of which was, in the manner of the times, served up all at once in a multitude of dishes, so as to fill the tables complete and impress the diners with an overwhelming sense of opulence and plenty. Many a hungry time in my later adventures I would talk myself to sleep by repeating each dish several times over in my mind, recollecting its individual flavor, and imagining myself so thoroughly fed that I turned dishes away untasted.

Thus do we waste our time and fill our minds with trivialities, while all the time the great world is falling rapidly into the past, carrying our loved ones and all we most value away from us at the rate of sixty seconds per minute, sixty minutes per hour, eight thousand seven hundred sixty-six hours per year!

So much for the food. Let me now describe the speech.

The connection between the Loganian and the main library was through a wide upper-level archway with stairs descending to the floor on either side of the librarian's desk. It was a striking, if inefficient, arrangement which coincidentally allowed us to easily spy upon the proceedings below.

When the final sweets and savories had been placed upon the tables, the waiters processed up the twin stairs, and passed through the Loganian to a small adjacent room for a quiet meal of leftovers. I went to the archway to draw the curtain shut, and stayed within its shadows, looking down upon the scene.

The tables were laid so that they filled the free space on the floor below, with two shoved together on the eastern side of the room for the officers and such city dignitaries—selectmen and flour merchants, mostly—who could not aspire to the celebration in Carpenter's Hall. All was motion and animation. I chanced to see one ruffian reach out to remove a volume from the shelves and, seeing a steelpoint engraving he admired, slide the book under the table, rip the page free, and place it, folded, within the confines of his jacket. Yet that was but one moment in such a menagerie of incident as would have challenged the hand of a Hogarth to record.

Somebody stood—Biddle, I presume—and struck an oratorical stance. From my angle, I could see only his back. Forks struck goblets

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for silence, so that the room was briefly filled with the song of dozens of glass crickets.

The curtains stirred, and Socrates joined me, plate in hand and gloves stuffed neatly into his sash. "Have I missed anything?" he whispered.

I knew Socrates only slightly, as one who was in normal conditions the perfect opposite of his master, Julius: the most garrulous of men, a fellow of strange fancies and sudden laughter. But he looked sober enough now. I shook my head, and we both directed our attention downward.

" . . . the late unpleasantness between our two great nations," the speaker was saying. "With its resolution, let the admiration the American people have always held for our British kindred resume again its rightful place in the hearts of us all."

Now the curtains stirred a second time, and Tacey appeared. Her countenance was as stormy as ever. Quietly, she said, "What is this nonsense Mary tells me about you going up Wissahickon to work in a mill?"

There was an odd stirring among the airmen, a puzzled exchange of glances.

Turning away from the speaker, I said, "I intended to say good-bye to you before I left."

"You've been intending to say good-bye to me since the day we met. So you do mean it, then?"

"I'm serious," I admitted.

Those dark, alert eyes flicked my way, and then back. "Oh, yes, you would do well in the mills—I don't think."

"Tacey, I have little choice. There is no work to be had on the wharves. If I stay at home, I burden Mother with the expense of my upkeep, and yet my utmost labor cannot increase her income by a single boarder. She'll be better off with my room empty and put out to let."

"Will Keely, you are a fool. What future can there be for you performing manual labor in a factory? There are no promotions. The mill owners all have five sons apiece—if a position of authority

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arises, they have somebody close at hand and dear to their hearts to fill it. They own, as well, every dwelling within an hour's walk of the mills. You must borrow from your family to buy your house from them. For years you scrimp, never tasting meat from month to month, working from dawn to dusk, burying pennies in the dirt beneath your bed, with never a hope of earning enough to attract a decent wife. Then the owners declare that there is no longer a market for their goods, and turn out most of their employees. There is no work nearby, so the laborers must sell their houses. Nobody will buy them, however low the price may be, save the mill owners. Who do, for a pittance, because six months later they will begin hiring a new batch of fools, who will squander their savings on the house you just lost."

"Tacey—"

"Oh, I can see the happy crowds now, when you return to the wharves in five years. Look, they will cry, here comes the famous factory boy! See how his silver buttons shine. What a handsome coach he drives—General Washington himself never owned so finely matched a sextet of white horses. Behold his kindly smile. He could buy half of New York city with his gold, yet it has not spoiled him at all. All the girls wish to marry him. They can see at a glance that he is an excellent dancer. They tat his profile into lace doilies and sleep with them under their pillows at night. It makes them sigh."

