

## Nightfall by Charles Stross

A synthetic gemstone the size of a Coke can falls through silent darkness. The night is quiet as the grave, colder than midwinter on Pluto. Gossamer sails as fine as soap bubbles droop, the gust of sapphire laser light that inflated them long since darkened; ancient starlight picks out the outline of a huge planet-like body beneath the jewel-and-cobweb corpse of the starwhisp.

Eight years have passed since the good ship Field Circus slipped into close orbit around the frigid brown dwarf Hyundai +4904/-56. Five years have gone by since the launch lasers of the Ring Imperium shut down without warning, stranding the light sail powered craft three light years from home. There has been no response from the router, the strange alien artifact in orbit around the brown dwarf, since the crew of the starwhisp uploaded themselves through its strange quantum entanglement interface for transmission to whatever alien network it connects to. In fact, nothing happens; nothing save the slow trickle of seconds, as a watchdog timer counts down the moments remaining until it is due to resurrect stored snapshots of the crew, on the assumption that their uploaded copies are beyond help.

Meanwhile, outside the light cone—

Amber jolts into wakefulness, as if from a nightmare. She sits bolt upright, a thin sheet falling from her chest; air circulating around her back chills her rapidly, cold sweat evaporating. She mutters aloud, unable to subvocalize, "where am I—oh. A bedroom. How did I get here?" mumble. "Oh, I see." Her eyes widen in horror. It's not a dream. . . .

"Greetings, human Amber," says a ghost-voice that seems to come from nowhere: "I see you are awake. Would you like anything?"

Amber rubs her eyes tiredly. Leaning against the bedstead, she glances around cautiously. She takes in a bedside mirror, her reflection in it: a young woman, gaunt in the manner of those whose genome bears the p53 calorie-restriction hack, she has disheveled blonde hair and dark eyes. She could pass for a dancer or a soldier; not, perhaps, a queen. "What's going on? Where am I? Who are you, and what am I doing in your head?"

Her eyes narrow. Analytical intellect comes to the fore as she takes stock of her surroundings. "The router," she mutters. Structures of strange matter in orbit around a brown dwarf, scant light years from Earth. "How long ago did we come through?" Glancing round, she sees a room walled in slabs of close-fitting stone. A window bay is recessed into them, after the style of crusader castles many centuries in the past, but there's no glass in it—just a blank white screen. The only furniture in the room, besides a Persian carpet on the cold flagstones, is the bed she sits upon. That, and the idiot gun that hovers just

beneath the ceiling. She's reminded of a scene from an old movie, Kubrick's enigma; this whole set-up has got to be deliberate, and it isn't funny.

"I'm waiting," she announces, and leans back against the headboard.

"According to our records this reaction indicates that you are now fully self-aware," says the ghost. "This is good. You have not been conscious for a very long time: explanations will be complex and discursive. Can I offer you refreshments? What would you like?"

"Coffee, if you have it. Bread and hummus. Something to wear." Amber crosses her arms, abruptly self-conscious. "I'd prefer to have management ackles to this universe, though. As realities go, it's a bit lacking in furniture." Which isn't entirely true—it seems to have a comprehensive, human-friendly biophysics model. Her eyes focus on her left forearm; tanned skin and a puckered dime of scar tissue records a youthful accident with a pressure seal in Jovian orbit. Amber freezes for a moment. Her lips move in silence, but she's locked into place in this universe, unable to split or conjoin nested realities just by calling subroutines that have been spliced into the corners of her mind since she was a teenager. Finally she asks, "How long have I been dead?"

"Longer than you were alive, by orders of magnitude," says the ghost. A tray laden with pita breads, hummus, and olives congeals from the air above her bed and a wardrobe appears at one side of the room. "I can begin the explanation now or wait for you to finish eating. Which would you prefer?"

Amber glances about again, then fixes on the white screen in the window bay. "Give it to me right now. I can take it," she says, quietly bitter. "I like to understand my mistakes as soon as possible," she adds.

"We-us can tell that you are a human of determination," says the ghost, a hint of pride entering its voice. "That is a good thing, human Amber. You will need all of your resolve if you are going to survive here. . . ."

It is the time of repentance in a temple beside a tower that looms above a dry plain, and the thoughts of the priest who lives in the tower are tinged with regret. It is Ashura, the tenth day of Muhurram, according to a real-time clock still tuned to the pace of a different era: the one thousand, three hundred and fortieth anniversary of the martyrdom of the third Imam, the Sayyid ash-Shuhada.

The priest of the tower has spent an indefinite time in prayer—locked in an eternal moment of meditation and recitation—and now, as the sun, vast and red, burns low above the horizon of the infinite desert, his thoughts drift toward the present. Ashura is a very special day, a day of atonement for collective guilt, evil committed through inactivity; but it is in Sadeq's nature to look outward toward the future. This is, he knows, a failing—but he is a member of that generation of the Shi'ite clergy that reacted to the excesses of the previous century: the generation that withdrew the ulama from temporal power, retreated from the velyat i-faqih of Khomeini and his successors, and left government to the people. Sadeq's focus, his driving obsession in theology, is a program of re-appraisal of eschatology and cosmology. Here in a tower of white sun-baked clay, on an endless plain that exists only in the imaginary spaces of a

starship the size of a soft drink can, the priest spends his processor cycles in contemplation of one of the most vicious problems ever to confront a mujtahid: the Fermi paradox.

Sadeq finishes his evening devotions in near silence, then stands, stretches as is his wont, and leaves the small and lonely courtyard at the base of the tower. The gate—made of wrought iron, warmed by sunlight—squeals slightly as he opens it. Glancing at the upper hinge, he frowns slightly, willing it clean and whole. The underlying physics model acknowledges his access controls: a thin rim of red around the pin turns silvery-fresh, and the squeaking stops dead. Closing the gate behind him, Sadeq enters the tower.

He climbs with a heavy, even tread, a spiral staircase snaking ever upward above him. Narrow slit-windows line the outer wall of the staircase: through each of them he sees a different world. Out there, nightfall in the month of Ramadan. And through the next, green misty skies and a horizon too close by far. Sadeq carefully avoids thinking about the implications of this manifold space. Coming from prayer, from a sense of the sacred, he doesn't want to lose his proximity to his faith. He's far enough from home as it is, and there is much to consider—he is surrounded by strange and curious ideas, all but lost in a corrosive desert of faith.

At the top of the staircase, Sadeq comes to a door of aged wood bound in iron. It doesn't belong here: it's a cultural and architectural anomaly. The handle is a loop of black iron: Sadeq regards it as if it's the head of an asp, poised to strike. Nevertheless he reaches out and turns the handle, steps across the threshold into a palace out of fantasy.

None of this is real, he reminds himself. It's no more real than an illusion conjured by one of the djinni of the thousand nights and one night. Nevertheless, he can't save himself from smiling at the scene—a sardonic smile of self-deprecating humor, tempered by frustration.

Sadeq's captors have stolen his soul and locked it—him—in a very strange prison, a temple with a tower that rises all the way to paradise. It's the whole classical litany of mediaevalist desires, distilled from fifteen hundred years of literature; colonnaded courtyards, cool pools lined with rich mosaics, rooms filled with every imaginable dumb matter luxury, endless banquets awaiting his appetite—and occupied by dozens of beautiful un-women, eager to fulfill his every fantasy. Sadeq, being human, has fantasies by the dozen: but he doesn't dare permit himself to succumb to this temptation. I'm not dead, he reasons, therefore how can I be in paradise? Therefore this must be a false paradise, a temptation sent to lead me astray. Probably. Unless I am dead, because Allah, peace be unto him, considers a human soul separated from its body to be dead. But if that's so, isn't uploading a sin? In which case this can't be paradise. Besides which, this paradox is so puerile!

Sadeq has always been inclined to philosophical enquiry, and his vision of the afterlife is more cerebral than most, involving ideas as questionable within the framework of Islam as those of Teilhard de Chardin were to the twentieth century Catholic church. If there's one key indicator of a false paradise in his eschatology it's two-and-seventy brainlessly beautiful houris waiting to do his bidding. So it follows that he can't really be dead. Except . . .

