# On the Brane

# GREGORY BENFORD

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*Gregory Benford [www.gregorybenford.com] lives in Irvine, California. A winner of the United Nations Medal for Literature, he is a professor of physics at the University of California, Irvine. Benford is the author of the classic SF novel* Timescape, *as well as a number of other highly regarded works, including* In the Ocean of Night *and* Sailing Bright Eternity. *He is the finest writer of hard SF in the generation after Larry Niven, and writes primarily in the tradition of Arthur C. Clarke, of immense, fertile, awesome astronomical vistas and technological marvels, but with a depth and richness of characterization not achieved by many other SF writers. Many of his (typically hard) SF stories are collected in* In Alien Flesh, Matters End, *and* Worlds Vast and Various. *Recently he began a non-fiction series of short essays on science and society with biologist Michael Rose, published on the Internet at Amazon Shorts.com*

*"On the Brane " was published in the original anthology* Gateways. *It is hard SF, a vivid depiction of the world next door; a world in synch with our own, separated from us by 20 cm along dimension Q.*

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Mina peered out at a universe cooling into extinction. Below their orbit hung the curve of Counter-Earth, its night side lit by the pale Counter-Moon. Both these were lesser echoes of the "real" Earth-Moon system, a universe away— or twenty centimeters, whichever came first.

Counter was dim but grayly grand—lightly banded in pale pewter and salmon red, save where the shrunken Moon cast its huge gloomy shadow. Here the Moon clung close to the Counter-Earth, in a universe chilling toward absolute zero.

Massive ice sheets spread like pearly blankets from both poles. Ridges ribbed the frozen methane ranges. The equatorial land was a flinty, scarred ribbon of ribbed black rock, hemmed in by the oppressive ice. The planet turned slowly, gravely, a major ridge just coming into view at the dawn line.

Mina sighed and brought their craft lower. Ben sat silent beside her. Yet they both knew that all of Earth-side—the real Earth, she still thought—listened and watched through their minicams.

"The focal point is coming into sunlight 'bout now," Ben reported.

"Let's go get it" she whispered. This loomy universe felt somber, awesome.

They curved toward the dawn line. Data hummed in their board displays, spatters of light reporting on the gravitational pulses that twisted space here.

They had already found the four orbiting gravitational wave radiators, just as predicted by the science guys. Now for the nexus of those four, down on the surface—the focal point, the coordinator of the grav wave transmissions that had summoned them here.

And, just maybe, to find whatever made the focal point. Somewhere near the dawn line.

They came arcing over the Counter night. A darkness deeper than she had ever seen crept across Counter. Night here, without the shrunken Moon's glow, had no planets dotting the sky, only the distant sharp stars. Apparently the rest of the solar system had not formed, due to less mass in the

Counter-Universe.

At the terminator shadows stretched, jagged black profiles of the ridgelines torn by pressure from the ice. The warming had somehow shoved fresh peaks into the gathering atmosphere, ragged and sharp. Since there was atmosphere thicker and denser than anybody had expected, the stars were not unwinking points; they flickered and glittered as on crisp nights at high altitudes on Earth. Near the magnetic poles, she watched swirling blue auroral glows cloak the plains where fogs rose even at night.

A cold dark world a universe away from sunny Earth, through a higher dimension…

She did not really follow the theory; she was an astronaut. It was hard enough to comprehend the mathematical guys when they spoke English. For them, the whole universe was a sheet of space-time, called "brane" for membrane. And there were other branes, spaced out along an unseen dimension. Only gravity penetrated between these sheets. All other fields, which meant all mass and light, were stuck to the branes.

*Okay, but what of it?* had been her first response.

Just mathematics, until the physics guys—it was nearly always guys—found that another brane was only twenty centimeters away. Not in any direction you could see, but along a new dimension. The other brane had been there all along, with its own mass and light, but in a dimension nobody could see. Okay, maybe the mystics, but that was it.

And between the two branes only gravity acted. So the Counter-Earth followed Earth exactly, and the Counter-Moon likewise. They clumped together, hugging each other with gravity in their unending waltz. Only the Counter-brane had less matter in it, so gravity was weaker there.