So, bickering as usual, we missed most of Biddle's speech. It ended to half-drunken applause and uncertain laughter. The British airmen, oddly enough, did not look so much pleased as bewildered.

After a certain amount of whispering and jostling at the head table, as if no one there cared to commit himself to public speech, a thin and spindly man stood. He was a comical fellow in an old-fashioned powdered wig so badly fitting it must surely have been borrowed, and he tittered nervously before he said, "Well. I thank our esteemed host for that most, ah, unusual—damn me if I don't say peculiar—speech. Two great nations indeed! Yes, perhaps, someday. Yet I hope not. Whimsical, perhaps, is the better word. I shall confine myself to a simple account of our historic passage . . ."

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So the speech progressed, and if the American's speech had puzzled the British officer, it was not half so bewildering as those things he said in return.

He began by applauding Tobias Whitpain, he of world-spanning renown, for the contributions made through his genius to the success of the first trans-Atlantic aerial crossing were matched only by the foresight of Queen Titania herself for funding and provisioning the airship. Isabella was now dethroned, he said, from that heavenly seat reserved for the muse of exploration and science.

"Whitpain?" I wondered. "Queen Titania?"

"What is that you are playing with?" Tacey hissed sharply.

I looked up guiltily. But the question was directed not at me but toward Socrates, who yet stood to my other side.

"Ma'am?" he said, the picture of innocence, as he shoved something into my hand, which from reflexive habit, I slid quickly into a pocket.

"Show me your hands," she said, and then, "Why are you not working? Get to work"

Socrates was marched briskly off. I waited until both were out of sight before digging out his toy.

It was a small mirror in a cheap, gaudy frame, such as conjure women from the Indies peer into before predicting love and health and thirteen children for gullible young ladies. I held it up and looked into it.

I saw myself.

I saw myself standing in the square below the great stepped ziggurat at the center of Nicnotezpocoatl. Which grand metropolis, serving twice over the population of London herself, my shipmates inevitably called Nignog City. Dear old Fuzzleton was perched on a folding stool, sketching and talking, while I held a fringed umbrella over him, to keep off the sun. He cut a ludicrous figure, so thin was he and so prissily did he sit. But, oh, what a fine mind he had!

We were always talking, Fuzzleton and I. With my new posting, I was in the strange position of being simultaneously both his tutor

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and student, as well as serving as his bootblack, his confidant, and his potential successor.

“The *Empire* is not safe anchored where it is,” he said in a low voice, lest we be overheard by our Aztec warrior guardians. “Fire arrows could be shot into the balloons from the top of the ziggurat. These people are not fools! They’ve nosed out our weaknesses as effectively as we have theirs. Come the day they fear us more than they covet our airship, we are all dead. Yet Captain Winterjude refuses to listen to me.”

“But Lieutenant Blacken promised—” I began.

“Yes, yes, promises. Blacken has ambitions, and plans of his own, as well. We—”

He stopped. His face turned pale and his mouth gaped wide. The stool clattered onto the paving stones, and he cried, “Look!”

I followed his pointing finger and saw an enormous Negro hand cover the sky, eclipsing the sun and plunging the world into darkness.

“Thank you,” Socrates said. His face twisted up into a grotesque wink, and he was gone.

I returned my attention to the scene below.

The speaker—old Fuzzleton himself, I realized with a start—was winding up his remarks. He finished by raising a glass high in the air, and crying loudly: “To America!—Her Majesty’s most treasured possession.”

At those words, every American started to his feet. Hands were clapped to empty belts. Gentlemen searched their coats for sidearms they had of course not brought. There were still men alive who had fought in the War of Independence, and even if there had not been such, memory of the recent war with its burning of Washington and, closer to home, the economically disastrous blockade of American ports was still fresh in the minds of all. Nobody was eager to return to the embrace of a foreign despot, whether king or queen, George or Titania, made no difference. Our freedoms were young enough that all were aware how precariously we held them.

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The British, for their part, were fighting men, and recognized hostility when confronted with it. They came to their feet as well, in a very Babel of accusation and denial.

It was at that instant, when all was confusion, and violence hovered in the air, that a messenger burst into the room.