The whole question of reality is so vexing that Sadeq does what he does every night. He strides heedlessly across priceless works of art, barging hastily through courtyards and passageways, ignoring niches in which nearly naked supermodels lie with their legs apart, climbing stairs—until he comes to a small unfurnished room with a single high window in one wall. There he sits on the floor, legs crossed, meditating: not in prayer, but in a more tightly focused ratiocination. Every false night—for there is no way to know how fast time is passing, outside this cyberspace pocket—Sadeq sits and thinks, grappling with Descartes' demon in the solitude of his own mind. And the question he asks himself every night is the same: can I tell if this is the true hell? And if it is not, how can I escape?

The ghost tells Amber that she has been dead for just under a third of a million years. She has been reinstated from storage—and has died again—many times in the intervening period, but she has no memory of this; she is a fork from the main bough, and the other branches expired in lonely isolation.

The business of resurrection does not, in and of itself, distress Amber unduly. Born in the post-Turing era, she merely finds some aspects of the ghost's description dissatisfyingly incomplete: like saying she was been drugged and brought hither without stating whether by plane, train, or automobile.

She doesn't have a problem with the ghost's assertion that she is nowhere near Earth, either—indeed, that she is approximately eighty thousand light years away. When she and the others took the risk of uploading themselves through the router they found in orbit around Hyundai +4904/-56, they'd understood that they could end up anywhere or nowhere. But the idea that she's still within the light cone of her departure strikes her as odd. The router is part of a network of self-replicating instantaneous communicators, spawning and spreading between the cold brown dwarf stars that litter the galaxy. She'd somehow expected to be much further from home by now.

Somewhat more disturbing is the ghost's assertion that the human genotype has rendered itself extinct at least twice, that its home planet is unknown, and that Amber is nearly the only human left in the public archives. At this point she interrupts: "I hardly see what this has to do with me!" She blows across her coffee glass; "I'm dead," she explains, with an undertone of knowing sarcasm in her voice. "Remember? I just got here. A thousand seconds ago, subjective time, I was in the control node of a starship, discussing what to do with the router we were in orbit around. We agreed to send ourselves through it, as a trade mission. Then I woke up in bed here in the umpty-zillionth century, wherever and whatever here is—without access to any reality ackles or augmentation, I can't even tell whether this is real or an embedded simulation. You're going to have to explain why you need an old version of me before I can make sense of my situation—and I can tell you, I'm not going to help you until I know who you are. And speaking of that, what about the others? Where are they? I wasn't the only one, you know?"

The ghost freezes in place for a moment, and Amber feels a watery rush of terror: have I gone too far? she wonders.

"There has been an unfortunate accident," the ghost announces portentously. It morphs from a translucent copy of Amber's own body into the outline of a human skeleton, elaborate bony extensions

simulating an osteosarcoma of more-than-lethal proportions. "Consensus-we believe that you are best positioned to remediate the situation. This applies within the demilitarized zone."

"Demilitarized. . . ?" Amber shakes her head, pauses to sip her coffee. "What do you mean? What is this place?"

The ghost flickers again, adopting an abstract rotating hypercube as its avatar. "This space we occupy is a manifold adjacent to the demilitarized zone. The demilitarized zone is a space outside our core reality, itself exposed to entities that cross freely through our firewall, journeying to and from the network outside. We-us use the DMZ to establish informational value of migrant entities, sapient currency units and the like. We-us banked you upon arrival against future options trades in human species futures."

"Currency!" Amber doesn't know whether to be amused or horrified—both reactions seem appropriate. "Is that how you treat all your visitors?"

The ghost ignores her question. "There is a runaway semiotic excursion underway in the zone. We-us believe only you can fix it. If you agree to do so we will exchange value, pay, reward cooperation, expedite remuneration, manumit, repatriate."

Amber drains her coffee cup. "Have you ever entered into economic interactions with me, or humans like me, before?" she asks. "If not, why should I trust you? If so, why have you revived me? Are there any more experienced instances of myself running around here?" She raises an eyebrow at the ghost. "This looks like the start of an abusive relationship."

The ghost continues to sidestep her attempts to work out where she stands. It flickers into transparency, grows into a hazy window on a landscape of impossible shapes. Clouds sprouting trees drift above a landscape of green, egg-curved hills and cheesecake castles. "Nature of excursion: alien intelligence is loose in the DMZ," it asserts. "Alien is applying invalid semiotics to complex structures designed to sustain trade. You know this alien, Amber. We require solution. Slay the monster, we will give you line of credit. Your own reality to control, insight into trade arrangements, augmented senses, ability to travel. Can even upgrade you to you-we consensus, if desired."

"This monster." Amber leans forward: it's her turn to ignore what she feels to be a spurious offer. Upgrade me to a ghost fragment of an alien group mind? she wonders dismissively. "what is this alien?" She feels blind and unsure, stripped of her ability to spawn threads of herself to pursue complex inferences. "Is it part of the Wunch?"

"Datum unknown. It-them came with you," says the ghost. "Accidentally reactivated some seconds since now. Now it runs amok in the demilitarized zone. Help us, Amber. Save our hub or we will be cut off from the network. If that happens, you will die with we-us. Save us. . . ."

A single memory belonging to someone else unwinds, faster than a guided missile and far more deadly.

Amber, aged eleven, is a gawky, long-limbed child loose on the streets of Hong Kong, a yokel tourist viewing the hotcore of the Middle Kingdom. This is her first and final vacation before the Franklin Trust straps her inside the payload pod of a Shenzhou spaceplane and blasts her into orbit from Xinkiang. She's free for the time being, albeit mortgaged to the tune of several million Euros; she's a little taikonaut to be, ready to work for the long years in Jupiter orbit it will take her to pay off the self-propelled options web that owns her. It's not exactly slavery: thanks to Dad's corporate shell-game, she doesn't have to worry about Mom chasing her, a cyanide-eyed abductress with feudal spawn-indenture rights in mind. And now she's got a little pocket money, and a room in the Hilton, and her own personal Franklin remote to keep her company, and she's gonna do that eighteenth century enlightenment tourist shit and do it right.

Because this is her last day at liberty in the randomly evolved biosphere.

China is where it's at in this decade, hot and dense and full of draconian punishments for the obsolescent. Nationalist fervor to catch up with the West has been replaced by consumerist fervor to own the latest fad gadgets, the most picturesque tourist souvenirs from the quaintly old-fashioned streets of America, the fastest hottest smartest upgrades for body and soul. Hong Kong is hotter and faster than just about anywhere else in China, or in the whole damn world for that matter; this is a place where tourists from Tokyo gawp, cowed and future-shocked by the glamor of high technology living.

Walking along Jardine's Bazaar—more like Jardine's bizarre, she thinks—exposes Amber to a blast of humid noise. Geodesic domes sprout like skeletal mushrooms from the glass and chrome roofs of the expensive shopping malls and luxury hotels, threatening to float away on the hot sea breeze. There are no airliners roaring in and out of Kai Tak any more, no burnished aluminum storm clouds to rain round-eyed passengers on the shopping malls and fish markets of Kowloon and the New Territories. In these tense later days of the War Against Unreason, impossible new shapes move in the sky; Amber gapes upward as a Shenyang F-30 climbs at a near-vertical angle, a mess of incomprehensibly curved flight surfaces vanishing to a perspective point that defies radar as well as eyeballs. The Chinese—fighter? missile platform? supercomputer?—is heading out over the South China Sea, to join the endless patrol that guards the border of the capitalist world against the Hosts of Denial, the Trouble out of Wa'hab.

For the moment, she's merely a human child: Amber's subconscious is offlined by the presence of forceful infowar daemons, the Chinese government censorbots suppressing her cognition of their deadliest weapons. And in the seconds while her mind is as empty as a sucked egg, a thin-faced man with blue hair shoves her in the small of her back and snatches at her shoulder bag.

"Hey!" she yells, stumbling. Her mind's a blur, optics refusing to respond and grab a physiology model of her assailant. It's the frozen moment, the dead zone when online coverage fails, and the thief is running away before she can catch her balance or try to give chase. Plus, with her extensions offline she doesn't know how to yell "stop, thief !" in Cantonese.

Seconds later, the fighter is out of visual range and the state censorship field lets up. "Get him, you bastards!" she screams, but the curious shoppers simply stare at the rude foreign child: an elderly woman

brandishes a disposable phonecam at her and screeches something back. Amber picks up her feet and runs. Already she can feel the subsonics from her luggage growling at her guts—it's going to make a scene if she doesn't catch up in time. Shoppers scatter, a woman with a baby carriage almost running her down in her panic to get away from it.

