

# Michael Swanwick

Michael Swanwick (1950- ) distinguished himself with a group of notable short stories in the early and mid-'80s. He has written both science fiction and fantasy, and, after reaching the height of his powers as a SF novelist in *Stations of the Tide* (1991), has turned increasingly toward fantasy in his two most recent novels, *The Iron Dragon's Daughter* (1993) and *Jack Faust* (1997).

"My father was an engineer... but I was lured away from engineering by science, and then lured away from science by literature," he says. *Science Fiction Writers* calls him "an author who produces thoughtful, speculative work in a complex, literary style without a strong, action-oriented plot." His early short fiction is collected in *Gravity's Angels* (1991).

Swanwick is also the author of two influential critical essays, one on science fiction, "User's Guide to the Postmoderns" (1985), and one on fantasy, "In The Tradition..." (1994). He remains one of the most significant genre writers of the '90s. "Ginungagap" was his first published story. It appeared in a special SF issue of the distinguished literary magazine *Triquarterly*. The title refers to the primordial chaos out of which the universe was born in Norse mythology.

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## GINUNGAGAP

### A

BIGAIL CHECKED OUT OF MOTHER OF Mercy and rode the translator web to Toledo Cylinder in Juno Industrial Park. Stars bloomed, dwindled, disappeared five times. It was a long trek, halfway around the sun.

Toledo was one of the older commercial cylinders, now given over almost entirely to bureaucrats, paper pushers, and free-lance professionals. It was not Abigail's favorite place to visit, but she needed work and 3M had already bought out of her contract.

The job broker had dyed his chest hairs blond and his leg hairs red. They

clashed wildly with his green *cache-sexe* and turquoise jewelry. His fingers played on a keyout, bringing up an endless flow of career trivia. "Cute trick you played," he said.

Abigail flexed her new arm negligently. It was a good job, but pinker than the rest of her. And weak, of course, but exercise would correct that. "Thanks," she said. She laid the arm underneath one breast and compared the colors. It matched the nipple perfectly. Definitely too pink. "Work outlook any good?"

"Naw," the broker said. A hummingbird flew past his ear, a nearly undetectable parting of the air. "I see here that you applied for the Proxima colony."

"They were full up," Abigail said. "No openings for a gravity bum, hey?"

"I didn't say that," the broker grumbled. "I'll find—Hello! What's this?" Abigail craned her neck, couldn't get a clear look at the screen. "There's a tag on your employment record."

"What's that mean?"

"Let me read." A honeysuckle flower fell on Abigail's hair and she brushed it off impatiently. The broker had an open-air office, framed by hedges and roofed over with a trellis. Sometimes Abigail found the older Belt cylinders a little too lavish for her taste.

"Mmp." The broker looked up. "Bell-Sandia wants to hire you. Indefinite term one-shot contract." He swung the keyout around so she could see. "Very nice terms, but that's normal for a high risk contract."

"High risk? From B-S, the Friendly Communications People? What kind of risk?"

The broker scrolled up new material. "There." He tapped the screen with a finger. "The language is involved, but what it boils down to is they're looking for a test passenger for a device they've got that uses black holes for interstellar travel."

"Couldn't work," Abigail said. "The tidal forces—"

"Spare me. Presumably they've found a way around that problem. The question is, are you interested or not?"

Abigail stared up through the trellis at a stream meandering across the curved land overhead. Children were wading in it. She counted to a hundred very slowly, trying to look as if she needed to think it over.

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Abigail strapped herself into the translation harness and nodded to the technician outside the chamber. The tech touched her console and a light stasis field immobilized Abigail and the air about her while the chamber wall irised open. In a fluid bit of technological sleight of hand, the translator rechanneled her inertia and gifted her with a velocity almost, but not quite, that of the speed of light.

Stars bloomed about her and the sun dwindled. She breathed in deeply and—was in the receiver device. Relativity had cheated her of all but a fraction of the transit time. She shrugged out of harness and frog-kicked her way to the lip station's tug dock.

The tug pilot grinned at her as she entered, then turned his attention to his controls. He was young and wore streaks of brown makeup across his chest and thighs—only slightly darker than his skin. His mesh vest was almost in bad taste, but he wore it well and looked roguish rather than overdressed. Abigail found herself wishing she had more than a *cache-sexe* and nail polish on—some jewelry or makeup, perhaps. She felt drab in comparison. The star-field wraparound held two inserts routed in by synchronous cameras. Alphanumerics flickered beneath them. One showed her immediate destination, the Bell-Sandia base *Arthur C. Clarke*. It consisted of five wheels, each set inside the other and rotating at slightly differing speeds. The base was done up in red-and-orange supergraphics. Considering its distance from the Belt factories, it was respectably sized.

Abigail latched herself into the passenger seat as the engines cut in. The second insert—

*Ginungagap, the only known black hole in the sun's gravity field, was discovered in 2023, a small voice murmured. Its presence explained the long-puzzling variations in the orbits of the outer planets. The Arthur C. Clarke was . . .*

"Is this necessary?" Abigail asked.

"Absolutely," the pilot said. "We abandoned the tourist program a year or so ago, but somehow the rules never caught up. They're very strict about the regs

here.” He winked at Abigail’s dismayed expression. “Hold tight a minute while—” His voice faded as he tinkered with the controls.

. . . established forty years later and communications with the Proxima colony began shortly thereafter. Ginungagap . . .

The voice cut off. She grinned thanks. “Abigail Vanderhoek.”

“Cheyney,” the pilot said. “You’re the gravity bum, right?”

“Yeah.”

“I used to be a vacuum bum myself. But I got tired of it, and grabbed the first semipermanent contract that came along.”

“I kind of went the other way.”

“Probably what I should have done,” Cheyney said amiably. “Still, it’s a rough road. I picked up three scars along the way.” He pointed them out: a thick slash across his abdomen, a red splotch beside one nipple, and a white crescent half obscured by his scalp. “I could’ve had them cleaned up, but the way I figure, life is just a process of picking up scars and experience. So I kept ‘em.”

If she had thought he was trying to impress her, Abigail would have slapped him down. But it was clearly just part of an ongoing self-dramatization, possibly justified, probably not. Abigail suspected that, tour trips to Earth excepted, the *Clarke* was as far down a gravity well as Cheyney had ever been. Still he did have an irresponsible, boyish appeal. “Take me past the net?” she asked.

Cheyney looped the tug around the communications net trailing the *Clarke*. Kilometers of steel lace passed beneath them. He pointed out a small dish antenna on the edge and a cluster of antennae on the back. “The loner on the edge transmits into Ginungagap,” he said. “The others relay information to and from Mother.”

“Mother?”

“That’s the traditional name for the *Arthur C. Clarke*.” He swung the tug about with a careless sweep of one arm, and launched into a long and scurrilous story about the origin of the nickname. Abigail laughed, and Cheyney pointed a finger. “There’s Ginungagap.”

Abigail peered intently. “Where? I don’t see a thing.” She glanced at the second wraparound insert, which displayed a magnified view of the black hole. It wasn’t at all impressive: a red smear against black nothingness. In the star-field it was all but invisible.

“Disappointing, hey? But still dangerous. Even this far out, there’s a lot of ionization from the accretion disk.”

“Is that why there’s a lip station?”

“Yeah. Particle concentration varies, but if the translator was right at the *Clarke*, we’d probably lose about a third of the passengers.”

Cheyney dropped Abigail off at Mother’s crew lock and looped the tug off and away. Abigail wondered where to go, what to do now.