Is that poker hot yet? Then plunge it in the wine and let the spices mull. Good. Hand me that. 'Twill help with the telling.

It was the madness of an instant that led me to join the airship-men's number. Had I taken the time to think, I would not have done it. But ambition was my undoing. I flung my towel away, darted into the kitchen to give my sister a quick hug and a peck on her cheek, and was down the stairs in a bound and a clatter.

In the library, all was confusion, with the British heading in a rush for the doorway, and the Americans holding back out of uncertainty, and fear as well of their sudden ferocity.

I joined the crush for the door.

Out in the cobbled street, we formed up into a loose group. I was jostled and roughly shoved, and I regretted my rashness immediately. The men about me were vague grey shapes, like figures in a dream. In the distance I heard the sound of angry voices.

A mob.

I was standing near the officers and overheard one argue, "It is unwise to leave thus quickly. It puts us in the position of looking as though we had reason to flee. 'Tis like the man seen climbing out his host's bedroom window. Nothing he says will make him look innocent again."

"There is no foe I fear half so much as King Mob," Fuzzleton replied. "March them out."

The officer saluted, spun about, and shouted, "To the ship—double-time, on the mark!" Clapping his horny hands together, he beat out the rhythm for a sailor's quick-march, such as I had played at a thousand times as a lad.

Rapidly the airmen began to move away.

Perforce I went with them.

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By luck or good planning, we reached the prison yard without encountering any rioters. Our group, which had seemed so large, was but a drop of water to the enormous swirling mass of humanity that had congregated below the airship.

All about me, airmen were climbing rope ladders, or else being yanked into the sky. For every man thus eliminated, a new rope suddenly appeared, bounced, and was seized by another. Meanwhile, lines from the Whitpain engines were being disconnected from the tubs of purified river water, where they had been generating hydrogen.

Somebody slipped a loose loop around me and under my arms and with a sudden lurch I went soaring up into the darkness.

Oh, that was a happy time for me. The halcyon weeks ran one into another, long and languid while we sailed over the American wilderness. Sometimes over seas of forest, other times over seas of plains. There were occasional Indian tribes which . . .

Eh? You want to know what happened when I was discovered? Well, so would I. As well ask, though, what words Paris used to woo Helen. So much that we wish to know, we never shall! I retain, however, one memory more precious to me than all the rest, of an evening during the crossing of the shallow sea that covers the interior of at least one American continent.

Our shifts done, Hob and I went to the starboard aft with no particular end but to talk. "Sit here and watch the sunset," she said, patting the rail. She leaned against me as we watched, and I was acutely aware of her body and its closeness. My eyes were half-closed with a desire I thought entirely secret when I felt her hand undoing the buttons on my trousers.

"What are you doing?" I whispered in alarm.

"Nothing they don't expect young lads to do with each other now and then. Trust me. So long as you're discreet, they'll none of them remark on't."

Then she had me out and with a little laugh squeezed the shaft. I was by then too overcome with desire to raise any objections to her remarkable behavior.

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Side by side we sat on the taffrail, as her hand moved first slowly and then with increasing vigor up and down upon my yard. Her mouth turned up on one side in a demi-smile. She was enjoying herself.

Finally I spurted. Drops of semen fell, silent in the moonlight, to mingle their saltiness with that of the water far below. She bent to swiftly kiss the tip of my yard and then tucked it neatly back into my trousers. "There," she said. "Now we're sweethearts."

My mind follows them now, those fugitive drops of possibility on their long and futile, yet hopeful, flight to the sea. I feel her hand clenching me so casually and yet profoundly. She could not have known how much it meant to me, who had never fired off my gun by a woman's direct intervention before. Yet inwardly I blessed her for it, and felt a new era had opened for me, and swore I would never forget her nor dishonor her in my mind for the sake of what she had done for me.

Little knowing how soon my traitor heart would turn away from her.

But for then I knew only that I no longer desired to return home. I wanted to go on with my Hob to the end of the voyage and back to her thronged and unimaginable London with its Whitpain engines and electrified lighting and surely a place for an emigré from a nonexistent nation who knew (as none of them did) the Calculus.

Somewhere around here, I have a folded and water-damped sheet of foolscap, upon which I apparently wrote down a short list of things I most wished never to forget. I may have lost it, but no matter. I've read it since a hundred times over. It begins with a heading in my uncertain Latin.