Mina had only a cartoon-level understanding of how another universe could live on a brane only twenty centimeters away from the universe humans knew. The trick was that those twenty centimeters lay along a dimension termed the Q-coordinate. Ordinary forces couldn't leave the brane humans called the universe, or this brane. But gravity could. So when the first big gravitational wave detectors picked up coherent signals from "nearby"—twenty centimeters away!— it was just too tempting to the physics guys.

And once they opened the portal into the looking-glass-like Counter system—she had no idea how, except that it involved lots of" magnets—somebody had to go and look. Mina and Ben.

It had been a split-second trip, just a few hours ago. In quick flash-images she had seen: purple-green limbs and folds, oozing into glassy struts—elongating, then splitting into red smoke. Leathery oblongs and polyhedrons folded over each other. Twinkling, jarring slices of hard actinic light poked through them. And it all moved as though blurred by slices of time into a jostling hurry—

*Enough. Concentrate on your descent trajectory.*

"Stuff moving down there," Ben said.

"Right where the focal point is?" At the dawn's ruby glow.

"Looks like." He close-upped the scene.

Below, a long ice ridge rose out of the sea like a great gray reef. Following its Earthly analogy, it teemed with life. Quilted patches of vivid blue green and carrot orange spattered its natural pallor. Out of those patches spindly trunks stretched toward the midmorning sun. At their tips crackled bright blue St. Elmos fire. Violet-tinged flying wings swooped lazily in and out among them to feed. Some, already filled, alighted at the shoreline and folded themselves, waiting with their flat heads cocked at angles.

The sky, even at Counter's midmorning, remained a dark backdrop for gauzy auroral curtains that bristled with energy. This world had an atmospheric blanket not dense enough to scatter the wan sunlight. For on this brane, the sun itself had less mass, too.

She peered down. She was a pilot, but a biologist as well. And they knew there was something waiting…

"Going in," she said.

Into this slow world they came with a high roar. Wings flapped away from the noise. A giant filled the sky.

Mina dropped the lander closer. Her legs were cramped from the small pilot chair, and she bounced with the rattling boom of atmospheric braking.

She blinked, suddenly alarmed. Beside her in his acceleration couch Ben peered forward at the swiftly looming landscape. "How's that spot?" He jabbed a finger tensely at the approaching horizon.

"Near the sea? Sure. Plenty of life forms there. Kind of like an African watering hole." Analogies were all she had to go on here, but there was a resemblance. Their recon scans had showed a ferment all along the shoreline.

Ben brought them down steady above a rocky plateau. Their drive ran red-hot.

Now here was a problem nobody on the mission team, for all their contingency planning, had foreseen. Their deceleration plume was bound to incinerate many of the life forms in this utterly cold ecosystem. Even after hours, the lander might be too hot for any life to approach, not to mention scalding them when nearby ices suddenly boiled away.

*Well, nothing to do about it now.*

"Fifty meters and holding." He glanced at her. "Ok?"

"Touchdown," she said, and they settled onto the rock.

To land on ice would have sunk them hip-deep in fluid, only to then be refrozen rigidly into place. They eagerly watched the plain. Something hurried away at the horizon, which did not look more than a kilometer away.

"Look at those lichen," she said eagerly. "In so skimpy and energy environment, how can there be so *many* of them?"

"We're going to be hot for an hour, easy," Ben said, his calm, careful gaze sweeping the view systematically. The ship's computers were taking digital photographs automatically, getting a good map. "I say we take a walk."

She tapped a key, giving herself a voice channel, reciting her ID opening without thinking. "Okay, now the good stuff. As we agreed, I am adding my own comments to the data I just sent you."

They had not agreed, not at all. But who could stop her? Many of the Counter Mission Control engineers, wedded to their mathematical slang and NASA's jawbone acronyms, felt that commentary was subjective and useless. Let the expert teams back home interpret the data; the PR people liked anything they could use.