By the time Amber reaches her terrified shoulder bag, the thief has disappeared: she has to spend almost a minute petting the scared luggage before it stops screeching and retracts its spines enough for her to pick it up. And by that time there's a robocop in attendance. "Identify yourself," it rasps in synthetic English.

Amber stares at her bag in horror: there's a huge gash in the side, and it's far too light. It's gone, she thinks, despairingly: he stole it. "Help," she says faintly, holding up her bag for the distant policeman looking through the robot's eyes. "Been stolen."

"What item missing?" asks the robot.

"My Hello Kitty," she says, batting her eyelashes, mendacity full-on at maximum utilization, prodding her conscience into submission, warning of dire consequences should the police discover the true nature of her pet cat: "My kitten's been stolen! Can you help me?"

"Certainly," says the cop, resting a reassuring hand on her shoulder—a hand that turns into a steel armband, as it pushes her into a van and notifies her in formally stilted language that she is under arrest on suspicion of shoplifting and will be required to produce certificates of authenticity and a fully compliant ownership audit for all items in her possession if she wants to prove her innocence.

By the time Amber's meatbrain realizes that she is being politely arrested, some of her external threads have already started yelling for help and her m-commerce trackers have identified the station she's being taken to by way of click-thru trails and an obliging software license manager. Some of them spawn agents to go notify the Franklin trustees, Amnesty International, and the Space and Freedom Party. As she's being booked into a cerise-and-turquoise juvenile offenders holding room by a middle-aged policewoman, the phones on the front desk are already ringing with enquiries from lawyers, fast food vendors, and a particularly on-the-ball celebrity magazine that's been tracking her father's connections. "Can you help me get my cat back?" she asks the policewoman earnestly.

"Name," the officer reads, eyes flickering from the simultaneous translation: "to please wax your identity stiffly."

"My cat has been stolen," Amber insists.

"Your cat?" The cop looks perplexed, then exasperated. Dealing with foreign teenagers who answer questions with gibberish isn't in her repertoire. "We are asking your name?"

"No," says Amber. "It's my cat. It has been stolen. My cat has been stolen."

"Aha! Your papers, please?"

"Papers?" Amber is growing increasingly worried. She can't feel the outside world; there's a Faraday cage wrapped around the holding cell and it's claustrophobically quiet in here. "I want my cat! Now!"

The cop snaps her fingers, then reaches into her own pocket and produces an ID card, which she points to insistently. "Papers," she repeats. "Or else."

"I don't know what you're talking about!" Amber wails.

The cop stares at her oddly. "Wait." She rises and leaves, and a minute later returns with a thin-faced man in a business suit and wire-rimmed glasses that glow faintly.

"You are making a scene," he says, rudely and abruptly. "What is your name? Tell me truthfully or you'll spend the night here."

Amber bursts into tears. "My cat's been stolen," she chokes out.

The detective and the cop obviously don't know how to deal with this scene; it's freaking them out, with its overtones of emotional messiness and sinister diplomatic entanglement. "You wait here," they say, and back out of the cell, leaving her alone with a plastic animatronic koala and a cheap Lebanese coffee machine.

The implications of her loss—of Aineko's abduction—are sinking in now, and Amber is weeping loudly and hopelessly. It's hard to deal with bereavement and betrayal at any age, and the cat has been her wisecracking companion and consolation for a year now, the rock of certainty that gave her the strength to break free from her crazy mother. To lose her cat to a body shop in Hong Kong, where she will probably be cut up for spare circuitry or turned into soup, is too horrible to contemplate. Filled with despair and hopeless anguish, Amber howls at the interrogation room walls while outside, trapped threads of her consciousness search for backups to synchronize with.

But after an hour, just as she's quieting down into a slough of raw despair, there's a knock—a knock!—at the door. An inquisitive head pops in. "Please to come with us?" It's the female cop with the bad translation ware. She takes in Amber's sobbing and tsks under her breath, but as Amber stands up and shambles toward her, she pulls back.

At the front desk of a cubicle farm full of police bureaucrats in various states of telepresence, the detective is waiting with a damp cardboard box wrapped in twine. "Please identify," he asks, snipping the string.

Amber shakes her head, dizzy with the flow of threads homing in to synchronize their memories with her. "Is it—" she begins to ask as the lid comes apart, wet pulp disintegrating. A triangular head pops up,



curiously, sniffing the air. Bubbles blow from brown-furred nostrils. "What took you so long?" asks the cat as she reaches into the box and picks her up, fur wet and matted with seawater.

"If you want me to go fix your alien, for starters I want you to give me reality alteration privileges," says Amber. "Then I want you to find the latest instances of everyone who came here with me—round up the usual suspects—and give them root privileges, too. Then we'll want access to the other embedded universes in the DMZ. Finally, I want guns. Lots of guns."

"That may be difficult," says the ghost. "Many other humans reached halting state long-since. Is at least one other still alive, but not accessible for duration of eschatological experiment in progress. Not all were recorded with version control engine; others were-are lost in DMZ. We-us can provide you with extreme access to the demilitarized zone, but query the need for kinetic energy weapons."

Amber sighs. "You guys really are media illiterates, aren't you?" She stands up and stretches, feeling a facsimile of sleep's enervation leaching from her muscles. "I'll also need my—" it's on the tip of her tongue: there's something missing. "Hang on. There's something I've forgotten." Something important, she thinks, puzzled. Something that used to be around all the time that would . . . know? . . . purr? . . . help? "Never mind," she hears her lips say. "This other human. I really want her. Non-negotiable. All right?"

"That may be difficult," repeats the ghost. "Entity is looping in a recursively confined universe."

"Eh?" Amber blinks at it. "Would you mind re-phrasing that? Or illustrating?"

"Illustration:" the ghost folds the air in the room into a glowing ball of plasma, shaped like a Klein bottle. Amber's eyes cross as she looks at it. "Closest reference from human historical database is Descartes' demon. This entity has retreated within a closed space but is now unsure whether it is objectively real or not. In any event, it refuses to interact."

"Well, can you get me into that space?" asks Amber. Pocket universes she can deal with; it's part and parcel of life as an upload. "Give me some leverage—"

"Risk may attach to this course of action," warns the ghost.

"I don't care," she says irritably. "Just put me there. It's someone I know, isn't it? Send me into her dream and I'll wake her up, okay?"

"Understood," says the ghost. "Prepare yourself."

Without any warning, Amber is somewhere else. She glances around, taking in an ornate mosaic floor, whitewashed walls set with open windows through which stars twinkle faintly in the night sky. The walls are stone, and she stands in a doorway to a room with nothing in it but a bed. Occupied by—

"Shit," she mumbles. "Who are you?" The young and incredibly, classically beautiful woman in the bed looks at her vacantly, then rolls over on her side. She isn't wearing a stitch, she's completely hairless from the ears down, and her languid posture is one of invitation. "Yes?" Amber asks, "what is it?"

The woman on the bed beckons to her slowly. Amber shakes her head. "Sorry, that's just not my scene." She backs away into the corridor, unsteady but thoughtful. "This is some sort of male fantasy, isn't it? And a particularly puerile one at that." She looks around again. In one direction a corridor heads past more open doorways, and in the other it ends with a spiral staircase. Amber concentrates, trying to tell the universe to take her to the logical destination, but nothing happens. "Shit, looks like I'm going to have to do this the hard way. I wish—" she frowns. She was about to wish that someone else was here, but she can't remember who. So she takes a deep breath and heads toward the staircase.

"Up or down?" she asks herself. Up—it seems logical, if you're going to have a tower, to sleep up at the top of it. So she climbs the steps carefully, holding the spiraling rail. I wonder who designed this space? She wonders. And what role am I supposed to fit into in their scenario? On second thoughts, the latter question strikes her as laughable. Wait 'til I give him an earful. . . .

There's a plain wooden door at the top of the staircase, with a latch that isn't fastened. Amber pauses for a few seconds, nerving herself to confront a sleeper so wrapped in solipsism that he's built this sex-fantasy castle around himself. I hope it isn't Pierre, she thinks grimly as she pushes the door inward.