*Ne Obliviscaris*

1. My father's burial
2. The Aztec Emperor in his golden armor
3. Hob's hair in the sunset
4. The flying men



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5. Winterjude's death & what became of his Lady
6. The air-serpents
7. The sound of icebergs calving
8. Hunting buffalo with the Apache
9. Being flogged
10. The night we solved the Whitpain Calculus

Which solution of course is gone forever—else so much would be different now! We'd live in a mansion as grand as the President's, and savants from across the world would come a-calling upon your old father, just so they could tell their grandchildren they'd met the Philadelphia Kepler, the American Archimedes. Yet here we are.

So it is savage irony that I remember that night vividly—the small lantern swinging lightly in the gloom above the table covered with sheet after sheet of increasingly fervid computation—Calculus in my hand and Whitpain equations in Fuzzleton's, and then on one miraculous and almost unreadable sheet, both of our hands dashing down formula upon formula in newly invented symbols, sometimes overlapping in the excitement of our reconciliation of the two geniuses.

"D'ye see what this means, boy?" Fuzzleton's face was rapturous. "Hundreds of worlds! Thousands! An infinitude of 'em! This is how the *Empire* was lost and why your capital city and mine are strangers to each other—it explains *everything!*"

We grabbed each other and danced a clumsy little jig. I remember that I hit my head upon a rafter, but what did I care? There would be statues of us in a myriad Londons and countless Philadelphias. We were going to live forever in the mind of Mankind.

My brother-in-law once told me that in China they believe that for every good thing there is an ill. For every kiss, a blow. For every dream a nightmare. So perhaps it was because of my great happiness that we shortly thereafter took on board a party of near-naked savages, men and women in equal numbers, to question about the gold ornaments they all wore in profusion about their necks and wrists and ankles.

Captain Winterjude stood watching, his lady by his side and every

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bit as impassive as he, as the men were questioned by Lieutenant Blacken. They refused to give sensible answers. They claimed to have no knowledge of where the gold came from. They insisted that they didn't know what we were talking about. When the ornaments were ripped from their bodies and shaken in their faces, they denied the gewgaws even existed.

Finally, losing patience, Blacken lined the natives up against the starboard rail. He conferred with the captain, received a curt nod, and ordered two airshipmen to seize the first Indian and throw him overboard.

The man fell to his death in complete silence.

His comrades watched stoically. Blacken repeated his questions. Again he learned nothing.

A second Indian went over the rail.

And so it went until every male was gone, and it was obvious we would learn nothing.

The women, out of compassion I thought at the time, were spared. The next morning, however, it was found that by night all had disappeared. They had slipped over the side, apparently, after their mates. The crew were much discontented with this discovery, and I discovered from their grumbles and complaints that their intentions for these poor wretches had been far from innocent.

Inevitably, we turned south, in search of El Dorado. From that moment on, however, our voyage was a thing abhorrent to me. It seemed to me that we had made the air itself into one vast grave and that, having plunged into it, the *Empire* was now engaged in an unholy pilgrimage through and toward Death itself.

When the Aztecs had been defeated at last and their city was ours, the officers held a banquet to celebrate and to accept the fealty of the vassal chieftains. Hob was chosen to be a serving-boy. But, because the clothes of a servitor were tight and thus revealing of gender, she perforce faked an injury, and I took her place instead.

It was thus that I caught the eye of Lady Winterjude.

The widow was a handsome, well-made woman with a black pony-

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tail tied up in a bow. She wore her late husband's military jacket, in assertion of her rights, and it was well known that she was Captain Blacken's chief advisor. As I waited on her I felt her eye upon me at odd moments, and once saw her looking at me with a shocking directness.

She took me, as her unwritten perquisite, into her bed. Thereby and instantly turning Hob into my bitterest enemy, with Captain Blacken not all that far behind.

Forgive me. No, I hadn't fallen asleep. I was just thinking on things. This and that. Nothing that need concern you.

At the time I thought of Lady Winterjude as a monster of evil, an incubus or lamia to whom I was nevertheless drawn by the weakness of my flesh. But of course she was nothing of the kind. Had I made an effort to see her as a fellow human, things might well have turned out differently. For I now believe that it was my very naivete, the transparency with which I was both attracted to and repelled by her, that was my chief attraction for the lady. Had I but the wit to comprehend this then, she would have quickly set me aside. Lady Winterjude was no woman to allow her weaknesses to be understood by a subordinate.