"Counter is a much livelier place than we ever imagined. There's weather, for one thing, a product of the planet's six-day rotation and the mysterious heating. Turns out the melting and freezing point of methane is crucial. With the heating-up, the mean temperature is well high enough that nitrogen and argon stay gaseous, giving Counter its thin atmosphere. Of course, the ammonia and carbon dioxide are solid as rock. Counter's warmer, but still incredibly cold by our standards. Methane, though, can go either way. It thaws, every morning. Even better, the methane doesn't just sublime—nope, it melts. Then it freezes at night."

Now the dawn line was creeping at its achingly slow pace over a ridgeline, casting long shadows that pointed like arrows across a great rock plain. There was something there she could scarcely believe, hard to make out even from their thousand-kilometer high orbit under the best magnification. Something they weren't going to believe back Earthside. So keep up the patter and lead them to it. *Just do it.*

"Meanwhile, on the dark side there's a great 'heat sink,' like the one over Antarctica on Earth. It moves slowly across the planet as it turns, radiating heat into space and pressing down a column of cold air—I mean, of even *colder* air. From its lowest, coldest point winds flow out toward the day side. At the sunset line they meet sun-warmed air—and it snows. Snow! Maybe I should take up skiing, huh?"

At least Ben laughed. It was hard, talking into a mute audience. And she was getting jittery. She took a hit of the thick, jolting Colombian coffee in her mug. Onward—

"On the sunrise side they meet sunlight and melting methane ice, and it rains. Gloomy dawn. Permanent, moving around the planet like a veil."

She close-upped the dawn line and there it was, a great gray curtain descending, marching ever-westward at about the speed of a fast car.

"So we've got a perpetual storm front moving at the edge of the night side, and another that travels with the sunrise."

As she warmed to her subject, all pretense at impersonal scientific discourse faded from Mina's voice; she could not filter out her excitement that verged on a kind of love. She paused, watching the swirling alabaster blizzards at twilight's sharp edge and, on the dawn side, the great solemn racks of cloud. Although admittedly no Jupiter, this planet— her planet, for the moment—could put on quite a show.

"The result is a shallow sea of methane that moves slowly around the world, following the sun. Who'd a thought, eh, you astro guys? Since methane doesn't expand as it freezes, the way water does"—okay, the astro guys know that, she thought, but the public needs reminders, and this damn well was going out to the whole wide bloomin' world, right?— "I'm sure it's all slush a short way below the surface,-and solid ice from there down. But so what? The sea isn't stagnant, because of what the smaller Counter-Moon is doing. It's close to the planet, so it makes a permanent tidal bulge directly underneath it. And the two worlds are trapped, like two dancers forever in each others' arms. So that bulge travels around from daylight to darkness, too. So sea currents form, and *flow,* and freeze. On the night side, the tidal pull puts stress on the various ices, and they hump up and buckle into pressure ridges. Like the ones in Antarctica, but *much* bigger."

Miles high, in fact, in Counter's weak gravity. Massive peaks, worthy of the best climbers…

But her enthusiasm drained away, and she bit her lip. Now for the hard part.

She'd rehearsed this a dozen times, and still the words stuck in her throat. After all, she hadn't come here to do close-up planetology. An unmanned orbital mission could have done that nicely. Mina had come in search of life—of the beings who had sent the gravitational wave signals. And now she and Ben were

about to walk the walk.

The cold here was unimaginable, hundreds of degrees below human experience. The suit heaters could cope—the atmosphere was too thin to steal heat quickly—but only if their boots alone actually touched the frigid ground. Sophisticated insulation could only do so much.

Mina did not like to think about this part. Her feet could freeze in her boots, then the rest of her. Even for the lander's heavily insulated shock-absorber legs, they had told her, it would be touch-and-go beyond a stay of a few hours. Their onboard nuclear thermal generator was already laboring hard to counter the cold she could see creeping in, from their external thermometers. Their craft already creaked and popped from thermal stresses.

And the thermal armor, from the viewpoint of the natives, must seem a hot, untouchable furnace. Yet already they could see things scurrying on the plain. Some seemed to be coming closer. Maybe curiosity was indeed a universal trait of living things.