The room is bare and floored in wood. There's no furniture, just an open window set high in one wall. A man sits cross-legged and robed, with his back to her, mumbling quietly to himself and nodding slightly. Her breath catches as she realizes who it is. Oh shit. Her eyes widen. Is this what's been inside his head all along?

"I did not summon you," Sadeq says calmly, not turning round to look at her. "Go away, tempter. You aren't real."

Amber clears her throat. "Sorry to disappoint you, but you're wrong," she says. "We've got an alien monster to catch. Want to come hunting?"

Sadeq stops nodding. He sits up slowly, stretching his spine, then stands up and turns round. His eyes glint in the moonlight. "That's odd." He undresses her with his gaze. "You look like someone I used to know. You've never done that before."

"For fuck's sake!" Amber nearly explodes but catches herself after a moment. "What is this, a Solipsists United chapterhouse meeting?"

"I—" Sadeq looks puzzled. "I'm sorry, are you claiming to be real?"

"As real as you are." Amber reaches out and grabs a hand: he doesn't resist as she pulls him toward the doorway.

"You're the first visitor I've ever had." He sounds shocked.

"Listen, come on." She tugs him after her, down the spiral staircase to the floor below. "Do you want to stay here? Really?" She glances back at him. "What is this place?"

"Hell is a perversion of heaven," he says slowly, running the fingers of his free hand through his beard. Abruptly, he reaches out and grabs her around the waist, then yanks her toward him. "We'll have to see how real you are—" Amber, who is not used to this kind of treatment, responds by stomping on his instep and back-handing him hard.

"You're real!" he cries, as he falls back against the staircase. "Forgive me, please! I had to know—"

"Know what?" she snarls. "Lay one finger on me again and I'll leave you here to rot!" She's already spawning the ghost that will signal the alien outside to pull her out of this pocket universe: it's a serious threat.

"But I had to—wait. You have free will. You just demonstrated that." He's breathing heavily and looking up at her imploringly. "I'm sorry, I apologize! But I had to know whether you were another zombie. Or not."

"A zombie?" She looks round. Another living doll has appeared behind her, standing in an open doorway wearing a skin-tight leather suit with a cut-away crotch. She beckons to Sadeq invitingly. Another body wearing strategically placed strips of rubber mewls at her feet, writhing for attention. Amber raises an eyebrow in disgust. "You thought I was one of those?"

Sadeq nods. "They've gotten cleverer lately. Some of them can talk. I nearly mistook one for—" he shudders convulsively. "Unclean!"

"Unclean." Amber looks down at him thoughtfully. "This isn't really your personal paradise, is it?" After a moment, she holds out a hand to him. "Come on."

"I'm sorry I thought you were a zombie," he repeats sadly: then the ghost yanks them both back to the universe outside.

More memories converge on the present moment:

The Ring Imperium is a huge cluster of self-replicating robots that Amber has assembled in low Jupiter orbit, fueled by the mass and momentum of the small moon J-47 Barney, to provide a launching platform for the interstellar probe her father's business partners are helping her to build. It's also the seat of her court, the leading jurisprudential nexus in the outer solar system. Amber is the Queen here, arbitrator and ruler. And Sadeq is her judge and counsel.

A plaintiff Amber only knows as a radar blip thirty light-minutes away has filed a lawsuit in her court, alleging malfeasance, heresy, and barratry against a semi-sentient corporate pyramid scheme that arrived in Jovian space twelve million seconds ago and currently seems set on converting every other intelligence in the region to its peculiar meme-set. A whole bundle of multi-threaded counter-suits are dragging at her attention, in a counter-attack alleging that the light blip is in violation of copyright, patent, and trade secrecy laws by discussing the interloper's intentions.

Right now, Amber isn't home on the Ring to hear the case in person. She's left Sadeq behind to grapple with the balky mechanics of her legal system—tailor-designed to make corporate litigation a pain in the ass—while she drags Pierre off on a diplomatic visit to another Jovian colony, the Nursery Republic. Planted by the Franklin Trust's orphanage ship Ernst Sanger, the Nursery has grown over the past four years into a spindly snowflake three kilometers across. A slow-growing O'Neil cylinder sprouts from its hub: most of the inhabitants of the space station are less than two years old, precocious additions to the Trust's borganism.

There's a piazza, paved with something not unlike rough marble, on the side of a hill that clings insecurely to the edge of a spinning cup. The sky is a black vastness overhead, wheeling slowly around a central axis lined up on Jupiter. Amber sprawls in a wicker chair, her legs stretched out before her and one arm flung across her forehead. The wreckage of an incredible meal is scattered across the tables around her. Torpid and full, she strokes the cat that lies curled in her lap. Pierre is off somewhere, touring one or another of the prototype ecosystems that one or another of the Borg's special-interest minds is testing. Amber, for her part, can't be bothered. She's just had a great meal, she doesn't have any lawsuits to worry about, everything back home is on the critpath, and quality time like this is so hard to come by—

"Do you keep in touch with your father?" asks Monica.

"Mm." The cat purrs quietly and Amber strokes its flank. "We email. Sometimes."

"I just wondered." Monica is the local Borg den mother, willowy and brown-eyed and with a deceptively lazy drawl—Yorkshire English overlaid with silicon-valley speak. "I hear from him, y'know. From time to time. He was talking about coming out here."

"What? To PeriJove?" Amber's eyes open in alarm: Aineko stops purring and looks round at Monica accusingly.

"Don't worry." Monica sounds vaguely amused. "He wouldn't cramp your style, I think."

"But, out here—" Amber sits up. "Damn," she says, quietly. "What got into him?"

"Middle-aged restlessness, my down-well sibs say." Monica shrugs. "This time, Annette didn't stop him. But he hasn't made up his mind to travel yet."

"Good. Then he might not—" Amber stops. "The phrase. Made up his mind. What exactly do you mean?"

Monica's smile mocks her for a few seconds before the older woman surrenders. "He's talking about uploading."

"Is that embarrassing, or what?" asks Ang. Amber glances at her, mildly annoyed, but Ang isn't looking her way. So much for friends, Amber thinks. Being queen of all you survey is a great way of breaking up peer relationships—

"He won't do it," Amber predicts. "Dad's burned out."

"He thinks he'll get it back if he optimizes himself for re-entrancy." Monica continues to smile. "I've been telling him it's just what he needs."

"I do not want my father bugging me. Or my mother. Memo to immigration control: no entry rights for Manfred Macx without clearance through the Queen's secretary."

"What did he do to get you so uptight?" asks Monica idly.

Amber sighs, and subsides. "Nothing. He's just so extropian it's embarrassing. Like, that was the last century's apocalypse. Y'know?"

"I think he was a really very forward-looking organic," Monica, speaking for the Franklin Borg, asserts. Amber looks away. Pierre would get it, she thinks. Pierre would understand her aversion to Manfred showing up. Pierre, too, wants to carve out his own niche without parents looking over his shoulders, although for very different reasons. She focuses on someone male and more-or-less mature—Nicky, she thinks, though she hasn't seen him for a long time—walking toward the piazza, bare-ass naked and beautifully tanned.

"Parents. What are they good for?" asks Amber, with all the truculence of her seventeen years. "Even if they stay neotenous they lose flexibility. And there's that long Paleolithic tradition of juvenile slavery. Inhuman, I call it."

"How old were you when it was safe to leave you around the house on your own?" challenges Monica.

"Five. That's when I had my first implants." Amber smiles at the approaching young Adonis, who smiles back: yes, it's Nicky, and he seems pleased to see her. Life is good, she thinks, idly considering whether or not to tell Pierre.

"Times change," remarks Monica. "Don't write your father off too soon; there might come a time when you want his company."

"Huh." Amber pulls a face at the old Borg component. "That's what you all say!"

As soon as Amber steps onto the grass, she can feel possibilities open up around her: she has management authority here, and this universe is big, wide open, not like Sadeq's existential trap. A twitch of a sub-process re-asserts her self-image, back to short hair and comfortable clothing. Another twitch brings up a whole load of useful diagnostics. Amber has an uncomfortable feeling that she's running in a compatibility box, here—there are signs that her access to the simulation system's control interface is very much via proxy—but at least she's got it.

"Wow. Back in the real world at last!" She can hardly contain her excitement, even forgetting to be pissed at Sadeq for thinking she was just an actor in his Cartesian theatre's performance of Puritan Hell. "Look! It's the DMZ!"