I was young, though, and she was a woman of appetites.

Which is all I remember of that world, save that we were driven out from it. Before we left, however, we dropped a Union Jack, weighted at the two bottom corners, over the side and into the ocean, claiming the sea and all continents it touched for Britain and Queen Titania.

Only an orca was there to witness the ceremony, and whether it took any notice I greatly doubt.

The *Empire* crashed less than a month after we encountered the air-serpents. They lived among the Aurora Borealis, high above the Arctic mountains. It was frigid beyond belief when we first saw them looping amid the Northern Lights, over and over in circles or cart-wheels, very much like the Oriental pictures of dragons. Everybody crowded the rails to watch. We had no idea that they were alive, much less hostile.

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The creatures were electrical in nature. They crackled with power. Yet when they came zigzagging toward us, we suspected nothing until two balloons were on fire, and the men had to labor mightily to cut them away before they could touch off the others.

We fought back not with cannons—the recoil of which would have been disastrous to our fragile shells—but with rockets. Their trails crisscrossed the sky, to no effect at first. Then, finally, a rocket trailing a metal chain passed through an air-dragon and the creature discharged in the form of a great lightning-bolt, down to the ground. For an instant we were dazzled, and then, when we could see again, it was no more.

Amid the pandemonium and cheers, I could have heard no sound to alert me. So it was either a premonition or merest chance that caused me to turn at that moment, just in time to see Hob, her face as hate-filled as any demon's, plunge a knife down upon me.

Eh? Oh, I'm sure she did. Your mother was never one for halfway gestures. I could show the scar if you required it. Still, I'm alive, eh? It's all water under the bridge. She had her reasons, to be sure, just as I had mine. Anyway, I didn't set out to explain the ways of women to you, but to tell of how the voyage ended.

We were caught in a storm greater than anything we had encountered so far. I think perhaps we were trapped between worlds. Witch-fires danced on the ropes and rails. Balloons went up in flames. So dire was our situation and sure our peril that I could not hold it in my mind. A wild kind of exaltation filled me, an almost Satanic glee in the chaos that was breaking the airship apart.

As Hob came scuttling across my path, I swept her into my arms and, unheeding of her panicked protests, kissed her! She stared, shocked, into my eyes, and I laughed. "Caroline," I cried, "you are the woman or lass or lad or whatever you might be for me. I'd kiss you on the lip of Hell itself, and if you slipped and fell in, I'd jump right after you."

Briefly I was the man she had once thought me and I had so often wished I could be.

Hob looked at me with large and unblinking eyes. "You'll never be

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free of me now,” she said at last, and then jerked away and was gone, back to her duty.

For more than a month I wandered the fever-lands, while the Society for the Relief of Shipwrecked Sailors attended to my needs. Of the crash itself, I remember nothing. Only that hours before it, I arrived at the bridge to discover that poor dear old Fuzzleton was dead.

Captain Blacken, in his madness, had destroyed the only man who might conceivably have returned him to his own port of origin.

“Can you navigate?” he demanded fiercely. “Can you bring us back to London?”

I gathered up the equations that Fuzzleton and I had spent so many nights working up. In their incomplete state, they would bring us back to Philadelphia—if we were lucky—but no further. With anything less than perfect luck, however, they would smear us across a thousand worlds.

“Yes,” I lied. “I can.”

I set a course for home.

And so at last, I came upon my father’s grave. It was a crisp black rectangle in the earth, as dark and daunting as oblivion itself. Without any hesitation, I stepped through that lightless doorway. And my eyes opened.

I looked up into the black face of a disapproving angel.

“Tacey?” I said wonderingly.

“That’s *Mrs. Nash* to you,” she snapped. But I understood her ways now, and when I gratefully clasped her hand, and touched my lips to it, she had to look away, lest I think she had changed in her opinion of me.

Tacey Nash was still one of the tiniest women I had ever seen, and easily the most vigorous. The doctor, when he came, said it would be weeks before I was able to leave the bed. But Tacey had me nagged and scolded onto my feet in two days, walking in three, and hobbling about the public streets on a cane in four. Then, on the fifth day, she returned to her husband, brood, and anonymity, vanishing from my

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life forever, as do so many people in this world to whom we owe so much more than will ever be repaid.