“You’re the gravity bum we’re dumping down Ginungagap.” The short, solid man was upon her before she saw him. His eyes were intense. His *cache-sexe* was a conservative orange. “I liked the stunt with the arm. It takes a lot of guts to do something like that.” He pumped her arm. “I’m Paul Girard. Head of external security. In charge of your training. You play verbal Ping Pong?”

“Why do you ask?” she countered automatically.

“Don’t you know?”

“Should I?”

“Do you mean now or later?”

“Will the answer be different later?”

A smile creased Paul’s solid face. “You’ll do.” He took her arm, led her along a sloping corridor. “There isn’t much prep time. The dry run is scheduled in two weeks. Things will move pretty quickly after that. You want to start your training now?”

“Do I have a choice?” Abigail asked, amused.

Paul came to a dead stop. “Listen,” he said. “Rule number one: don’t play games with *me*. You understand? Because I always win. Not sometimes, not usually—always.”

Abigail yanked her arm free. “You maneuvered me into that,” she said angrily.

“Consider it part of your training.” He stared directly into her eyes. “No matter how many gravity wells you’ve climbed down, you’re still the product of a near-space culture—protected, trusting, willing to take things at face value. This is a dangerous attitude, and I want you to realize it. I want you to learn to look behind the mask of events. I want you to grow up. And you will.”

*Don’t be so sure.* A small smile quirked Paul’s face as if he could read her thoughts. Aloud, Abigail said, “That sounds a little excessive for a trip to Proxima.”

“Lesson number two,” Paul said: “don’t make easy assumptions. You’re not going to Proxima.” He led her outward-down the ramp to the next wheel, pausing briefly at the juncture to acclimatize to the slower rate of revolution. “You’re going to visit spiders.” He gestured. “The crew room is this way.”

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The crew room was vast and cavernous, twilight gloomy, Keyouts were set up along winding paths that wandered aimlessly through the work space. Puddles of light fell on each board and operator. Dark-loving foliage was set between the keyouts.

“This is the heart of the beast,” Paul said. “The green keyouts handle all Proxima communications—pretty routine by now. But the blue ...” His eyes glinting oddly, he pointed. Over the keyouts hung silvery screens with harsh, grainy images floating on their surfaces, black-and-white blobs that Abigail could not resolve into recognizable forms.

“Those,” Paul said, “are the spiders. We’re talking to them in real-time. Response delay is almost all due to machine translation.”

In a sudden shift of perception, the blobs became arachnid forms. That mass of black fluttering across the screen was a spider leg and *that* was its thorax. Abigail felt an immediate, primal aversion, and then it was swept away by an all-encompassing wonder.

“Aliens?” she breathed.

“Aliens.”

They actually looked no more like spiders than humans looked like apes. The eight legs had an extra joint each, and the mandible configuration was all wrong. But to an untrained eye they would do.

“But this is—How long have you—? Why in God’s name are you keeping this a secret?” An indefinable joy arose in Abigail. This opened a universe of possibilities, as if after a lifetime of being confined in a box someone had removed the lid.

“Industrial security,” Paul said. “The gadget that’ll send you through Ginungagap to *their* black hole is a spider invention. We’re trading optical data for it, but the law won’t protect our rights until we’ve demonstrated its use. We don’t want the other corporations cutting in.” He nodded toward the nearest black-and-white screen. “As you can see, they’re weak on optics.”

“I’d love to talk . . .” Abigail’s voice trailed off as she realized how little-girl hopeful she sounded.

“I’ll arrange an introduction.”

There was a rustling to Abigail’s side. She turned and saw a large black tomcat with white boots and belly emerge from the bushes. “This is the esteemed head of Alien Communications,” Paul said sourly.

Abigail started to laugh, then choked in embarrassment as she realized that he was not speaking of the cat. “Julio Dominguez, section chief for translation,” Paul said. “Abigail Vanderhoek, gravity specialist.”

The wizened old man smiled professorially. “I assume our resident gadfly has explained how the communications net works, has he not?”

“Well—” Abigail began.

Dominguez clucked his tongue. He wore a yellow *cache-sexe* and matching bow tie, just a little too garish for a man his age. “Quite simple, actually. Escape velocity from a black hole is greater than the speed of light. Therefore, within Ginungagap the speed of light is no longer the limit to the speed of communications.”

He paused just long enough for Abigail to look baffled. “Which is just a stuffy way of saying that when we aim a stream of electrons into the boundary of

the stationary limit, they emerge elsewhere—out of another black hole. And if we aim them *just so*”—his voice rose whimsically—“they’ll emerge from the black hole of our choosing. The physics is simple. The finesse is in aiming the electrons.”

The cat stalked up to Abigail, pushed its forehead against her leg, and mewed insistently. She bent over and picked it up. “But nothing can emerge from a black hole,” she objected.

Dominguez chuckled. “Ah, but anything can fall in, hey? A positron can fall in. But a positron falling into Ginungagap in positive time is only an electron falling out in negative time. Which means that a positron falling into a black hole in negative time is actually an electron falling out in positive time—exactly the effect we want. Think of Ginungagap as being the physical manifestation of an equivalence sign in mathematics.”

“Oh,” Abigail said, feeling very firmly put in her place. White moths fluttered along the path. The cat watched, fascinated, while she stroked its head.

“At any rate, the electrons do emerge, and once the data are in, the theory has to follow along meekly.”

“Tell me about the spiders,” Abigail said before he could continue. The moths were darting up, sideward, down, a chance ballet in three dimensions.

“The *aliens*,” Dominguez said, frowning at Paul, “are still a mystery to us. We exchange facts, descriptions, recipes for tools, but the important questions do not lend themselves to our clumsy mathematical codes. Do they know of love? Do they appreciate beauty? Do they believe in God, hey?”

“Do they want to eat us?” Paul threw in. “Don’t be ridiculous,” Dominguez snapped. “Of course they don’t.”

The moths parted when they came to Abigail. Two went to either side; one flew over her shoulder. The cat batted at it with one paw. “The cat’s name is Garble,” Paul said. “The kids in Bio cloned him up.”

Dominguez opened his mouth, closed it again.

Abigail scratched Garble under the chin. He arched his neck and purred all but noiselessly. “With your permission,” Paul said. He stepped over to a keyout and waved its operator aside.



“Technically you’re supposed to speak a convenience language, but if you keep it simple and non-idiomatic, there shouldn’t be any difficulty.” He touched the keyout. “Ritual greetings, spider.” There was a blank pause. Then the spider moved, a hairy leg flickering across the screen.

“Hello, human.”

“Introductions: Abigail Vanderhoek. She is our representative. She will ride the spinner.” Another pause. More leg waving.

“Hello, Abigail Vanderhoek. Transition of vacuum garble resting garble commercial benefits garble still point in space.”

“Tricky translation,” Paul said. He signed to Abigail to take over.

Abigail hesitated, then said, “Will you come to visit us? The way we will visit you?”

“No, you see—” Dominguez began, but Paul waved him to silence.

“No, Abigail Vanderhoek. We are sulfur-based life.”

“I do not understand.”

“You can garble black hole through garble spinner because you are carbon-based life. Carbon forms chains easily but sulfur combines in lattices or rosettes. Our garble simple form garble. Sometimes sulfur forms short chains.”

“We’ll explain later,” Paul said. “Go on, you’re doing fine.”

Abigail hesitated again. What do you say to a spider, anyway? Finally, she asked, “Do you want to eat us?”

“Oh, Christ, get her off that thing,” Dominguez said, reaching for the keyout.

Paul blocked his arm. “No,” he said. “I want to hear this.”