Ben pointed silently. She picked out a patch of dark blue-gray down by the shore of the methane sea. On their console she brought up the visual magnification. In detail it looked like rough beach shingle. Tidal currents during the twenty-two hours since dawn had dropped some kind of gritty detritus—not just ices, apparently—at the sea's edge. Nothing seemed to grow on the flat, and—swiveling point of view—up on the ridge's knife-edge also seemed bare, relatively free of life. "It'll have to do," she said.

"Maybe a walk down to the beach?" Ben said. "Turn over a few rocks?"

They were both tiptoeing around the coming moment. With minimal talk they got into their suits.

Skillfully, gingerly—and by prior coin-flip—Mina clumped down the ladder. She almost envied those pioneer astronauts who had first touched the ground on Luna, backed up by a constant stream of advice, or at least comment, from Houston. The Mars landing crew had taken a mutual, four-person single step. Taking a breath, she let go of the ladder and thumped down on Counter. Startlingly, sparks spat between her feet and the ground, jolting her.

"There must be a *lot* of electricity running around out here," she said, fervently thanking the designers for all that redundant insulation.

Ben followed. She watched big blue sparks zap up from the ground to his boots. He jumped and twitched.

"Ow! That smarts," Ben said.

Only then did she realize that she had already had her shot at historical pronouncements, and had squandered it in her surprise. "Wow—what a profound thought," huh? she asked herself ruefully.

Ben said solemnly, "We stand at the ramparts of the solar system."

Well, she thought, fair enough. He had actually remembered his prepared line. He grinned at her and shrugged as well as he could in the bulky suit. Now on to business.

Against the gray ice and rock their lander stood like an H. G. Wells Martian walking-machine, splay-footed and ominous.

"Rocks, anyone?" They began gathering some, using long tweezers. Soil samples rattled into the storage bin.

"Let's take a stroll," Ben said.

"Hey, close-up that." She pointed out toward sea.

Things were swimming toward them. Just barely visible above the smooth surface, they made steady progress toward shore. Each had a small wake behind it.

"Looks like something's up," Ben said.

As they carefully walked down toward the beach, she tried her link to the lander's wide-band receiver. Happily, she found that the frequencies first logged by her lost, devoured probe were full of traffic. Confusing, though. Each of the beasts—for she was sure it was them—seemed to be broadcasting on all waves at once. Most of the signals were weak, swamped in background noise that sounded like an old AM radio picking up a nearby high-tension line. One, however, came roaring in like a pop music station. She made the lander's inductance tuner scan carefully.

That pattern—yes! It had to be. Quickly she compared it with the probe-log she'd had the wit to bring down with her. These were the odd cadences and sputters of the very beast whose breakfast snack had been her first evidence of life.

"Listen to this," she said. Ben looked startled through his faceplate.

The signal boomed louder, and she turned back the gain. She decided to try the radio direction-finder. Ben did, too, for a crosscheck. As they stepped apart, moving from some filmy ice onto a brooding brown rock, she felt sparks snapping at her feet. Little jolts managed to get through even the thermal vacuum-layer insulation, prickling her feet.

The vector reading, combined with Ben's, startled her. "Why, the thing's practically on top of us!"

If Counter's lords of creation were all swimming in toward this island ridge for lunch, this one might get here first. Fired up by all those vitamins from the lost probe? she wondered.

Suddenly excited, Mina peered out to sea—and there it was. Only a roiling, frothing ripple, like a ship's bow wave, but arrowing for shore. And others, farther out.

Then it bucked up into view and she saw its great, segmented tube of a body, with a sheen somewhere between mother-of-pearl and burnished brass. Why, it was *huge.* For the first time it hit her that when they all converged on this spot, it was going to be like sitting smack in a middling-sized dinosaur convention.

Too late to back out now. She powered up the small lander transmitter and tuned it to the signal she was receiving from seaward.

With her equipment she could not duplicate the creature's creative chaos of wavelengths. For its personal identification sign the beast seemed to use a simple continuous pulse pattern, like Morse code. Easy enough to simulate. After a couple of dry-run hand exercises to get with the rhythm of it, Mina sent the creature a roughly approximate duplicate of its own ID.