When word got out that I was well enough to receive visitors, the first thing I learned was that my brother was dead. Jack had drowned in a boating accident several years after I left. A girl whose face was entirely unknown to me told me this—my mother, there also, could not shush her in time—and told me as well that she was my baby sister Barbara.

I should have felt nothing. The loss of a brother one does not know is, after all, no loss at all. But I was filled with a sadness wholly inexplicable but felt from the marrow outward, so that every bone, joint, and muscle ached with the pain of loss. I burst into tears.

Crying, it came to me then, all in an instant, that the voyage was over.

The voyage was over and Caroline had not survived it. The one true love of my life was lost to me forever.

So I came here. I could no longer bear to live in Philadelphia. The gems in my pocket, small though they might be compared to those I'd left behind, were enough to buy me this house and set me up as a merchant. I was known in the village as a melancholy man. Indeed, melancholy I was. I had been through what would have been the best adventure in the world, were it not ruined by its ending—by the loss of the *Empire* and all its hands, and above all the loss of my own dear and irreplaceable Hob.

Perhaps in some other, and better, world she yet survived. But not in mine.

Yet my past was not done with me yet.

On a cold, wet evening in November, a tramp came to my door. He was a wretched, fantastical creature, more kobold than human, all draped in wet rags and hooded so that only a fragment of nose poked out into the meager light from my doorway.

Imploringly, the phantasm held out a hand and croaked, "Food!"

I had not the least thought that any danger might arise from so

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miserable a source, and if I had, what would I have cared? A violent end to a violent life—I would not have objected. “Come inside,” I said to the poor fellow, “out of the rain. There’s a fire in the parlor. Go sit there, while I warm something up.”

As the beggar gratefully climbed the stairs, I noticed that he had a distinct limp, as if a leg had been broken and imperfectly healed.

I had a kettle steaming in the kitchen. It was the work of a minute to brew the tea. I prepared a tray with milk and sugar and ginger, and carried it back to the front of the house.

In the doorway to the parlor I stopped, frozen with amazement. There, in that darkened room, a hand went up and moved the hood down. All the world reversed itself.

I stumbled inside, unable to speak, unable to think.

The fire caught itself in her red hair. She turned up her cheek toward me with that same impish smile I loved so well.

“Well, mate,” she said. “Ain’t you going to kiss me?”

The fire is all but done. No, don’t bother with another log. Let it die. There’s nothing there but ashes anyway.

You look at your mother and you see someone I do not—a woman who is old and wrinkled, who has put on some weight, perhaps, who could never have been an adventurer, a rogue, a scamp. Oh, I see her exterior well enough, too. But I also see deeper.

I love her in a way you can’t possibly understand, nor ever will understand unless some day many years hence you have the good fortune to come to feel the same way yourself. I love her as an old and comfortable shoe loves its mate. I could never find her equal.

And so ends my tale. I can vouch for none of it. Since the fever, I have not been sure which memories are true and which are fantasy. Perhaps only half of what I have said actually happened. Perhaps none of it did. At any rate, I have told you it all.

Save for one thing.

Not many years later, and for the best of reasons, I sent for the midwife. My darling Caroline was in labor. First she threw up, and then the water broke. Then the Quaker midwife came and chased me

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from the room. I sat in the parlor with my hands clasped between my knees and waited.

Surely hours passed while I stewed and worried. But all I recall is that somehow I found myself standing at the foot of my wife's child-bed. Caroline lay pale with exhaustion. She smiled wanly as the midwife held up my son for me to see.

I looked down upon that tiny creature's face and burst into tears. The tears coursed down my face like rain, and I felt such an intensity of emotion as I can scarce describe to you now. It was raining outside, they tell me now, but that is not how I recall it. To me the world was flooded with sunshine, brighter than any I had ever seen before.

The midwife said something, I paid her no mind. I gazed upon my son.

In that moment I felt closer to my father than ever I had before. I felt that finally I understood him and knew what words he would have said to me if he could. I looked down on you with such absolute and undeviating love as we in our more hopeful moments pray that God feels toward us, and silently I spoke to you.

Someday, my son, I thought, you will be a man. You will grow up and by so doing turn me old, and then I will die and be forgotten. But that's all right. I don't mind. It's a small price to pay for your existence.