Several of the spider legs wove intricate patterns. “The question is false. Sulfur-based life derives no benefit from eating carbon-based life.”

“You see,” Dominguez said.

“But if it were possible,” Abigail persisted. “If you *could* eat us and derive benefit. Would you?”

“Yes, Abigail Vanderhoek. With great pleasure.”

Dominguez pushed her aside. “We’re terribly sorry,” he said to the alien. “This is a horrible, horrible misunderstanding. You!” he shouted to the operator. “Get back on and clear this mess up.”

Paul was grinning wickedly. “Come,” he said to Abigail. “We’ve accomplished enough here for one day.”

As they started to walk away, Garble twisted in Abigail’s arms and leaped free. He hit the floor on all fours and disappeared into the greenery. “Would they really eat us?” Abigail asked. Then amended it to, “Does that mean they’re hostile?”

Paul shrugged. “Maybe they thought we’d be insulted if they *didn’t* offer to eat us.” He led her to her quarters. “Tomorrow we start training for real. In the meantime, you might make up a list of all the ways the spiders could hurt us if we set up transportation and they *are* hostile. Then another list of all the reasons we shouldn’t trust them.” He paused. “I’ve done it myself. You’ll find that the lists get rather extensive.”

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Abigail’s quarters weren’t flashy, but they fit her well. A full star field was routed to the walls, floor, and ceiling, only partially obscured by a trellis inner frame that supported fox-grape vines. Somebody had done research into her tastes.

“Hi.” The cheery greeting startled her. She whirled, saw that her hammock was occupied.

Cheyney sat up, swung his legs over the edge of the hammock, causing it to rock lightly. “Come on in.” He touched an invisible control and the star field blue-shifted down to a deep, erotic purple.

“Just what do you think you’re doing here?” Abigail asked.

“I had a few hours free,” Cheyney said, “so I thought I’d drop by and seduce you.”

“Well, Cheyney, I appreciate your honesty,” Abigail said. “So I won’t say no.”

“Thank you.”

“I’ll say maybe some other time. Now get lost. I’m tired.”

“Okay.” Cheyney hopped down, walked jauntily to the door. He paused. “You said ‘Later,’ right?”

“I said *maybe* later.”

“Later. Gotcha.” He winked and was gone.

Abigail threw herself into the hammock, red-shifted the star field until the universe was a sparse smattering of dying embers. Annoying creature! There was no hope for anything more than the most superficial of relationships with him. She closed her eyes, smiled. Fortunately, she wasn’t currently in the market for a serious relationship.

She slept.

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She was falling ...

Abigail had landed the ship an easy walk from 3M’s robot laboratory. The lab’s geodesic dome echoed white clouds to the north, where Nix Olympus peeked over the horizon. Otherwise all—land, sky, rocks—was standard issue Martian orange. She had clambered to the ground and shrugged on the supply backpack.

Resupplying 3M-RL stations was a gut contract, easy but dull. So perhaps she was less cautious than usual going down the steep, rock-strewn hillside, or perhaps the rock would have turned under her no matter how carefully she placed her feet. Her ankle twisted and she lurched sideways, but the backpack had shifted her center of gravity too much for her to be able to recover.

Arms windmilling, she fell.

The rock slide carried her downhill in a panicky flurry of dust and motion, tearing her flesh and splintering her bones. But before she could feel pain, her suit

shot her full of a nerve synesthetic, translating sensation into colors—reds, russets, and browns, with staccato yellow spikes when a rock smashed into her ribs. So that she fell in a whirling rainbow of glorious light.

She came to rest in a burst of orange. The rocks were settling about her. A spume of dust drifted away, out toward the distant red horizon. A large, jagged slab of stone slid by, gently shearing off her backpack. Tools, supplies, airpacks flew up and softly rained down.

A spanner as long as her arm slammed down inches from Abigail's helmet. She flinched, and suddenly events became real. She kicked her legs and sand and dust fountained up. Drawing her feet under her body—the one ankle bright gold—she started to stand.

And was jerked to the ground by a sudden tug on one arm. Even as she turned her head, she became aware of a deep purple sensation in her left hand. It was pinioned to a rock not quite large enough to stake a claim to. There was no color in the fingers.

“Cute,” she muttered. She tugged at the arm, pushed at the rock. Nothing budged.

Abigail nudged the radio switch with her chin. “Grounder to Lip Station,” she said. She hesitated, feeling foolish, then said, “Mayday. Repeat, Mayday. Could you guys send a rescue party down for me?”

There was no reply. With a sick green feeling in the pit of her stomach, Abigail reached a gloved hand around the back of her helmet. She touched something jagged, a sensation of mottled rust, the broken remains of her radio, “I think I'm in trouble.” She said it aloud and listened to the sound of it. Flat, unemotional—probably true. But nothing to get panicky about.

She took quick stock of what she had to work with. One intact suit and helmet. One spanner. A worldful of rocks, many close at hand. Enough air for—she checked the helmet readout—almost an hour. Assuming the Up station ran its checks on schedule and was fast on the uptake, she had almost half the air she needed.

Most of the backpack's contents were scattered too far away to reach. One rectangular gaspack, however, had landed nearby. She reached for it but could not touch it, squinted but could not read the label on its nozzle. It was almost certainly liquid gas—either nitrogen or oxygen—for the robot lab. There was a

slim chance it was the spare airpack. If it was, she might live to be rescued. Abigail studied the landscape carefully, but there was nothing more. “Okay, then, it’s an airpack.” She reached as far as her tethered arm would allow. The gaspack remained a tantalizing centimeter out of reach.

For an instant she was stymied. Then, feeling like an idiot, she grabbed the spanner. She hooked it over the gas-pack. Felt the gaspack move grudgingly. Slowly nudged it toward herself.

By the time Abigail could drop the spanner and draw in the gaspack, her good arm was blue with fatigue. Sweat running down her face, she juggled the gaspack to read its nozzle markings.

It was liquid oxygen—useless. She could hook it to her suit and feed in the contents, but the first breath would freeze her lungs. She released the gaspack and lay back, staring vacantly at the sky.

Up there was civilization: tens of thousands of human stations strung together by webs of communication and transportation. Messages flowed endlessly on laser cables. Translators borrowed and lent momentum, moving streams of travelers and cargo at almost (but not quite) the speed of light. A starship was being readied to carry a third load of colonists to Proxima. Up there, free from gravity’s relentless clutch, people lived in luxury and ease. Here, however . . .

“I’m going to die.” She said it softly and was filled with wondering awe. Because it was true. She was going to die.

Death was a black wall. It lay before her, extending to infinity in all directions, smooth and featureless and mysterious. She could almost reach out an arm and touch it. Soon she would come up against it and, if anything lay beyond, pass through. Soon, very soon, she would *know*.

She touched the seal to her helmet. It felt gray— smooth and inviting. Her fingers moved absently, tracing the seal about her neck. With sudden horror, Abigail realized that she was thinking about undoing it, releasing her air, throwing away the little time she had left. . . .

She shuddered. With sudden resolve, she reached out and unsealed the shoulder seam of her captive arm.

The seal clamped down, automatically cutting off air loss. The flesh of her

damaged arm was exposed to the raw Martian atmosphere. Abigail took up the gaspack and cradled it in the pit of her good arm. Awkwardly, she opened the nozzle with the spanner.

She sprayed the exposed arm with liquid oxygen for over a minute before she was certain it had frozen solid. Then she dropped the gaspack, picked up the spanner, and swung.

Her arm shattered into a thousand fragments.