They're standing on a grassy knoll overlooking a gleaming Mediterranean city that snoozes beneath a Mandelbrot-fuzzy not-sun that hangs at the center of a hyperbolic landscape dwindling into the blue yonder, incomprehensibly distant. Circular baby-blue wells open in the walls of the world at regular intervals, connecting to other parts of the manifold. "How big is it, ghost? In planetary simulation-equivalents."

"This demilitarized zone is an embedded reality, funneling all transfers between the local star system's router and the civilization that built it. It uses on the order of a thousandth of the capacity of the Matrioshka brain it is part of, although the runaway excursion currently in force has absorbed most of that. Matrioshka brain, you are familiar with the concept?" The ghost sounds fussily pedantic.

Sadeq shakes his head. Amber glances at him, askance. "Take all the planets in a star system and dismantle them," she explains. "Turn them into dust—structured nanocomp, powered by heat exchangers, in concentric orbits around the central star. The inner orbitals run close to the melting point of iron; the outer ones are cold as liquid nitrogen, and each layer runs off the waste heat of the next shell in. It's like a Russian doll made out of Dyson spheres, shell enclosing shell enclosing shell, all running uploads—Dad figured our own solar system could support, uh, about a hundred billion times as many inhabitants as Earth. At a conservative estimate. As uploads, living in simulation space."

"Ah." Sadeq nods thoughtfully. "Is that your definition, too?" he asks, glancing up at the glowing point the ghost uses to localize its presence.

"Substantially," it says, almost grudgingly.

"Substantially?" Amber glances around. A billion worlds to explore, she thinks dizzily. And that's just the firewall? She feels obscurely cheated: you need to be vaster than human just to count the digits in the big numbers at play here, but there's nothing fundamentally incomprehensible about it. This is the sort of civilization Dad said she could expect to live in, within her meatbody life-expectancy. Dad and his drinking buddies, singing "dismantle the Moon! Melt down Mars!" in a castle outside Prague as they waited for the results of a shamelessly gerrymandered election to come in in the third decade of the third millennium, the space and freedom party taking over the EU and cranking up to escape velocity. But this

is supposed to be kiloparsecs from home, ancient alien civilizations and all that! Where's the exotic super-science? I have a bad feeling about this, she thinks, spawning a copy of herself to set up a private channel to Sadeq; it isn't advanced enough. Do you suppose these guys could be like the Wunch? Parasites hitching a ride in the machine?

The Wunch, a disastrous infection that had nearly taken over the Field Circus, are dumb parasitic aliens who infest the routers. Luckily, Earth's first uploads—who had reached the router years earlier and been assimilated by the Wunch—had been lobsters; the confused carpetbaggers succumbed to defenses jury-rigged by Pierre and the rest of the crew.

You believe it's lying to us? Sadeq sends back.

"Hmm." Amber sets off down-slope toward the piazza below, at the heart of the fake town. "It looks a bit too human to me."

"Human," echoes Sadeq, a curious wistfulness in his voice. "Did you not say humans are extinct?"

"Your species is obsolete," the ghost comments smugly. "Inappropriately adapted to artificial realities. Poorly optimized circuitry, excessively complex low-bandwidth sensors, messy global variables—"

"Yeah, yeah, I get the picture," says Amber, turning her attention on the town. "So why do you think we can deal with this alien god you've got a problem with?"

"It asked for you," said the ghost, narrowing from an ellipse to a line, and then shrinking to a dimensionless point of brilliance. "And now it's coming. We-I not willing to risk exposure. Call us-me when you have slain the dragon. Goodbye."

"Oh shit—" Amber spins round. But she and Sadeq are alone beneath the hot sunlight from above. The piazza, like the one in the Nursery republic, is charmingly rustic—but there's nobody home, nothing but ornate cast-iron furniture basking beneath the noon-bright sun, a table with a parasol over it, something furry lying sprawled in a patch of sunlight beside it.

"We appear to be alone for now," says Sadeq. He smiles crookedly, then nods at the table. "Maybe we should wait for our host to arrive?"

"Our host." Amber peers around. "The ghost is kind of frightened of this alien. I wonder why?"

"It asked for us." Sadeq heads toward the table, pulls out a chair, and sits down carefully. "That could be very good news—or very bad."

"Hmm." Amber finishes her survey, sees no sign of life. For lack of any better idea, she ambles over to the table and sits down at the other side of it from Sadeq. He looks slightly nervous beneath her inspection, but maybe it's just embarrassment. If I had an afterlife like that, I'd be embarrassed about it

too, Amber thinks to herself.

"Hey, you nearly tripped over—" Sadeq freezes, peering at something close to Amber's left foot. He looks puzzled. "What are you doing here?" he asks her blind spot.

"What are you talking to?" she asks, startled.

He's talking to me, dummy, says something tantalizingly familiar from her blind spot. So the fuckwit's trying to use you to dislodge me, hmm? That's not exactly clever.

"Who—" Amber squints at the flagstone, spawns a bunch of ghosts who tear hurriedly at her reality modification ackles. Nothing seems to shift the blindness. "Are you the alien?"

"What else could I be?" the blind spot asks with heavy irony. "No, I'm your father's pet cat. Listen, do you want to get out of here?"

"Uh." Amber rubs her eyes. "I can't see you, whatever you are," she says politely. "Do I know you?" She's got a strange sense that she does know the blind spot, that it's really important and she's missing something intimate to her own sense of identity, but what it might be she can't tell.

"Yeah, kid." There's a note of world-weary amusement in the not-voice coming from the hazy patch on the ground. "They've hacked you but good, both of you. Let me in and I'll fix it."

"No!" exclaims Amber, a second ahead of Sadeq, who looks at her oddly. "Are you really an invader?"

The blind spot sighs. "I'm as much an invader as you are, remember? I came here with you. Difference is, I'm not going to let some stupid corporate ghost use me as fungible currency."

"Fungible—" Sadeq stops. "I remember you," he says slowly, with an expression of absolute, utter surprise on his face. "What do you mean?"

The blind spot yawns, baring sharp ivory fangs. Amber shakes her head, dismissing the momentary hallucination. "Lemme guess. You woke up in a room and this alien ghost tells you the human species is extinct and asks you to do a number on me. Is that right?"

Amber nods, as an icy finger of fear trails up and down her spine. "Is it lying?" she asks.

"Damn right!" The blind spot is smiling, now, and the smile on the void won't go away—she can see the smile, just not the body it's attached to. "My reckoning is, we're about sixteen light years from Earth. The Wunch have been through here, stripped the dump, then took off for parts unknown; it's a trashhole, you wouldn't believe it. The main life form is an incredibly ornate corporate ecosphere, legal instruments breeding and replicating. They mug passing sapients and use them as currency."



There's a triangular, pointy head behind the smile, slit eyes and sharp ears; predatory, intelligent-looking. Amber can see it out of the corners of her eyes when she looks around the piazza. "You mean we, uh, they grabbed us when we appeared and they've mangled my memories—" Amber suddenly finds it incredibly difficult to concentrate, but if she focuses on the smile she can almost see the body behind it, hunched like a furry chicken, tail wrapped neatly around its front paws.

"Yeah. Except that they didn't bargain on meeting something like me." The smile is infinitely wide, a Cheshire cat grin on the front of an orange and brown stripy body that shimmers in front of Amber's gaze like a hallucination. "Your mother's cracking tools are self-extending, Amber. Do you remember Hong Kong?"

"Hong—"

There is a moment of painless pressure, then Amber feels huge invisible barriers sliding away on all sides. She looks around, for the first time seeing the piazza as it really is, half the crew of the Field Circus waiting nervously around her, the grinning cat crouched on the floor at her feet, the enormous walls of recomplicating data that fence their little town off from the gaping holes—interfaces to the other routers in the network.

"Welcome back," Pierre says gravely, as Amber gives a squeak of surprise and leans forward to pick up her cat. "Now you're out from under, how about we start trying to figure out how to get home?"

Welcome to decade the sixth, millennium three. These old datelines don't mean so much any more, for while some billions of fleshbody humans are still infected with viral memes, the significance of theocentric dating has been dealt a body blow. This may be the fifties, but what that means to you depends on how fast your reality rate runs. The various upload clades exploding across the reaches of the solar system vary by several orders of magnitude—some are barely out of 2049, while others are exploring the subjective thousandth millennium.