Then the midwife put you into my arms, and all debts and grudges I ever held were canceled forever.

There's so much more I wish I could tell you. But it's late, and I lack the words. Anyway, your trunk is packed and waiting by the door. In the morning you'll be gone. You're a man yourself, and about to set off on adventures of your own. Adventures I cannot imagine, and which afterwards you will no more be able to explain to others than I could explain mine to you. Live them well. I know you will.

And now it's time I was abed. Time, and then some, that I slept.





## CONTRIBUTORS

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**GREG EGAN** was born in Perth, Australia, in 1961. He has published over fifty short stories in magazines and anthologies, seven novels, and three collections of stories. His novella “Oceanic” won the Hugo Award, the Japanese Seiun Award, the Locus Award, and the Asimov’s Readers Award for best novella of 1998. A new far-future novel, *Incandescence*, was published earlier this year by Night Shade Books.

**BRUCE STERLING** is an Austin-based science fiction writer and Net critic, and internationally recognized as a cyberspace theorist. His novels *Involution Ocean*, *The Artificial Kid*, *Schismatrix*, *Islands in the Net*, and *Heavy Weather* influenced the cyberpunk literary movement. He co-authored with William Gibson *The Difference Machine*, and is one of the founders of the Electronic Frontier Foundation.

**CHARLES COLEMAN FINLAY** was born in New York City, but was carried away as a small child by loyal retainers who raised him in the wilderness of Ohio, where he still resides. His first story, “Footnotes,” published in 2001 in *The Magazine of Fantasy and Science Fiction*, caused confusion and bafflement. Somehow after that, he still managed to become a regular contributor to *F&SF*.

His stories have been reprinted in four different Year’s Best volumes, and he and his stories have been finalists for four different awards. His first novel, *The Prodigal Troll*, and *Wild Things*, his first short story collection, containing “Footnotes” as well as his award-nominated and Year’s Best stories, both came out in 2005. In 2009, Del Rey will be publishing a new fantasy series, the Traitor to the Crown trilogy.

## CONTRIBUTORS

**KAREN JOY FOWLER** is the author of five novels, including *The Jane Austen Book Club*, which was a *New York Times* Bestseller, and two short story collections, including *Black Glass*, which won the World Fantasy Award in 1999. A new novel, *Wit's End*, was published in April of 2008.

**JOHN BARNES** was born a few months before Sputnik and will probably die before anyone walks on the moon again. He has published over twenty-five science fiction books and will probably keep doing it if nobody stops him. He was a theatre professor for a while. These days he works primarily as a consulting statistical semiotician, an occupation which he will explain at great length if you buy him a drink and let him get between you and the door, and often as a book doctor. His next novel will be his first mainstream book, *Tales of the Madman Underground*, coming from Penguin in 2009.

**EKATERINA SEDIA** resides in the Pinelands of New Jersey. Her critically-acclaimed novels, *The Secret History of Moscow* and *The Alchemy of Stone* were published by Prime Books. Her next one, *The House of Discarded Dreams*, is coming out in July 2009. Her short stories have sold to *Analog*, *Baen's Universe*, *Dark Wisdom* and *Clarkesworld*, as well as *Japanese Dreams* and *Magic in the Mirrorstone* anthologies. Visit her at [www.ekaterinasedia.com](http://www.ekaterinasedia.com)

**PAUL DI FILIPPO** has been writing professionally for over twelve-five years, and has twenty-five books in print to prove it. He lives in Providence, Rhode Island, with his mate Deborah Newton, a chocolate-colored cocker spaniel named Brownie, and a calico cat named Penny Century.

**TIM PRATT's** stories have appeared in the *Best American Short Stories*, *The Year's Best Fantasy and Horror*, and other nice places, and have won a Hugo Award (and lost a Nebula). He lives in Oakland California with his wife and son.

## CONTRIBUTORS

**KEN MACLEOD** holds a degree in zoology and has worked in the fields of biomechanics and computer programming. His first two novels, *The Star Fraction* and *The Stone Canal*, each won the Prometheus Award; *The Cassini Division* was a finalist for the Nebula Award; and *The Sky Road* won the British Science Fiction Association Award and was a finalist for the Hugo Award.

Ken MacLeod lives near Edinburgh, Scotland, with his wife and children.