She stood up.

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Abigail awoke, tense and sweaty. She blue-shifted the walls up to normal light, and sat up. After a few minutes of clearing her head, she set the walls to cycle from red to blue in a rhythm matching her normal pulse. Eventually the womb-cycle lulled her back to sleep.

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“Not even close,” Paul said. He ran the tape backward, froze it on a still shot of the spider twisting two legs about each other. “That’s the morpheme for ‘extreme disgust,’ remember. It’s easy to pick out, and the language kids say that any statement with this gesture should be reversed in meaning. Irony, see? So when the spider says that the strong should protect the weak, it means—”

“How long have we been doing this?”

“Practically forever,” Paul said cheerfully. “You want to call it a day?”

“Only if it won’t hurt my standing.”

“Hah! Very good.” He switched off the keyout. “Nicely thought out. You’re absolutely right; it would have. However, as reward for realizing this, you can take off early *without* it being noted on your record.”

“Thank you,” Abigail said sourly.

Like most large installations, the *Clarke* had a dozen or so smaller structures tagging along after it in minimum maintenance orbits. When Abigail discovered that these included a small wheel gymnasium, she had taken to putting in an

hour's exercise after each training shift. Today she put in two.

The first hour she spent shadowboxing and practicing *savate* in heavy-gee to work up a sweat. The second hour she spent in the axis room, performing free-fall gymnastics. After the first workout, it made her feel light and nimble and good about her body.

She returned from the wheel gym sweaty and cheerful to find Cheyney in her hammock again. "Cheyney," she said, "this is not the first time I've had to kick you out of there. Or even the third, for that matter."

Cheyney held his palms up in mock protest. "Hey, no," he said. "Nothing like that today. I just came by to watch the raft debate with you."

Abigail felt pleasantly weary, decidedly uncerebral. "Paul said something about it, but. . ."

"Turn it on, then. You don't want to miss it." Cheyney touched her wall, and a cluster of images sprang to life at the far end of the room.

"Just what is a raft debate anyway?" Abigail asked, giving in gracefully. She hoisted herself onto the hammock, sat beside him. They rocked gently for a moment.

"There's this raft, see? It's adrift and powerless and there's only enough oxygen on board to keep one person alive until rescue. Only there are three on board— two humans and a spider."

"Do spiders breathe oxygen?"

"It doesn't matter. This is a hypothetical situation." Two thirds of the image area was taken up by Dominguez and Paul, quietly waiting for the debate to begin. The remainder showed a flat spider image.

"Okay, what then?"

"They argue over who gets to survive. Dominguez argues that he should, since he's human and human culture is superior to spider culture. The spider argues for itself and its culture." He put an arm around her waist. "You smell nice."

"Thank you." She ignored the arm. "What does Paul argue?"

“He’s the devil’s advocate. He argues that no one deserves to live and they should dump the oxygen.”

“Paul would enjoy that role,” Abigail said. Then, “What’s the point to this debate?”

“It’s an entertainment. There isn’t supposed to be a point.”

Abigail doubted it was that simple. The debate could reveal a good deal about the spiders and how they thought, once the language types were done with it. Conversely, the spiders would doubtless be studying the human responses. *This could be interesting*, she thought. Cheyney was stroking her side now, lightly but with great authority. She postponed reaction, not sure whether she liked it or not.

Louise Chang, a vaguely high-placed administrator, blossomed in the center of the image cluster. “Welcome,” she said, and explained the rules of the debate. “The winner will be decided by acclaim,” she said, “with half the vote being human and half alien. Please remember not to base your vote on racial chauvinism, but on the strengths of the arguments and how well they are presented.” Cheyney’s hand brushed casually across her nipples; they stiffened. The hand lingered. “The debate will begin with the gentleman representing the aliens presenting his thesis.”

The image flickered as the spider waved several legs. “Thank you, Ms. Chairman. I argue that I should survive. My culture is superior because of our technological advancement. Three examples. Humans have used translation travel only briefly, yet we have used it for sixteens of garble. Our black hole technology is superior. And our garble has garble for the duration of our society.”

“Thank you. The gentleman representing humanity?”

“Thank you, Ms. Chairman.” Dominguez adjusted an armlet. Cheyney leaned back and let Abigail rest against him. Her head fit comfortably against his shoulder. “My argument is that technology is neither the sole nor the most important measure of a culture. By these standards dolphins would be considered brute animals. The aesthetic considerations—the arts, theology, and the tradition of philosophy—are of greater import. As I shall endeavor to prove.”

“He’s chosen the wrong tactic,” Cheyney whispered in Abigail’s ear. “That must have come across as pure garble to the spiders.”



“Thank you. Mr. Girard?”

Paul’s image expanded. He theatrically swigged from a small flask and hoisted it high in the air. “Alcohol! There’s the greatest achievement of the human race!” Abigail snorted. Cheyney laughed out loud. “But I hold that neither Mr. Dominguez nor the distinguished spider deserves to live, because of the disregard both cultures have for sentient life.” Abigail looked at Cheyney, who shrugged. “As I shall endeavor to prove.” His image dwindled.

Chang said, “The arguments will now proceed, beginning with the distinguished alien.”

The spider and then Dominguez ran through their arguments, and to Abigail they seemed markedly lackluster. She didn’t give them her full attention, because Cheyney’s hands were moving most interestingly across unexpected parts of her body. He might not be too bright, but he was certainly good at some things. She nuzzled her face into his neck, gave him a small peck, returned her attention to the debate.

Paul blossomed again. He juggled something in his palm, held his hand open to reveal three ball bearings. “When I was a kid I used to short out the school module and sneak up to the axis room to play marbles.” Abigail smiled, remembering similar stunts she had played. “For the sake of those of us who are spiders, I’ll explain that marbles is a game played in free-fall for the purpose of developing coordination and spatial perception. You make a six-armed star of marbles in the center . . .”

One of the bearings fell from his hand, bounced noisily, and disappeared as it rolled out of camera range. “Well, obviously it can’t be played here. But the point is that when you shoot the marble just right, it hits the end of one arm and its kinetic energy is transferred from marble to marble along that arm. So that the shooter stops and the marble at the far end of the arm flies away.” Cheyney was stroking her absently now, engrossed in the argument.

“Now, we plan to send a courier into Ginungagap and out the spiders’ black hole. At least, that’s what we say we’re going to do.

“But what exits from a black hole is not necessarily the same as what went into its partner hole. We throw an electron into Ginungagap and another one pops out elsewhere. It’s identical. It’s a direct causal relationship. But it’s like the marbles—they’re identical to each other and have the same kinetic force. It’s simply not the same electron.”

Cheyney's hand was still, motionless. Abigail prodded him gently, touching his inner thigh. "Anyone who's interested can see the equations. Now, when we send messages, this doesn't matter. The message is important, not the medium. However, when we send a human being in ... what emerges from the other hole will be cell for cell, gene for gene, atom for atom identical. *But it will not be the same person.*" He paused a beat, smiled.

"I submit, then, that this is murder. And further, that by conspiring to commit murder, both the spider and human races display absolute disregard for intelligent life. In short, no one on the raft deserves to live. And I rest my case."

"Mr. Girard!" Dominguez objected, even before his image was restored to full size. "The simplest mathematical proof is an identity: that A equals A. Are you trying to deny this?"

Paul held up the two ball bearings he had left. "These marbles are identical too. But they are not the same marble."

"We know the phenomenon you speak of," the spider said. "It is as if garble the black hole bulges out simultaneously. There is no violation of continuity. The two entities are the same. There is no death."