While the Field Circus floats in orbit around an alien router—itsself orbiting the brown dwarf Hyundai +4904/-56—while Amber and her crew are trapped on the far side of a wormhole linking the router to a network of incomprehensibly vast alien mindscapes—while all this is going on, the damnfool human species has finally succeeded in making itself obsolete. The proximate cause of its displacement from the pinnacle of creation (or the pinnacle of teleological self-congratulation, depending on your stance on evolutionary biology) is an attack of self-aware corporations. The phrase "smart money" has taken on a whole new meaning, for the collision between international business law and neurocomputing technology has given rise to a whole new family of species—fast-moving corporate carnivores in the net. The planet Mercury has been broken up by a consortium of energy brokers, and Venus is an expanding debris cloud, energized to a violent glare by the trapped and channeled solar output; a million billion fist-sized computing caltrops, backsides glowing dull red with the efflux from their thinking, orbit the sun at various inclinations no further out than Mercury used to be.

Billions of fleshbody humans refuse to have anything to do with the blasphemous new realities. Many of

their leaders denounce the uploads and AIs as soulless machines. Many more are timid, harboring self-preservation memes that amplify a previously healthy aversion to having one's brain peeled like an onion by mind-mapping robots into an all-pervading neurosis—sales of electrified tinfoil-lined hats are at an all-time high. Still, hundreds of millions have already traded their meat puppets for mind machines: and they breed fast. In another few years, the fleshbody populace will be an absolute minority of the posthuman clade. Some time later, there will probably be a war: the dwellers in the thoughtcloud are hungry for dumb matter to convert, and the fleshbodies make notoriously poor use of the collection of silicon and rare elements that pool at the bottom of their gravity well.

Energy and thought are driving a phase change in the condensed matter substance of the solar system. The MIPS per kilogram metric is on the steep upward leg of a sigmoidal curve—dumb matter is coming to life as the mind children restructure everything with voracious nanomechanical servants. The thoughtcloud forming in orbit around the sun will ultimately mark the graveyard of a biological ecology, another marker in space visible to the telescopes of any new iron-age species with the insight to understand what they're seeing: the death throes of dumb matter, the birth of a habitable reality vaster than a galaxy and far speedier. Death throes that within a few centuries will mean the extinction of biological life within a light-year or so of that star—for the majestic Matrioshka brains, though they are the pinnacles of sentient civilization, are innately hostile to fleshy life.

Pierre, Donna-the-all-seeing-eye, and Su Ang fill Amber in on what they've discovered about the bazaar—as they call the space the ghost referred to as the demilitarized zone—over ice-cold margaritas and a very good simulation of a sociable joint.

"It's half a light-hour in diameter, four hundred times as massive as Earth," Pierre explains. "Not solid, of course—the largest component is about the size my fist used to be." Amber squints, trying to remember how big that was—scale factors are hard to remember accurately. "I met this old chatbot that said it's outlived its original star, but I'm not sure it's running with a full deck. Anyway, if it's telling the truth, we're a third of a light-year out from a closely coupled binary system—they use orbital lasers the size of Jupiter to power it without getting too close to all those icky gravity wells."

Amber is intimidated, despite her better judgment, because the bazaar is several orders of magnitude more complex than the totality of human pre-singularity civilization. She tries not to show it in front of the others, but she's worried that getting home may be impossible—requiring enterprise beyond the economic event horizon, as realistic a proposition as a dime debuting as a dollar bill. Still, she's got to at least try. Just knowing about the existence of the bazaar will change so many things—

"How much money can we lay our hands on?" she asks. "What is money hereabouts, anyway? Assuming they've got a scarcity-mediated economy. Bandwidth, maybe?"

"Ah, well." Pierre looks at her oddly. "That's the problem. Didn't the ghost tell you?"

"Tell me?" Amber raises an eyebrow. "Yeah, but it hasn't exactly proven to be a reliable guide to anything, has it?"

"Tell her," Su Ang says quietly. She looks away, embarrassed by something.

"They've got a scarcity economy all right," says Pierre. "Bandwidth is the limited resource and things that come from other cognitive universes are, well, currency. We came in through the coin slot, is it any wonder we ended up in the bank?"

"That's so deeply wrong that I don't know where to begin," Amber grumbles. "How did they get into this mess?"

"Don't ask me." Pierre shrugs. "I have the distinct feeling that anyone or anything we meet in this place won't have any more of a clue than we do—whatever or whoever built this brain, there ain't nobody home any more except for the self-propelled corporations and hitchhikers like the Wunch. We're in the dark, just like they were."

"Huh." Amber focuses on the table in front of her, rests the heel of her palm on the cool metal, and tries to remember how to fork a second copy of her state vector. A moment later her ghost obligingly fucks with the physics model of the table; iron gives way like rubber beneath her fingertips, a pleasant elasticity. "Okay, we have some control over the universe, at least that's something to work with. Tried any self-modification?"

"That's dangerous," Pierre says emphatically. "The more of us the better before we start doing that stuff. And we need some firewalling of our own."

"How deep does reality go, here?" asks Sadeq. It's almost the first question he's asked of his own volition, and Amber takes it as a positive sign that he's finally coming out of his shell.

"Oh, the Planck length is about a hundredth of a millimeter here. Too small to see, comfortably large for the simulation engines to handle. Not like real spacetime."

"Well, then." Sadeq pauses. "They can zoom their reality if they need to?"

"Yeah, fractals work in here." Pierre nods. "I didn't—"

"This place is a trap," Su Ang says emphatically.

"No, it isn't," Pierre replies, nettled.

"What do you mean, a trap?" asks Amber.

"We've been here a while," says Ang. She glances at Aineko, who sprawls on the flagstones, snoozing or whatever it is that weakly superhuman AIs do when they're emulating a sleeping cat. "After your cat broke us out of bondage, we had a look around. There are things here that—" she shivers. "Humans can't

survive in most of the simulation spaces here. We're talking universes with physics models that don't support our kind of neural computing. You could migrate there, but you'd need to be ported to a whole new type of logic—by the time you did that, would you still be you? Still, there are enough entities roughly as complex as we are to prove that the builders aren't here any more. Just lesser sapients, rooting through the wreckage. Worms and parasites squirming through the body after nightfall on the battlefield."

"So there's no hope of making contact," Amber summarizes. "At least, not with anything transcendent and well-inclined."

"That's right," Pierre concedes. He doesn't sound happy about it.

"And we're stuck in a pocket universe with limited bandwidth to home and a bunch of crazy slum-dwellers who want to use us for currency. 'Jesus saves, and redeems souls for valuable gifts.' Yeah?"

"Yeah." Su Ang looks gloomy.

"Well." Amber glances at Sadeq speculatively. Sadeq is staring into the distance, at the crazy infinite sun spot that limns the square with shadows. "Hey, god-man. Got a question for you."

"Yes?" Sadeq looks at her, a slightly dazed expression on his face. "I'm sorry, I am just feeling the jaws of a larger trap around my throat—"

"Don't be." Amber grins, and it is not a pleasant expression. "Have you ever been to Brooklyn?"

"No, why—"

"You're going to help me sell these lying bastards a bridge. Okay? And when we've sold it, we're going to get the buyer to drive us across, so we can go home. Listen, here's how we're going to do it. . . ."

"I can do this, I think," Sadeq says, moodily examining the Klein bottle on the table. The bottle is half-empty, its fluid contents invisible around the corner of the fourth dimensional store. "I spent long enough alone in there to—" he shivers.

"I don't want you damaging yourself," Amber says, calmly enough, because she has an ominous feeling that their survival in this place has an expiration date attached.

"Oh, never fear." Sadeq grins lopsidedly. "One pocket hell is much like another."

"Do you understand why—"

"Yes, yes," he says dismissively. "We can't send copies of ourselves into it, that would be an abomination. It needs to be unpopulated, yes?"

"Well. The idea is to get us home, not leave thousands of copies of ourselves trapped in a pocket universe here. Isn't that it?" Su Ang asks hesitantly. She's looking distracted, most of her attention focused on absorbing the experiences of a dozen ghosts she's spun off to attend to perimeter security.