She had expected a call-back, maybe a more complex message. The result was astonishing. Its internal rocket engine fired a bright orange plume against the sky's black. It shot straight up in the air, paused, and plunged back. Its splash sent waves rolling up the beach. The farthest tongue of sluggish fluid broke against the lander's most seaward leg. The beast thrashed toward shore, rode a wave in—and stopped. The living cylinder lay there, half in, half out, as if exhausted.

Had she terrified it? Made it panic?

Cautiously, Mina tried the signal again, thinking furiously. It *would* give you quite a turn, she realized, if you'd just gotten as far in your philosophizing as I think, therefore I am, and then heard a thin, toneless duplicate of your own voice give back an echo.

She braced herself—and her second signal prompted a long, suspenseful silence. Then, hesitantly—shyly?—the being repeated the call after her.

Mina let out her breath in a long, shuddering sigh.

She hadn't realized she was holding it. Then she instructed DIS, the primary computer aboard *Venture,* to run the one powerful program Counter Mission Control had never expected her to have to use: the translator, Wiseguy. The creation of that program climaxed an argument that had raged for a century, ever since Whitehead and Russell had scrapped the old syllogistic logic of Aristotle in favor of a far more powerful method—sufficient, they believed, to subsume the whole of science, perhaps the whole of human cognition. All to talk to Counter's gravitational signals.

She waited for the program to come up and kept her eyes on the creature. It washed gently in and out with the lapping waves but seemed to pay her no attention. Ben was busily snapping digitals. He pointed offshore. "Looks like we put a stop to the rest of them."

Heads bobbed in the sea. Waiting? For what?

In a few moments they might have an answer to questions that had been tossed around endlessly. Could all language be translated into logically rigorous sentences, relating to one another in a linear configuration, structures, a system? If so, one could easily program a computer loaded with one language to search for another language's equivalent structures. Or, as many linguists and anthropologists insisted, does a truly unknown language forever resist such transformations?

This was such a strange place, after all. Forbidding, weird chemistry. Alien tongues could be strange not merely in vocabulary and grammatical rules, but in their semantic swamps and mute cultural or even biological premises. What would life forms get out of this place? Could even the most inspired programmers, just by symbol manipulation and number-crunching, have cracked ancient Egyptian with no Rosetta Stone?

With the Counter Project already far over budget, the decision to send along Wiseguy—which took many terabytes of computational space—had been hotly contested. The deciding vote was cast by an eccentric but politically astute old skeptic, who hoped to disprove the "bug-eyed monster Rosetta Stone theory," should life unaccountably turn up on Counter. Mina had heard through the gossip tree that the geezer was gambling that his support would bring along the rest of the DIS package. That program he passionately believed in.

Wiseguy had learned Japanese in five hours, Hopi in seven, and what smatterings they knew of Dolphin in two days. It also mastered some of the fiendishly complex, mul-tilogic artificial grammars generated from an Earth-based mainframe.

The unexpected outcome of six billion dollars and a generation of cyberfolk was simply put: A good translator had all the qualities of a true artificial intelligence. Wiseguy *was* a guy, of sorts. It—or she, or he; nobody had known quite how to ask—had to have cultural savvy *and* blinding mathematical skills. Mina had long since given up hope of beating Wiseguy at chess, even with one of its twin processors tied off.

She signaled again and waved, hoping to get the creature's attention. Ben leaped high in the one-tenth of a g gravity and churned both arms and legs in the ten seconds it took him to fall back down. Excited, the flying wings swooped silently over them. The scene was eerie in its silence; shouldn't birds make some sort of sound? The auroras danced, in Mina's feed from *Venture* she heard Wiseguy stumblingly, muttering… and beginning to talk.

She noted from the digital readout on her helmet interior display that Wiseguy had been eavesdropping on the radio crosstalk already. Now it was galloping along. In contrast to the simple radio signals she had first heard, the spoken, acoustic language turned out to be far more sophisticated. Wiseguy, however, dealt not in grammars and vocabularies but in underlying concepts. And it was *fast.*

Mina took a step toward the swarthy cylinder that heaved and rippled. Then another. Ropy muscles surged in it beneath layers of crusted fat. The cluster of knobs and holes at its front moved. It lifted its "head"—the snubbed-off, blunt forward section of the tube—and a bright, fast chatter of microwaves chimed through her ears. Followed immediately by Wiseguy's whispery voice. Discourse.