**ROBERT REED** has written more than ten science fiction novels including his recent *The Well of Stars*. He has been nominated for the Hugo Award for his short fiction, which has appeared in the major SF magazines. He lives in Lincoln, Nebraska.

**JACK SKILLINGSTEAD** lives in Seattle. His stories have appeared in *Asimov's*, *Realms of Fantasy*, *On Spec* and *Talebones*, as well as various *Year's Best Science Fiction* anthologies. He has been translated into Russian, Spanish, Romanian and Greek. In 2000 his entry was a winner in Stephen King's "On Writing" contest. In 2008 and 2009 his work will appear in *Fast Forward 2* and *The Solaris Book of New Science Fiction*. Jack is a 2004 finalist for the Sturgeon Award.

**NANCY KRESS** is the author of twenty-one books: thirteen novels of science fiction or fantasy, one YA novel, two thrillers, three story collections, and two books on writing. Her most recent books are *Probability Space*, the conclusion of a trilogy that began with *Probability Moon* and *Probability Sun*; *Crossfire*, *Nothing Human*, and *Dogs*.

She teaches regularly at summer conferences such as Clarion, and during the year at the Bethesda Writing Center in Bethesda, Maryland. In addition, she is the "Fiction" columnist for *Writer's Digest* magazine. She has won two Nebulas and a Hugo, and lost over a dozen more of these awards. Her work has been translated into Swedish, French, Italian, German, Spanish, Polish, Croatian, Lithuanian, Romanian, Japanese, and Russian, none of which she can read.

## CONTRIBUTORS

**HOLLY PHILLIPS** lives by the Columbia River in the mountains of western Canada. She is the author of the award-winning story collection *In the Palace of Repose*. Her fantasy novel *Engine's Child* will be published by Del Rey in 2008.

**ALEXANDER JABLOKOV** has no head for business, but finds it fascinating. This explains a few things about both the quality of his writing and the state of his finances. He has written a number of novels, findable in the near-surface strata of several active archeological digs, and a bit of short fiction, still recent enough to be viewed with dismay. He has discovered that raising children is an indecently high-overhead method of gathering material for his writing. Now that they are old enough to prefer being ignored, he hopes his productivity will improve.

**MARY ROBINETTE KOWAL** is a professional puppeteer who moonlights as a writer. Originally from North Carolina, Mrs. Kowal lives in New York or Iceland. Her short fiction appears in *Strange Horizons*, *Cosmos* and *CICADA*. Visit her website [www.maryrobinettekowal.com](http://www.maryrobinettekowal.com)

**WILL MCINTOSH** made his first professional sale to *Interzone* in 2005. Since then he has published in *Asimov's*, *Strange Horizons*, *Postscripts*, *CHIZINE*, *Black Static*, and many other venues. He was shortlisted for both the British Science Fiction Association and British Fantasy Society awards for best short story of 2005. By day, he is a psychology professor in the southeastern U.S.

In his day life, Dr. **GEOFFREY LANDIS** is a meek and mild-mannered scientist. During 2006 he was the Ronald E. McNair Visiting Professor of Astronautics at MIT, the institution where he received his undergraduate degrees in Physics and in Electrical Engineering. His scientific work includes being a member of the science team on the Mars Exploration Rovers mission and working on advanced technology for space flight at NASA Glenn Research Center.

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Dr. Landis writes under the name “Geoffrey A. Landis.” An award-winning author, He has written seventy-five short stories, which been translated into twenty-three languages. His books include the novel *Mars Crossing* and the short story collection *Impact Parameter and Other Quantum Realities*. More information is available on his website at [www.sff.net/people/geoffrey.landis](http://www.sff.net/people/geoffrey.landis).

**MICHAEL SWANWICK** is one of the most acclaimed writers of his generation. He has received a Hugo Award for short fiction an unprecedented five times in six years. He has also received the Nebula, Theodore Sturgeon Memorial and World Fantasy Awards. His stories are frequently reprinted in Best of the Year anthologies and have been translated and published throughout the world. His newest novel, *The Dragons of Babel*, was published to critical acclaim in January by Tor Books. *The Dog Said Bow-Wow*, his most recent collection, is available from Tachyon Publications.

He lives in Philadelphia with his wife, Marianne Porter, and is currently at work on a novel featuring Darger and Surplus, Postutopian gentlemen and confidence artists.

## PUBLICATION HISTORY

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