"Who are we selling this to?" asks Sadeq. "If you want me to make it attractive—"

"It doesn't need to be a complete replica of the Earth. It just has to be a convincing advertisement for a pre-singularity civilization full of humans. You've got two-and-seventy zombies to dissect for their brains; bolt together a bunch of variables you can apply to them and you can permute them to look a bit more varied."

Amber turns her attention to the snoozing cat. "Hey, furball. How long have we been here really, in real-time? Can you grab Sadeq some more resources for his personal paradise garden?"

Aineko stretches and yawns, totally feline, then looks up at Amber with narrowed eyes and raised tail. "'Bout eighteen minutes, wall-clock time." The cat stretches again and sits, front paws drawn together primly, tail curled around them. "The ghosts are pushing. You know? I don't think I can sustain this for too much longer. They're not good at hacking you, but I think it won't be too long before they instantiate a new copy of you, one that'll be predisposed to their side."

"I don't get why they didn't assimilate you along with the rest of us."

"Blame your mother again—she's the one who kept updating the digital rights management code on my personality. 'Illegal consciousness is copyright theft' sucks until an alien tries to rewire your hindbrain with a debugger; then it's a life-saver." Aineko glances down and begins washing one paw. "I can give your mullah-man about six days, subjective time. After that, all bets are off."

"I will take it, then." Sadeq stands. "Thank you." He smiles at the cat; a smile that fades to translucency, hanging in the simulated air like an echo as the priest returns to his tower—this time with a blueprint and a plan in mind.

"That leaves just us." Su Ang glances at Pierre, back to Amber. "Who are you going to sell this crazy scheme to?"

Amber leans back and smiles. Behind her, Donna—her avatar an archaic movie camera suspended below a model helicopter—is filming everything for posterity. "Who do we know who's dumb enough to buy into a scam like this?"

Pierre looks at her suspiciously. "I think we've been here before," he says slowly. "You aren't going to make me kill anyone, are you?"

"I don't think that'll be necessary, unless the corporate ghosts think we're going to get away from them

and are greedy enough to want to kill us."

"You see, she learned from last time," Ang comments, and Amber nods. "No more misunderstandings. Right?" She beams at Amber.

Amber beams right back. "Right. And that's why you—" she points at Pierre—"are going to go find out if any relics of the Wunch are hanging about here. I want you to make them an offer they won't refuse."

"How much for just the civilization?" asks the slug.

Pierre looks down at it thoughtfully. It's not really a terrestrial mollusk; slugs on earth aren't two meters long and don't have lacy white exoskeletons to hold their chocolate-colored flesh in shape. But then, it isn't really the alien it appears to be, either; it's a defaulting corporate instrument that has disguised itself as a long-extinct alien upload, in the hope that its creditors won't recognize it if it looks like a randomly evolved sentient.

"The civilization isn't for sale," Pierre says slowly. The translation interface shimmers, storing up his words and transforming them into a different deep grammar: not merely translating his syntax, but mapping equivalent meanings where necessary. "But we can give you privileged observer status if that's what you want. And we know what you are. If you're interested in finding a new exchange to be traded on, your existing intellectual property assets will be worth rather more there than here."

The rogue corporation rears up slightly and bunches into a fatter lump; its skin blushes red in patches. "Must think about this. Is your mandatory accounting time-cycle fixed or variable term? Are self-owned corporate entities able to enter contracts?"

"I could ask my patron," Pierre says casually. Suppressing a stab of angst; he's still not sure where he and Amber stand, but theirs is far more than just a business relationship and he worries about the risks she's taking. "My patron has a jurisdiction within which she can modify corporate law to accommodate your requirements. Your activities on a wider scale might require shell companies, but that can be taken care of."

The translation membrane wobbles for a while, apparently reformulating some difficult concepts in a manner that the corporation can absorb. Pierre is reasonably confident that it'll work, however. He waits patiently, looking around at the swampy landscape, mud flats punctuated by clumps of spiky violet ferns. The corporation has to be desperate, to be considering the bizarre proposition that Amber has dreamed up for him to pitch to it.

"Sounds interesting," the slug declares after a brief confirmatory debate with the membrane. "If I supply the genome, can you customize a container for it?"

"I believe so," Pierre says carefully. "For your part, can you deliver the energy we need?"

"From a gate?" For a moment the translation membrane hallucinates a stick-human, shrugging. "Easy. Gates are all entangled: dump coherent radiation in at one, get it out at another."

"But the lightspeed lag—"

"No problem. You go first, then a dumb instrument I leave behind buys up power and sends it after. Router network is synchronous, within framework of state machines that run Universe 1.0; messages propagate at same speed, speed of light in vacuum. Whole point of the network is that it is non-lossy. Who would trust their mind to a communications channel that might partially randomize them in transit?"

Pierre goes cross-eyed, trying to understand the implications of the slug's cosmology. But there isn't really time, here and now: they've got on the order of a minute of wall-clock time to get everything together, if Aineko is right, before the angry ghosts that resurrected Amber to do their bidding start trying to break into the DMZ by other means. "If you are willing to try this, we'd be happy to accommodate you," he says, thinking of crossed fingers and rabbits' feet and firewalls.

"It's a deal," the membrane translates the slug's response back at him. "Now we exchange shares/plasmids/ownership? Then merger complete?"

Pierre stares at the slug: "But this is a business arrangement!" he protests. "What's sex got to do with it?"

"Apologies offered. I am thinking we have a translation error. You said this was to be a merging of businesses?"

"Not that way. It's a contract. We agree to take you with us. In return, you help lure the Wunch into the domain we're setting up for them. . . ."

And so on.

Steeling herself, Amber recalls the address the ghost gave her for Sadeq's afterlife universe. In her own subjective time, it's been about half an hour since he left. "Coming?" she asks her cat.

"Don't think I will," says Aineko. It looks away, blissfully unconcerned.

"Bah." Amber tenses, then opens the port to Sadeq's pocket universe.

As before, she finds herself indoors, standing on an ornate mosaic floor in a room with whitewashed walls and peaked windows. But there's something different about it, and, after a moment, she realizes what it is. The sound of vehicle traffic from outside, the cooing of pigeons on the rooftops, someone shouting across the street: there are people here.

She walks over to the nearest window and looks out, then recoils. It's hot outside. Dust and fumes hang

in air the color of cement over rough-finished concrete apartment buildings, their roofs covered in satellite uplinks and cheap, garish LED advertising panels. Looking down, she sees motor scooters, cars—filthy fossil-fuelled behemoths, a ton of steel and explosives in motion to carry only one human, a mass ratio worse than an archaic ICBM—brightly dressed people walking to and fro. A news heli-cam buzzes overhead, lenses darting and glinting at the traffic.

"Just like home, isn't it?" says Sadeq, behind her.

Amber starts. "This is where you grew up? This is Yazd?"

"It doesn't exist any more, in realspace." Sadeq looks thoughtful, but far more animated than the barely conscious parody of himself that she'd rescued from this building—back when it was a mediaeval vision of the afterlife—scant subjective hours ago. He cracks a smile: "Probably a good thing. They were dismantling it even while we were preparing to leave, you know?"

"It's detailed." Amber throws her gaze out through the window, multiplexes it, sends little virtual viewpoints dancing through the streets of the Iranian industrial 'burb. Overhead, big Airbuses ply the skyways, bearing pilgrims on the Hajj, tourists to the coastal resorts on the Persian Gulf, produce to the foreign markets.

"It's the best time I could recall," Sadeq says. "I didn't spend much time here—I was in Qom, studying, and Kazakhstan, for cosmonaut training—but it's meant to be the early twenties. After the troubles, after the fall of the guardians; a young, energetic, liberal country full of optimism and faith in democracy. Values that weren't doing well elsewhere."

"I thought democracy was a new thing there?"

"No." Sadeq shakes his head. "There were pro-democracy riots in Tehran in the nineteenth century, did you know that? That's why the first revolution—no." He makes a cutting gesture. "Politics I can live without." He frowns. "But look. Is this what you wanted?"

Amber recalls her scattered eyes—some of which have flown as much as a thousand kilometers from her locus—and concentrates on reintegrating: memories of Sadeq's re-creation. "It looks convincing. But not too convincing."

"That was the idea."

"Well, then." She smiles. "Is it just Iran? Or did you take any liberties around the edges?"

"Who, me?" He raises an eyebrow. "I have enough doubts about the morality of this—project—without trying to trespass on Allah's territory, peace be unto him. I promise you, there are no sapients in this world but us; the people are the hollow shells of my dreaming, storefront dummies. The animals are crude bitmaps. This is what you asked for, and no more."