Abigail pulled Cheyney down, so that they were both lying on their sides, still able to watch the images. "So long as you happen to be the second marble and not the first," Paul said. Abigail tentatively licked Cheyney's ear.

"He's right," Cheyney murmured.

"No he's not," Abigail retorted. She bit his earlobe.

"You mean that?"

"Of course I mean that. He's confusing semantics with reality." She engrossed herself in a study of the back of his neck.

"Okay."

Abigail suddenly sensed that she was missing something. "Why do you ask?" She struggled into a sitting position. Cheyney followed.

"No particular reason." Cheyney's hands began touching her again. But

Abigail was sure something had been slipped past her.

They caressed each other lightly while the debate dragged to an end. Not paying much attention, Abigail voted for Dominguez, and Cheyney voted for Paul. As a result of a nearly undivided spider vote, the spider won. "I told you Dominguez was taking the wrong approach," Cheyney said. He hopped off the hammock. "Look, I've got to see somebody about something. I'll be right back." "You're not leaving *now*?" Abigail protested, dumbfounded. The door irised shut.

Angry and hurt, she leaped down, determined to follow him. She couldn't remember ever feeling so insulted. Cheyney didn't try to be evasive; it apparently did not occur to him that she might follow. Abigail stalked him down a corridor, up an in-ramp, and to a door that irised open for him. She recognized that door.

Thoughtfully she squatted on her heels behind an un-trimmed boxwood and waited. A minute later, Garble wandered by, saw her, and demanded attention. "Scat!" she hissed. He butted his head against her knee. "Then be quiet, at least." She scooped him up. His expression was smug.

The door irised open and Cheyney exited, whistling. Abigail waited until he was gone, stood, went to the door, and entered. Fish darted between long fronds under a transparent floor. It was an austere room, almost featureless. Abigail looked, but did not see a hammock.

"So Cheyney's working for you now," she said coldly. Paul looked up from a corner keyout.

"As a matter of fact, I've just signed him to permanent contract in the crew room. He's bright enough. A bit green. Ought to do well."

"Then you admit that you put him up to grilling me about your puerile argument in the debate?" Garble struggled in her arms. She juggled him into a more comfortable position. "And that you staged the argument for my benefit in the first place?"

"Ah," Paul said. "I knew the training was going somewhere. You've become very wary in an extremely short time."

"Don't evade the question."

"I needed your honest reaction," Paul said. "Not the answer you would have given me, knowing your chances of crossing Ginungagap rode on it."

Garble made an angry noise. "You tell him, Garble!" she said. "That goes double for me." She stepped out the door. "You lost the debate," she snapped.

Long after the door had irised shut, she could feel Paul's amused smile burning into her back.

\* \* \* \*

Two days after she returned to kick Cheyney out of her hammock for the final time, Abigail was called to the crew room. "Dry run," Paul said. "Attendance is mandatory." And cut off.

The crew room was crowded with technicians, triple the number of keyouts. Small knots of them clustered before the screens, watching. Paul waved her to him.

"There," he motioned to one screen. "That's Clotho —the platform we built for the transmission device. It's a hundred kilometers off. I wanted more, but Dominguez overruled me. The device that'll unravel you and dump you down Ginungagap is that doohickey in the center." He tapped a keyout and the platform zoomed up to fill the screen. It was covered by a clear, transparent bubble. Inside, a space-suited figure was placing something into a machine that looked like nothing so much as a giant armor-clad clamshell. Abigail looked, blinked, looked again.

"That's Garble," she said indignantly.

"Complain to Dominguez. I wanted a baboon." The clamshell device closed. The space-suited tech left in his tug, and alphanumeric flickered, indicating the device was in operation. As they watched, the spider-designed machinery immobilized Garble, transformed his molecules into one long continuous polymer chain, and spun it out an invisible opening at near light speed. The water in his body was separated out, piped away, and preserved. The electrolyte balances were recorded and simultaneously transmitted in a parallel stream of electrons. It would reach the spider receiver along with the lead end of the cat-polymer, to be used in the reconstruction.

Thirty seconds passed. Now Garble was only partially in Clotho. The polymer chain, invisible and incredibly long, was passing into Ginungagap. On the far side the spiders were beginning to knit it up. If all was going well. . .

Ninety-two seconds after they flashed on, the alphanumeric stopped twinkling on the screen. Garble was gone from Clotho. The clamshell opened and the remote cameras showed it to be empty. A cheer arose.

Somebody boosted Dominguez atop a keyout. Intercom cameras swiveled to follow. He wavered fractionally, said "My friends," and launched into a speech. Abigail didn't listen.

Paul's hand fell on her shoulder. It was the first time he had touched her since their initial meeting. "He's only a scientist," he said. "He had no idea how close you are to that cat."

"Look, I *asked* to go. I knew the risks. But Garble's just an animal; he wasn't given the choice."

Paul groped for words. "In a way, this is what your training has been about—the reason you're going across instead of someone like Dominguez. He projects his own reactions onto other people. If—"

Then, seeing that she wasn't listening, he said, "Anyway, you'll have a cat to play with in a few hours. They're only keeping him long enough to test out the life systems."

\* \* \* \*

There was a festive air to the second gathering. The spiders reported that Garble had translated flawlessly. A brief visual display showed him stalking about Clotho's sister platform, irritable but apparently unharmed.

"There," somebody said. The screen indicated that the receiver net had taken in the running end of the cat's polymer chain. They waited a minute and a half and the operation was over.

It was like a conjuring trick: the clamshell closed on emptiness. Water was piped in. Then it opened and Garble floated over its center, quietly licking one paw.

Abigail smiled at the homeliness of it. "Welcome back, Garble," she said quietly. "I'll get the guys in Bio to brew up some cream for you,"

Paul's eyes flicked in her direction. They lingered for no time at all, long enough to file away another datum for future use, and then his attention was

elsewhere. She waited until his back was turned and stuck out her tongue at him.

The tub docked with Clotho and a technician floated in. She removed her helmet self-consciously, aware of her audience. One hand extended, she bobbed toward the cat, calling softly.

“Get that jerk on the line,” Paul snapped. “I want her helmet back on. That’s sloppy. That’s real—”

And in that instant Garble sprang.

Garble was a black-and-white streak that flashed past the astonished tech, through the air lock, and into the open tug. The cat pounced on the pilot panel. Its forelegs hit the controls. The hatch slammed shut, and the tug’s motors burst into life.

Crew room techs grabbed wildly at their keyouts. The tech on Clotho frantically tried to fit her helmet back on. And the tug took off, blasting away half the protective dome and all the platform’s air.

The screens showed a dozen different scenes, lenses shifting from close to distant and back. “Cheyney,” Paul said quietly. Dominguez was frozen, looking bewildered. “Take it out.”

“It’s coming right at us!” somebody shouted.

Cheyney’s fingers flicked: rap-tap-rap.

A bright nuclear flower blossomed.

There was silence, dead and complete, in the crew room. *I’m missing something*, Abigail thought. *We just blew up 5 percent of our tug fleet to kill a cat.*

“Pull that transmitter!” Paul strode through the crew room, scattering orders. “Nothing goes out! You, you, and you”—he yanked techs away from their keyouts—“off those things. I want the whole goddamned net shut *down*.”

“Paul . . .” an operator said.

“Keep on receiving.” He didn’t bother to look. “Whatever they want to send. Dump it all in storage and don’t merge any of it with our data until we’ve gone over it.” Alone and useless in the center of the room, Dominguez stuttered,

“What—what happened?”