Another step. More chimes. Wiseguy kept this up at increasing speed. She was now clearly out of the loop. Data sped by in her ears, as Wiseguy had neatly inserted itself into the conversation, assuming Mina's persona, using some electromagnetic dodge. The creature apparently still thought it was speaking to her; its head swiveled to follow her.

The streaming conversation verged now from locked harmonies into brooding, meandering strings of chords. Mina had played classical guitar as a teenager, imagining herself performing before concert audiences instead of bawling into a mike and hitting two chords in a rock band. So she automatically thought in terms of the musical moves of the data flow. Major keys gave way to dusky harmonies in a minor triad. To her mind this had an effect like a cloud passing across the sun.

Wiseguy reported to her and Ben in its whisper. It and Awk had only briefly had to go through the me-Tarzan-you-Jane stage. For a life form that had no clearly definable brain she could detect, it proved a quick study.

She got its proper name first, as distinguished from its identifying signal; *its* name, definitely, for the translator established early in the game that these organisms had no gender.

*The Quand* they called themselves. And this one—call it Ark, because that was all Wiseguy could make of the noise that came before—*Ark-Quand.* Maybe, Wiseguy whispered for Mina and Ben alone, Ark was just a place-note to show that this thing was the "presently here" *of* the Quand. It seemed that the name was generic, for all of them.

"Like Earth tribes," Ben said, "who name themselves the People. Individual distinctions get tacked on when necessary?"

Ben was like that—surprising erudition popping out when useful, otherwise a straight supernerd techtype. His idea might be an alternative to Earth's tiresome clash of selfish individualisms and stifling collectivisms, Mina thought; the political theorists back home would go wild.

Mina took another step toward the dark beach where the creature lolled, its head following her progress. It was no-kidding *cold,* she realized. Her boots were melting the ground under her, just enough to make it squishy. And she could hear the sucking as she lifted her boot, too. So she wasn't missing these creatures' calls—they didn't use the medium.

One more step. Chimes in her ears, and Wiseguy sent them a puzzled, "It seems a lot smarter than it should be."

"Look, they need to talk to each other over distance, out of sight of each other," Mina said. "Those waxy all-one-wing birds should flock and probably need calls for mating, right? So do we." Not that she really thought that was a deep explanation.

"How do we frame an expectation about intelligence?" Ben put in.

"Yeah, I'm reasoning from Earthly analogies," Mina admitted. "Birds and walruses that use microwaves—who woulda thought?"

"I see," Wiseguy said, and went back to speaking to the Awk in its ringing microwave tones.

Mina listened to the ringing interchange speed up into a blur of blips and jots. Wiseguy could run very fast, of course, but this huge tubular thing seemed able to keep up with it. Microwaves' higher frequencies had far greater carrying capacity than sound waves, and this Awk seemed able to use that. Well, evolution would prefer such a fast-talk capability, she supposed—but why hadn't it on Earth? Because sound was so easy to use, evolving out of breathing. Even here— Wiseguy told her in a sub-channel aside—individual notes didn't mean anything. Their sequence did, along with rhythm and intonation, just like sound speech. Nearly all human languages used either subject-object-verb order or else subject-verb-object, and the Quands did, too. But to Wiseguy's confusion, they used both, apparently not caring.

Basic values became clear, in the quick scattershot conversation. Something called "rendezvous" kept coming up, modified by comments about territory. "Self-merge," the ultimate, freely chosen—apparently with all the Quands working communally afterward to care for the young, should there luckily occur a birthing. Respect for age, because the elders had experienced so much more.

Ben stirred restlessly, watching the sea for signs that-others might come ashore. "Hey, they're moving in," Ben said apprehensively.