"Well, then." Amber pauses. Recalls the expression on the dirt-smudged face of a little boy, bouncing a ball at his companions by the boarded-up front of a gas station on a desert road. Remembers the animated chatter of two synthetic housewives, one in traditional black and the other in some imported Eurotrash fashion. "Are you sure they aren't real?" she asks.

"Quite sure." But for a moment, she sees Sadeq looking uncertain. "Shall we go? Do you have the occupiers ready to move in yet?"

"Yes to the first, and Pierre's working on the second. Come on, we don't want to get trampled by the squatters." She waves and opens a door back onto the piazza, where her robot cat—the alien's nightmare intruder in the DMZ—sleeps, chasing superintelligent dream mice through multidimensional realities. "Sometimes I wonder if I'm conscious. Thinking these thoughts gives me the creeps; let's go and sell a bridge."

Amber confronts the mendacious ghost in the windowless room stolen from 2001.

"You have confined the monster," the ghost states.

"Yes." Amber waits for a subjective moment, feeling delicate fronds tickle at the edges of her awareness in what seems to be a timing-channel attack. She feels a momentary urge to sneeze, a hot flash of anger that passes almost immediately.

"And you have modified yourself to lock out external control," the ghost adds. "What is it that you want, Autonome Amber?"

"Don't you have any concept of individuality?" she asks, annoyed by its presumption at meddling with her internal states.

"Individuality is an unnecessary barrier to information transfer," says the ghost, morphing into its original form, a translucent reflection of her own body. "A large block of the DMZ is still inaccessible to we-me. Are you sure you have defeated the monster?"

"It'll do as I say," Amber replies, forcing herself to sound more confident than she feels—that damned transhuman cyborg cat is no more predictable than any real feline. "Now, the matter of payment arises."

"Payment." The ghost sounds amused. But now Pierre's filled her in on what to look for, Amber can see the translation membranes around it. Their color shift maps to a huge semantic distance; the creature on the other side, even though it looks like a ghost-image of herself, is very far from human. "How can we be expected to pay our own money for rendering services to us?"

Amber smiles. "We want an open channel back to the router we arrived through."

"Impossible," says the ghost.

"We want an open channel, and for it to stay open for six hundred million seconds after we clear it."

"Impossible," the ghost repeats.

"We can trade you a whole civilization," Amber says blandly. "A whole human nation, millions of individuals. Just let us go and we'll see to it."

"You—please wait." The ghost shimmers slightly, fuzzing at the edges.

Amber opens a private channel to Pierre while the ghost confers with its other nodes. Are the Wunch in place yet? she sends.

They're moving in. This bunch don't remember what happened on the Field Circus, memories of those events never made it back to them. So the slug's got them to cooperate. It's kinda scary to watch—like the Invasion of the Body Snatchers, you know?

I don't care if it's scary to watch, Amber replies, I need to know if we're ready yet.

Sadeq says yes, the universe is ready.

Right, pack yourself down. We'll be moving soon.

The ghost is firming up in front of her. "A whole civilization?" it asks. "That is not possible. Your arrival—" It pauses, fuzzing a little. Hah, Gotcha! thinks Amber. Liar, liar, pants on fire! "You cannot possibly have found a human civilization in the archives."

"The monster you complain about that came through with us is a predator," she asserts blandly. "It swallowed an entire nation before we heroically attracted its attention and induced it to follow us into the router. It's an archivore—everything was inside it, still frozen until we expanded it again. This civilization will have been restored from hot shadows in our own solar system, already: there is nothing to gain by taking it home with us. But we need to return to ensure that no more predators of this type discover the router—or the high bandwidth hub we linked to it."

"You are sure you have killed this monster?" asks the ghost. "It would be inconvenient if it were to emerge from hiding in its digest archives."

"I can guarantee it won't trouble you again if you let us go," says Amber, mentally crossing her fingers. The ghost doesn't seem to have noticed the huge wedge of fractally compressed data that bloats her personal scope by an order of magnitude. She can still feel Aineko's goodbye smile inside her head, an echo of ivory teeth trusting her to revive it if the escape plan succeeds.

"We-us agree." The ghost twists weirdly, morphs into a five-dimensional hypersphere. It bubbles violently for a moment, then spits out a smaller token—a warped distortion in the air, like a gravityless black hole. "Here is your passage. Show us the civilization."

"Okay—" Now! "—catch." Amber twitches an imaginary muscle and one wall of the room dissolves, forming a doorway into Sadeq's existential hell, now redecorated as a fair facsimile of a twenty-first century industrial city in Iran, and populated by a Wunch of parasites who can't believe what they've lucked into—an entire continent of zombies waiting to host their flesh-hungry consciousness.

The ghost drifts toward the open window; Amber grabs the hole and yanks it open, gets a grip on her own thoughts, and sends open wide! on the channel everybody is listening in on. For a moment time stands still; and then—

A synthetic gemstone the size of a Coke can falls through the cold vacuum, in high orbit around a brown dwarf. But the vacuum is anything but dark. A sapphire glare as bright as the noonday sun on Mars shines on the crazy diamond, billowing and cascading off sails as fine as soap bubbles that slowly drift and tense away from the can. The runaway slug-corporation's proxy is holding the router open, and the lump of strange matter is shining with the brilliance of a nuclear fireball, laser light channeled from a star eight light years away to power the Field Circus on its return trip to the once-human solar system.

Amber has retreated, with Pierre, into a simulation of her home aboard the Ring Imperium. One wall of her bedroom is a solid slab of diamond, looking out across the boiling Jovian ionosphere from an orbit low enough to make the horizon appear flat. They're curled together in her bed, a slightly more comfortable copy of the royal bed of King Henry VIII of England, a bed that appears to be carved from thousand year old oak beams. As with everything else about the Ring Imperium, appearances are deceptive: and even more so in the cramped simulation spaces of the Field Circus as it slowly accelerates toward a tenth of lightspeed.

"Let me get this straight. You convinced. The locals. That a simulation of Iran populated by refugee members of the Wunch. Was a human civilization?"

"Yeah." Amber stretches lazily and smirks at him. "It's their damn fault; if the corporate collective entities didn't use conscious viewpoints as money, they wouldn't have fallen for a trick like that, would they?"

"People. Money."

"Well." She yawns, then sits up and snaps her finger imperiously: down-stuffed pillows appear behind her back, and a silver salver bearing two full glasses of wine materializes between them. "Corporations are life forms back home, too, aren't they? We give our AIs corporations to make them legal entities, but it goes further. Look at any company headquarters, fitted out with works of art and expensive furniture and with staff bowing-and-scraping everywhere—"

"—The new aristocracy. Right?"

"Wrong. When they take over, what you get is more like the new biosphere. Hell, the new primordial soup: prokaryotes, bacteria and algae, mindlessly swarming, trading money for plasmids." The queen passes her consort a wine glass. He drinks from it: it refills miraculously. "You've got to wonder where the builders of that structure came from. And where they went."

"Maybe the companies spent them." Pierre looks worried. "Running up a national debt, importing luxurious viewpoint extensions, munching exotic dreams. Once they plugged into the net, a primitive Matrioshka civilization would be like, um." He pauses. "Tribal. A primitive post-singularity civilization meeting the galactic net for the first time. Over-awed. Wanting all the luxuries. Spending their capital, their human—or alien—capital, the meme machines that built them. Until there's nothing left but a howling wilderness of corporate mechanisms looking for someone to own."

"Speculation."

"Idle speculation," he agrees.

"But we can't ignore it." She nods. "Is the hitch hiker happy?"

"Last time I checked on him, yeah." Pierre blows on his wine glass and it dissolves into a million splinters of light, but he looks dubious at the mention of the slug-shaped corporate instrument they're taking with them in return for help engineering their escape. "Don't trust him out in the unrestricted sim-spaces yet. Aineko is spending a lot of time with him."

"So that's where she is!"

"Cats never come when you call them, do they?"

"There's that," she agrees. Then with a worried glance at the vision of Jupiter's cloudscape: "I wonder what we'll find when we get there?"

Outside the window, the imaginary Jovian terminator is sweeping toward them with eerie rapidity, sucking them toward an uncertain nightfall.