“You blind idiot!” Paul turned on him viciously. “Your precious aliens have just made their first hostile move. The cat that came back was nothing like the one we sent. They made changes. They retransmitted it with instructions wet-wired into its brain.”

“But why would they want to steal a tug?”

“*We don’t know!*” Paul roared. “Get that through your head. We don’t know their motives and we don’t know how they think. But we would have known a lot more about their intentions than we wanted if I hadn’t rigged that tug with an abort device.”

“You didn’t—” Dominguez began. He thought better of the statement.

“—have the authority to rig that device,” Paul finished for him. “That’s right. I didn’t.” His voice was heavy with sarcasm.

Dominguez seemed to shrivel. He stared bleakly, blankly, about him, then turned and left, slightly hunched over. Thoroughly discredited in front of the people who worked for him.

*That was cold,* Abigail thought. She marveled at Paul’s cruelty. Not for an instant did she believe that the anger in his voice was real, that he was capable of losing control.

Which meant that in the midst of confusion and stress, Paul had found time to make a swift play for more power. To Abigail’s newly suspicious eye, it looked like a successful one, too.

\* \* \* \*

For five days Paul held the net shut by sheer willpower and force of personality. Information came in but did not go out. Bell-Sandia administration was not behind him; too much time and money had been sunk into Clotho to abandon the project. But Paul had the support of the tech crew, and he knew how to use it.

“Nothing as big as Bell-Sandia runs on popularity,” Paul explained. “But I’ve got enough sympathy from above, and enough hesitation and official cowardice to keep this place shut down long enough to get a message across.”

The incoming information flow fluctuated wildly, shifting from subject to subject. Data sequences were dropped halfway through and incomplete. Nonsense came in. The spiders were shifting through strategies in search of the key that would reopen the net.

“When they start repeating themselves,” Paul said, “we can assume they understand the threat.”

“But we *wouldn't* shut the net down permanently,” Abigail pointed out.

Paul shrugged. “So it’s a bluff.”

They were sharing an after-shift drink in a fifth-level bar. Small red lizards scuttled about the rock wall behind the bartender. “And if your bluff doesn’t work?” Abigail asked. “If it’s all for nothing—what then?”

Paul’s shoulders sagged, a minute shifting of tensions. “Then we trust in the goodwill of the spiders,” he said. “We let them call the shots. And they will treat us benevolently or not, depending. In either case,” his voice became dark, “I’ll have played a lot of games and manipulated a lot of people for no reason at all.” He took her hand. “If that happens, I’d like to apologize.” His grip was tight, his knuckles pale.

\* \* \* \*

That night Abigail dreamed she was falling.

Light rainbowed all about her, in a violent splintering of bone and tearing of flesh. She flung out an arm and it bounced on something warm and yielding.

“Abigail.”

She twisted and tumbled and something smashed into her ribs. Bright spikes of yellow darted up.

“Abigail!” Someone was shaking her, speaking loudly into her face. The rocks and sky went gray, were overlaid by unresolved images. Her eyelids struggled apart, fell together, opened.

“Oh,” she said.

Paul rocked back on his heels. Fish darted about in the water beneath him.



"There now," he said." Blue-green lights shifted gently underwater, moving in long, slow arcs. "Dream over?"

Abigail shivered, clutched his arm, let go of it almost immediately. She nodded. "Good. Tell me about it."

"I—" Abigail began. "Are you asking me as a human being or in your official capacity?"

"I don't make that distinction."

She stretched out a leg and scratched her big toe, to gain time to think. She really didn't have any appropriate thoughts. "Okay," she said, and told him the entire dream. Paul listened intently, rubbed a thumb across his chin thoughtfully when she was done. "We hired you on the basis of that incident, you know," he said. "Coolness under stress. Weak body image. There were a lot of gravity bums to choose from. But I figured you were just a hair tougher, a little bit grittier."

"What are you trying to tell me? That I'm replaceable?"

Paul shrugged. "Everybody's replaceable. I just wanted to be sure you knew that you could back out if you want. It wouldn't wreck our project."

"I don't want to back out." Abigail chose her words carefully, spoke them slowly, to avoid giving vent to the anger she felt building up inside. "Look, I've been on the gravity circuit for ten years. I've been everywhere in the system there is to go: Did you know that there are less than two thousand people alive who've set foot on Mercury *and* Pluto? We've got a little club; we get together once a year." Seaweed shifted about her; reflections of the floor lights formed nebulous swimming shapes on the walls. "I've spent my entire life going around and around and around the sun, and never really getting anywhere. I want to travel, and there's nowhere left for me to go. So you offer me a way out and then ask if I want to back down. Like hell I do!"

"Why don't you believe that going through Ginungagap is death?" Paul asked quietly. She looked into his eyes, saw cool calculations going on behind them. It frightened her, almost. He was measuring her, passing judgment, warping events into long logical chains that did not take human factors into account. He was an alien presence.

"It's—common sense, is all. I'll be the same when I exit as when I go in. There'll be no difference, not an atom's worth, not a scintilla."

“The *substance* will be different. Every atom will be different. Not a single electron in your body will be the same one you have now.”

“Well, how does that differ so much from normal life?” Abigail demanded. “All our bodies are in constant flux. Molecules come and go. Bit by bit, we’re replaced. Does that make us different people from moment to moment? ‘All that is body is as coursing vapors,’ right?”

Paul’s eyes narrowed. “Marcus Aurelius. Your quotation isn’t complete, though. It goes on: ‘All that is of the soul is dreams and vapors.’ “

“What’s that supposed to mean?”

“It means that the quotation doesn’t say what you claimed it did. If you care to read it literally, it argues the opposite of what you’re saying.”

“Still, you can’t have it both ways. Either the me that comes out of the spider black hole is the same as the one who went in, or I’m not the same person as I was an instant ago.”

“I’d argue differently,” Paul said. “But no matter. Let’s go back to sleep.”

He held out a hand, but Abigail felt no inclination to accept it. “Does this mean I’ve passed your test?”

Paul closed his eyes, stretched a little. “You’re still reasonably afraid of dying, and you don’t believe that you will,” he said. “Yeah. You pass.”

“Thanks a heap,” Abigail said. They slept, not touching, for the rest of the night.

\* \* \* \*

Three days later Abigail woke up, and Paul was gone. She touched the wall and spoke his name. A recording appeared. “Dominguez has been called up to Administration,” it said. Paul appeared slightly distracted; he had not looked directly into the recorder and his image avoided Abigail’s eyes. “I’m going to reopen the net before he returns. It’s best we beat him to the punch.” The recording clicked off.

Abigail routed an intercom call through to the crew room. A small chime

notified him of her call, and he waved a hand in combined greeting and direction to remain silent. He was hunched over a keyout. The screen above it came to life.

“Ritual greetings, spider,” he said.

“Hello, human. We wish to pursue our previous inquiry: the meaning of the term ‘art’ which was used by the human Dominguez six-sixteenths of the way through his major presentation.”

“This is a difficult question. To understand a definition of art, you must first know the philosophy of aesthetics, This is a comprehensive field of knowledge comparable to the study of perception. In many ways it is related.”

“What is the trade value of this field of knowledge?”

Dominguez appeared, looking upset. He opened his mouth, and Paul touched a finger to his own lips, nodding his head toward the screen.

“Significant. Our society considers art and science as being of roughly equal value.”

“We will consider what to offer in exchange.”

“Good. We also have a question for you. Please wait while we select the phrasing.” He cut the translation lines, turned to Dominguez. “Looks like your raft gambit paid off. Though I’m surprised they bit at that particular piece of bait.”