Mina would scarcely have noticed the splashing and grinding on the beach as other Quands began to arrive— apparently for Rendezvous, their mating, and Wiseguy stressed that it deserved the capital letter—save that Awk stopped to count and greet the new arrivals. Her earlier worry about being crunched under a press of huge Quand bodies faded. They were social animals, and this barren patch of rock was now Awk's turf. Arrivals lumbering up onto the dark beach kept a respectful distance, spacing themselves. Like walruses, yes.

Mina felt a sharp cold ache in her lower back. Standing motionless for so long, the chill crept in. She was astounded to realize that nearly four hours had passed. She made herself pace, stretch, eat, and drink from suit supplies.

Ben did the same, saying, "We're eighty percent depleted on air."

"Damn it, I don't want to quit *now!* How 'bout you get extra from the Lander?"

Ben grimaced. He didn't want to leave either. They had all dedicated their lives to getting here, to this moment in this place. "Okay, Cap'n sir," he said sardonically as he trudged away.

She felt a kind of silent bliss here, just watching. Life, strange and wonderful, went on all around her. Her running digital coverage would be a huge hit Earthside. Unlike Axel-rod's empire, the Counter Project gave their footage away.

As if answering a signal, the Quand hunched up the slope a short way to feed on some brown lichen-like growth that sprawled across the warming stones. She stepped aside. Awk came past her and another

Quand slid up alongside. It rubbed against Awk, edged away, rubbed again. A courtship preliminary? Mina guessed.

They stopped and slid flat tongues over the lichen stuff, vacuuming it up with a slurp she could hear through her suit. Tentatively, the newcomer laid its body next to Awk. Mina could hear the pace of microwave discourse Awk was broadcasting, and it took a lurch with the contact, slowing, slowing… And Awk abruptly—even curtly, it seemed to Mina—rolled away. The signal resumed its speed.

She laughed aloud. How many people had she known who would pass up a chance at sex to get on with their language lessons?

Or was Wiseguy into philosophy already? It seemed to be digging at how the Quand saw their place in this weird world.

Mina walked carefully, feeling the crunch of hard ice as she melted what would have been gases on Earth—nitrogen, carbon dioxide, oxygen itself. She had to keep up, and the low-g walking was an art. With so little weight, rocks and ices that looked rough were still slick enough to make her slip. She caught herself more than once from a full, facedown splat—but only because she had so much time to recover, in a slow fall. As the Quand worked their way across the stony field of lichen, they approached the lander. Ben wormed his way around them, careful to not get too close.

"Wiseguy! Interrupt." Mina explained what she wanted. It quickly got the idea and spoke in short bursts to Awk—who resent a chord-rich message to the Quand.

They all stopped short. "I don't want them burned on the lander," Mina said to Ben, who made the switch on her suit oxy bottles without a hitch.

"Burned? I don't want them eating it," Ben said.

Then the Quand began asking *her* questions, and the first one surprised her: *Do you come from Light giver? As heralds?*

In the next few minutes Mina and Ben realized from their questions alone that in addition to a society, the Quand had a rough-and-ready view of the world, an epic oral literature (though recited in microwaves), and something that resembled a religion. Even Wiseguy was shaken; it paused in its replies, something she had never heard it do before, not even in speed trials.

Agnostic though she was, the discovery moved her profoundly. *Lightgiver.* After all, she thought with a rush of compassion and nostalgia, we started out as sun worshippers too.

There were dark patches on the Quands' upper sides, and as the sun rose these pulled back to reveal thick lenses. They looked like quartz—tough crystals for a rugged world. Their banquet of lichen done—she took a few samples for analysis, provoking a snort from a nearby Quand—they lolled lazily in their long day. She and Ben walked gingerly through them, peering into the quartz "eyes." Their retinas were a brilliant blue with red wire-like filaments curling through and under. Convergent evolution seemed to have found yet another solution to the eye problem.

"So what's our answer? Are we from Lightgiver?"

"Well… you're the Cap'n, remember." He grinned. "And the biologist."