Dominguez looked weary. “Did they mention the incident with the cat?”

“No, nor the communications blackout.” The old man sighed. “I always felt close to the aliens,” he said. “Now they seem—cold, inhuman.” He attempted a chuckle. “That was almost a pun, wasn’t it?”

“In a human, we’d call it a professional attitude. Don’t let it spoil your accomplishment,” Paul said. “This could be as big as optics.” He opened the communications line again. “Our question is now phrased.” Abigail noted he had not told Dominguez of her presence.

“Please go ahead.”

“Why did you alter our test animal?”

Much leg waving. "We improved the ratios garble centers of perception garble wetware garble making the animal twelve-sixteenths as intelligent as a human. We thought you would be pleased."

"We were not. Why did the test animal behave in a hostile manner toward us?"

The spider's legs jerked quickly and it disappeared from the screen. Like an echo, the machine said, "Please wait."

Abigail watched Dominguez throw Paul a puzzled look. In the background, a man with a leather sack looped over one shoulder was walking slowly along the twisty access path. His hand dipped into the sack, came out, sprinkled fireflies among the greenery. Dipped in, came out again. Even in the midst of crisis the trivia of day-to-day existence went on.

The spider reappeared, accompanied by two of its own kind. Their legs interlaced and retreated rapidly, a visual pantomime of an excited conversation. Finally one of their number addressed the screen.

"We have discussed the matter."

"So I see."

"It is our conclusion that the experience of translation through Ginungagap had a negative effect on the test animal. This was not anticipated. It is new knowledge. We know little of the psychology of carbon-based life."

"You're saying the test animal was driven mad?"

"Key word did not translate. We assume understanding. Steps must be taken to prevent a recurrence of this damage. Can you do this?"

Paul said nothing.

"Is this the reason why communications were interrupted?"

No reply.

"There is a cultural gap. Can you clarify?"

"Thank you for your cooperation," Paul said, and switched the screen off.

“You can set your people to work,” he told Dominguez. “No reason why they should answer the last few questions, though.”

“Were they telling the truth?” Dominguez asked wonderingly.

“Probably not. But at least now they’ll think twice before trying to jerk us around again.” He winked at Abigail, and she switched off the intercom.

\* \* \* \*

They re-ran the test using a baboon shipped out from the Belt Zoological Gardens. Abigail watched it arrive from the lip station, crated and snarling.

“They’re a lot stronger than we are,” Paul said. “Very agile. If the spiders want to try any more tricks, we couldn’t offer them better bait.”

The test went smooth as silk. The baboon was shot through Ginungagap, held by the spiders for several hours, and returned. Exhaustive testing showed no tampering with the animal.

Abigail asked how accurate the tests were. Paul hooked his hands behind his back. “We’re returning the baboon to the Belt. We wouldn’t do that if we had any doubts. But—” He raised an eyebrow, asking Abigail to finish the thought.

“But if they’re really hostile, they won’t underestimate us twice. They’ll wait for a human to tamper with.”

Paul nodded.

\* \* \* \*

The night before Abigail’s send-off they made love. It was a frenzied and desperate act, performed wordlessly and without tenderness. Afterward they lay together, Abigail idly playing with Paul’s curls.

“Gail . . .” His head was hidden in her shoulder; she couldn’t see his face. His voice was muffled.

“Mmmm?”

“Don’t go.”

She wanted to cry. Because as soon as he said it, she knew it was another test, the final one. And she also knew that Paul wanted her to fail it. That he honestly believed transversing Ginungagap would kill her, and that the woman who emerged from the spiders' black hole would not be herself.

His eyes were shut; she could tell by the creases in his forehead. He knew what her answer was. There was no way he could avoid knowing.

Abigail sensed that this was as close to a declaration of emotion as Paul was capable of. She felt how he despised himself for using his real emotions as yet another test, and how he could not even pretend to himself that there were circumstances under which he would *not* so test her. *This must be how it feels to think as he does*, she thought. *To constantly scrabble after every last implication, like eternally picking at a scab.*

"Oh, Paul," she said.

He wrenched about, turning his back to her. "Sometimes I wish"—his hands rose in front of his face like claws; they moved toward his eyes, closed into fists—"that for just ten goddamned minutes I could turn my mind off." His voice was bitter.

Abigail huddled against him, looped a hand over his side and onto his chest. "Hush," she said.

\* \* \* \*

The tug backed away from Clotho, dwindling until it was one of a ring of bright sparks pacing the platform. Mother was a point source lost in the star field. Abigail shivered, pulled off her arm bands and shoved them into a storage sack. She reached for her *cache-sexe*, hesitated.

*The hell with it*, she thought. *It's nothing they haven't seen before.* She shucked it off, stood naked. Gooseflesh rose on the backs of her legs. She swam to the transmittal device, feeling awkward under the distant watching eyes.

Abigail groped into the clamshell. "Go," she said.

The metal closed about her seamlessly, encasing her in darkness. She floated in a lotus position, bobbing slightly.

A light, gripping field touched her, stilling her motion. On cue, hypnotic

commands took hold in her brain. Her breathing became shallow; her heart slowed. She felt her body ease into stasis. The final command took hold.

Abigail weighed 50 keys. Even though the water in her body would not be transmitted, the polymer chain she was to be transformed into would be 275 kilometers long. It would take 15 minutes, and 17 seconds to unravel at light speed, negligibly longer at translation speed. She would still be sitting in Clotho when the spiders began knitting her up.

It was possible that Garble had gone mad from a relatively swift transit. Paul doubted it, but he wasn't taking any chances. To protect Abigail's sanity, the meds had wet-wired a travel fantasy into her brain. It would blind her to external reality while she traveled.

\* \* \* \*

She was an eagle. Great feathered wings extended out from her shoulders. Clotho was gone, leaving her alone in space. Her skin was red and leathery, her breasts hard and unyielding. Feathers covered her thighs, giving way at the knees to talons.

She moved her wings, bouncing lightly against the thin solar wind swirling down into Ginungagap. The vacuum felt like absolute freedom. She screamed a predator's exultant shrill. Nothing enclosed her; she was free of restrictions forever.

Below her lay Ginungagap, the primal chasm, an invisible challenge marked by a red smudge of glowing gases. It was inchoate madness, a gibbering, impersonal force that wanted to draw her in, to crush her in its embrace. Its hunger was fierce and insatiable.

Abigail held her place briefly, effortlessly. Then she folded her wings and dove.

A rain of X rays stung through her, the scattering of Ginungagap's accretion disk. They were molten iron passing through a ghost. Shrieking defiance, she attacked, scattering sparks in her wake.

Ginungagap grew, swelled until it swallowed up her vision. It was purest black, unseeable, unknowable, a thing of madness. It was Enemy.

A distant objective part of her knew that she was still in Clotho, the polymer

chain being unraveled from her body, accelerated by a translator, passing through two black holes, and simultaneously being knit up by the spiders. It didn't matter.

She plunged into Ginungagap as effortlessly as if it were the film of a soap bubble.

In—

—And out.

It was like being reversed in a mirror, or watching an entertainment run backward. She was instantly flying out the way she came. The sky was a mottled mass of violet light.

The stars before her brightened from violet to blue, She craned her neck, looked back at Ginungagap, saw its disk-shaped nothingness recede, and screamed in frustration because it had escaped her. She spread her wings to slow her flight and—

—was sitting in a dark place. Her hand reached out, touched metal, recognized the inside of a clamshell device.

A hairline crack of light looped over her, widened. The clamshell opened.

Oceans of color bathed her face. Abigail straightened, and the act of doing so lifted her up gently. She stared through the transparent bubble at a phosphorescent foreverness of light.

*My God, she thought. The stars.*

The stars were thicker, more numerous than she was used to seeing them—large and bright and glittery rich. She was probably someplace significant, in a star cluster or the center of the galaxy; she couldn't guess. She felt irrationally happy to simply *be*; she took a deep breath, then laughed.

“Abigail Vanderhoek.”

She turned to face the voice, and found that it came from a machine. Spiders crouched beside it, legs moving silently. Outside, in the hard vacuum, were more spiders.

“We regret any pain this may cause,” the machine said.



Then the spiders rushed forward. She had no time to react. Sharp mandibles loomed before her, then dipped to her neck. Impossibly swift, they sliced through her throat, severed her spine. A sudden jerk and her head was separated from her body.

It happened in an instant. She felt brief pain, and the dissociation of actually *seeing* her decapitated body just beginning to react. And then she died.

\* \* \* \*

A spark. A light. *I'm alive*, she thought. Consciousness returned like an ancient cathode tube warming up. Abigail stretched slowly, bobbing gently in the air, collecting her thoughts. She was in the sister-Clotho again—not in pain, her head and neck firmly on her shoulders. There were spiders in the platform, and a few floating outside.

“Abigail Vanderhoek,” the machine said. “We are ready to begin negotiations.”

Abigail said nothing.

After a moment, the machine said, “Are you damaged? Are your thoughts impaired?” A pause, then, “Was your mind not protected during transit?”

“Is that you waving the legs there? Outside the platform?”

“Yes. It is important that you talk with the other humans. You must convey our questions. They will not communicate with us.”

“I have a few questions of my own,” Abigail said. “I won’t cooperate until you answer them.”

“We will answer any questions provided you neither garble nor garble.”

“What do you take me for?” Abigail asked. “Of course I won’t.”

Long hours later she spoke to Paul and Dominguez. At her request the spiders had withdrawn, leaving her alone. Dominguez looked drawn and haggard. “I swear we had no idea the spiders would attack you,” Dominguez said. “We saw it on the screens. I was certain you’d been killed...” His voice trailed off.

“Well, I’m alive, no thanks to you guys. Just what *is* this crap about an explosive substance in my bones, anyway?”

“An explosive—I swear we know nothing of anything of the kind.”

“A close relative to plastique,” Paul said. “I had a small editing device attached to Clotho’s translator. It altered roughly half the bone marrow in your sternum, pelvis, and femurs in transmission. I’d hoped the spiders wouldn’t pick up on it so quickly.”

“You actually did,” Abigail marveled. “The spiders weren’t lying; they decapitated me in self-defense. What the holy hell did you think you were *doing*?”

“Just a precaution,” Paul said. “We wet-wired you to trigger the stuff on command. That way, we could have taken out the spider installation if they’d tried something funny.”

“Um,” Dominguez said, “this *is* being recorded. What I’d like to know, Ms. Vanderhoek, is how you escaped being destroyed.”

“I didn’t,” Abigail said. “The spiders killed me. Fortunately, they anticipated the situation, and recorded the transmission. It was easy for them to recreate me—after they edited out the plastique.”

Dominguez gave her an odd look. “You don’t—feel anything particular about this?”

“Like what?”

“Well—” He turned to Paul helplessly.

“Like the real Abigail Vanderhoek died and you’re simply a very realistic copy,” Paul said.

“Look, we’ve been through this garbage before,” Abigail began angrily.

Paul smiled formally at Dominguez. It was hard to adjust to seeing the two in flat black-and-white. “She doesn’t believe a word of it.”

“If you guys can pull yourselves up out of your navels for a minute,” Abigail said, “I’ve got a line on something the spiders have that you want. They claim they’ve sent probes through their black hole.”

“Probes?” Paul stiffened. Abigail could sense the thoughts coursing through his skull, of defenses and military applications.

“Carbon-hydrogen chain probes. Organic probes. Self-constructing transmitters. They’ve got a carbon-based secondary technology.”

“Nonsense,” Dominguez said. “How could they convert back to coherent matter with a receiver?”

Abigail shrugged. “They claim to have found a loophole.”

“How does it work?” Paul snapped.

“They wouldn’t say. They seemed to think you’d pay well for it.”

“That’s very true,” Paul said slowly. “Oh, yes.”

The conference took almost as long as her session with the spiders had. Abigail was bone weary when Dominguez finally said, “That ties up the official minutes. We now stop recording.” A line tracked across the screen, was gone. “If you want to speak to anyone off the record, now’s your chance. Perhaps there is someone close to you...”

“Close? No.” Abigail almost laughed. “I’ll speak to Paul alone, though.”

A spider floated by outside Clotho II. It was a golden, crablike being, its body slightly opalescent. It skittered along unseen threads strung between the open platforms of the spider star-city. “I’m listening,” Paul said.

“You turned me into a *bomb*, you freak.”

“So?”

“I could have been killed.”

“Am I supposed to care?”

“You damn well ought to, considering the liberties you’ve taken with my fair white body.”

“Let’s get one thing understood,” Paul said. “The woman I slept with, the

woman I cared for, is dead. I have no feelings toward or obligations to you whatsoever.”

“Paul,” Abigail said. “*I’m not dead*. Believe me, I’d know if I were.”

“How could I possibly trust what you think or feel? It could all be attitudes the spiders wet-wired into you. We know they have the technology.”

“How do you know that *your* attitudes aren’t wet-wired in? For that matter, how do you know anything is real? I mean, these are the most sophomoric philosophic ideas there are. But I’m the same woman I was a few hours ago. My memories, opinions, feelings—they’re all the same as they were. There’s absolutely no difference between me and the woman you slept with on the *Clarke*.”

“I know.” Paul’s eyes were cold. “That’s the horror of it.” He snapped off the screen.

Abigail found herself staring at the lifeless machinery. *God, that hurt*, she thought. *It shouldn’t, but it hurt*. She went to her quarters.

The spiders had done a respectable job of preparing for her. There were no green plants, but otherwise the room was the same as the one she’d had on the *Clarke*. They’d even been able to spin the platform, giving her an adequate down-orientation. She sat in her hammock, determined to think pleasanter thoughts. About the offer the spiders had made, for example. The one she hadn’t told Paul and Dominguez about.

Banned by their chemistry from using black holes to travel, the spiders needed a representative to see to their interests among the stars. They had offered her the job. Or perhaps the plural would be more appropriate— they had offered her the jobs. Because there were too many places to go for one woman to handle them all. They needed a dozen—in time, perhaps, a hundred— Abigail Vanderhoeks.

In exchange for licensing rights to her personality, the right to make as many duplicates of her as were needed, they were willing to give her the rights to the self-reconstructing black hole platforms.

It would make her a rich woman—a hundred rich women—back in human space. And it would open the universe. She hadn’t committed herself yet, but there was no way she was going to turn down the offer. The chance to see a

thousand stars? No, she would not pass it by.

When she got old, too, they could create another Abigail from their recording, burn her new memories into it, and destroy her old body.

*I'm going to see the stars, she thought. I'm going to live forever.* She couldn't understand why she didn't feel elated, wondered at the sudden rush of melancholy that ran through her like the precursor of tears.

Garble jumped into her lap, offered his belly to be scratched. The spiders had recorded him, too. They had been glad to restore him to his unaltered state when she made the request. She stroked his stomach and buried her face in his fur.

"Pretty little cat," she told him. "I thought you were dead."