She quickly sent *No. We are from a world like this, from near, uh, Lifegiver.*

*Do not be sad,* it sent through Wiseguy. *Lightgiver gives and Lightgiver takes; but it gives more*

*than any; it is the source of all life, here and from the Dark; bless Lightgiver.*

Quands did not use verb forms underlining existence itself—no words for *are, is, be*—so sad became a verb. She wondered what deeper philosophical chasm that linguistic detail revealed. Still, the phrasing was startlingly familiar, the same damned, comfortless comfort she had heard preached at her grandmother's rain-swept funeral.

Remembering that moment of loss with a deep inward hurt, she forced it away. What could she say… ?

After an awkward silence, Awk said something render-able as, / *need leave you for now.*

Another Quand was peeling out Awk's personal identification signal, with a slight tag-end modification. Traffic between the two Quands became intense. Wiseguy did its best to interpret, humming with the effort in her ears.

Then she saw it. A pearly fog had lifted from the shoreline, and there stood a distant spire. Old, worn rocks peaked in a scooped-out dish.

"Ben, there's the focal point!"

He stopped halfway between her and the lander. "Damn! Yes!"

"The Quand built it!"

"But… where's their civilization?"

"Gone. They lost it when this brane-universe cooled." The idea had been percolating in her, and now she was sure of it.

Ben said, awed, "Once *these* creatures put those grav wave emitters in orbit? And built this focal point—all to signal to us, on our brane?"

"We know this universe is dying—and so do they."

The Counter-brane had less mass in it and somewhat different cosmology. Here space-time was much farther along in its acceleration, heading for the Big Rip when the expansion of the Counter-universe would tear first galaxies, then stars and planets apart, pulverizing them down into atoms.

Mina turned the translator off. First things first, and even on Counter there was such a thing as privacy.

"They've been sending signals a long time, then," Ben said.

"Waiting for us to catch up to the science they once had—and now have lost." She wondered at the abyss of time this implied. "As if we could help them…"

Ben, ever the diplomat, began, "Y'know, it's been hours…" Even on this tenth-g world she was getting tired. The Quand lolled, Lifegiver stroking their skins—which now flushed with an induced chemical radiance, harvesting the light. She took more digitals, thinking about how to guess the reaction—

"Y'know…"

"Yeah, right, let's go."

Outside they prepped the lander for lift-off. Monotonously, as they had done Earthside a few thousand times, they went through the checklist. Tested the external cables. Rapped the valves to get them to

open. Tried the mechanicals for freeze-up—and found two legs that would not retract. It took all of Ben's powerful heft to unjam them.

Mina lingered at the hatch and looked back, across the idyllic plain, the beach, the sea like a pink lake. She hoped the heat of launching, carried through this frigid air, would add to the suns thin rays and… and what? Maybe help these brave beings who had sent their grav-wave plea for help?

Too bad she could not transmit Wagner's grand *Liebestod* to them, something to lift spirits—but even Wiseguy could only do so much.

She lingered, gazing at the chilly wealth here, held both by scientific curiosity and by a newfound affection. Then another miracle occurred, the way they do, matter-of-factly. Sections of carbon exoskeleton popped forth from the shiny skin of two nearby Quands. Jerkily, these carbon-black leaves articulated together, joined, swelled, puffed with visible effort into one great sphere.

Inside, she knew but could not say why, the two Quands were flowing together, coupling as one being. Self-merge.

For some reason, she blinked back tears. Then she made herself follow Ben inside the lander. Back to… what? Checked and rechecked, they waited for the orbital resonance time with *Venture* to roll around. Each lay silent, immersed in thought. The lander went *ping* and *pop* with thermal stress.

Ben punched the firing keys. The lander rose up on its roaring tail of fire. Her eyes were dry now, and their next move was clear: *Back through the portal, to Earth. Tell them of this vision, a place that tells us what is to come, eventually, in our own universe.*

"Goin' home!" Ben shouted.

"Yes!" she answered. *And with us and the Quand together, maybe we can find a way to save us both. To rescue life and meaning from a universe that, in the long run, would destroy itself Cosmological suicide.*

She had come to explore, and now they were going back with a task that could shape the future of two species, two branes. Quite enough, for a mere one trip through the portal, through the looking-glass. Back to a reality that could never be the same.