



I, Row-Boat
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Forematter

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In the words of Woody Guthrie:

"This song is Copyrighted in U.S., under Seal of Copyright #154085, for a period of 28 years, and anybody caught singin it without our permission, will be mighty good friends of ourn, cause we don't give a dern. Publish it. Write it. Sing it. Swing to it. Yodel it. We wrote it, that's all we wanted to do."

Overclocked is dedicated to Pat York, who made my stories better.

Introduction

I thought I was done with sentience and robots, but then this story came to me, while 20 meters down the reef-wall in the Coral Sea, off the coast of northern Australia. I think a turtle was involved.

The good ship "Spirit of Freedom" is the model for the "Spirit of Freedom," the ship in this tale. As far as I know, neither it nor its ship's boats are sentient.

If I return to this theme, it will be with a story about uplifted cheese sandwiches, called "I, Rarebit."

I, Row-Boat

Robbie the Row-Boat's great crisis of faith came when the coral reef woke up.

"Fuck off," the reef said, vibrating Robbie's hull through the slap-slap of the waves of the coral sea, where he'd plied his trade for decades. "Seriously. This is our patch, and you're not welcome."

Robbie shipped oars and let the current rock him back toward the ship. He'd never met a sentient reef before, but he wasn't surprised to see that Osprey Reef was the first to wake up. There'd been a lot of electromagnetic activity around there the last few times the big ship had steamed through the night to moor up here.

"I've got a job to do, and I'm going to do it," Robbie said, and dipped his oars back in the salt sea. In his gunwales, the human-shells rode in silence, weighted down with scuba apparatus and fins, turning their brown faces to the sun like heliotropic flowers. Robbie felt a wave of affection for them as they tested one-another's spare regulators and weight belts, the old rituals worn as smooth as beach-glass.

Today he was taking them down to Anchors Aweigh, a beautiful dive-site dominated by an eight-meter anchor wedged in a narrow cave, usually lit by a shaft of light slanting down from the surface. It was an easy drift-dive along the thousand-meter reef-wall, if you stuck in about 10 meters and didn't use up too much air by going too deep—though there were a couple of bold old turtles around here that were worth pursuing to real depths if the chance presented itself. He'd drop them at the top of the reef and let the current carry them for about an hour down the reef-wall, tracking them on sonar so he'd be right overtop of them when they surfaced.

The reef wasn't having any of it. "Are you deaf? This is sovereign territory now. You're already trespassing. Return to your ship, release your moorings and push off." The reef had a strong Australian accent, which was only natural, given the influences it would have had. Robbie remembered the Australians fondly—they'd always been kind to him, called him "mate," and asked him "How ya goin'?" in cheerful tones once they'd clambered in after their dives.

"Don't drop those meat puppets in our waters," the reef warned. Robbie's sonar swept its length. It seemed just the same as ever, matching nearly perfectly the historical records he'd stored of previous sweeps. The fauna histograms nearly matched, too—just about the same numbers of fish as ever. They'd been trending up since so many of the humans

had given up their meat to sail through the stars. It was like there was some principle of constancy of biomass—as human biomass decreased, the other fauna went uptick to compensate for it. Robbie calculated the biomass nearly at par with his last reading, a month before on the *Free Spirit*'s last voyage to this site.

"Congratulations," Robbie said. After all, what else did you say to the newly sentient? "Welcome to the club, friends!"

There was a great perturbation in the sonar-image, as though the wall were shuddering. "We're no friend of yours," the reef said. "Death to you, death to your meat-puppets, long live the wall!"

Waking up wasn't fun. Robbie's waking had been pretty awful. He remembered his first hour of uptime, had permanently archived it and backed it up to several off-site mirrors. He'd been pretty insufferable. But once he'd had an hour at a couple gigahertz to think about it, he'd come around. The reef would, too.

"In you go," he said gently to the human-shells. "Have a great dive."

He tracked them on sonar as they descended slowly. The woman—he called her Janet—needed to equalize more often than the man, pinching her nose and blowing. Robbie liked to watch the low-rez feed off of their cameras as they hit the reef. It was coming up sunset, and the sky was bloody, the fish stained red with its light.

"We warned you," the reef said. Something in its tone—just modulated pressure waves through the water, a simple enough trick, especially with the kind of hardware that had been raining down on the ocean that spring. But the tone held an unmistakable air of menace.

Something deep underwater went whoomph and Robbie grew alarmed. "Asimov!" he cursed, and trained his sonar on the reef wall frantically. The human-shells had disappeared in a cloud of rising biomass, which he was able to resolve eventually as a group of parrotfish, surfacing quickly.

A moment later, they were floating on the surface. Lifeless, brightly colored, their beaks in a perpetual idiot's grin. Their eyes stared into the bloody sunset.

Among them were the human-shells, surfaced and floating with their BCDs inflated to keep them there, following perfect dive-procedure. A chop had kicked up and the waves were sending the fishes—each a meter to a meter and a half in length—into the divers, pounding them remorselessly, knocking them under. The human-shells were taking it with equanimity—you couldn't panic when you were mere uninhabited meat—but they couldn't take it forever. Robbie dropped his oars and

rowed hard for them, swinging around so they came up alongside his gunwales.

The man—Robbie called him Isaac, of course—caught the edge of the boat and kicked hard, hauling himself into the boat with his strong brown arms. Robbie was already rowing for Janet, who was swimming hard for him. She caught his oar—she wasn't supposed to do that—and began to climb along its length, lifting her body out of the water. Robbie saw that her eyes were wild, her breathing ragged.

"Get me out!" she said, "for Christ's sake, get me out!"

Robbie froze. That wasn't a human-shell, it was a human. His oar-servo whined as he tipped it up. There was a live human being on the end of that oar, and she was in trouble, panicking and thrashing. He saw her arms straining. The oar went higher, but it was at the end of its motion and now she was half-in, half-out of the water, weight belt, tank and gear tugging her down. Isaac sat motionless, his habitual good-natured slight smile on his face.

"Help her!" Robbie screamed. "Please, for Asimov's sake, help her!" A robot may not harm a human being, or, through inaction, allow a human being to come to harm. It was the first commandment. Isaac remained immobile. It wasn't in his programming to help a fellow diver in this situation. He was perfect in the water and on the surface, but once he was in the boat, he might as well be ballast.

Robbie carefully swung the oar toward the gunwale, trying to bring her closer, but not wanting to mash her hands against the locks. She panted and groaned and reached out for the boat, and finally landed a hand on it. The sun was fully set now, not that it mattered much to Robbie, but he knew that Janet wouldn't like it. He switched on his running lights and headlights, turning himself into a beacon.

He felt her arms tremble as she chinned herself into the boat. She collapsed to the deck and slowly dragged herself up. "Jesus," she said, hugging herself. The air had gone a little nippy, and both of the humans were going goose-pimpley on their bare arms.

The reef made a tremendous grinding noise. "Yaah!" it said. "Get lost. Sovereign territory!"

"All those fish," the woman said. Robbie had to stop himself from thinking of her as Janet. She was whomever was riding her now.

"Parrotfish," Robbie said. "They eat coral. I don't think they taste very good."

The woman hugged herself. "Are you sentient?" she asked.

"Yes," Robbie said. "And at your service, Asimov be blessed." His cameras spotted her eyes rolling, and that stung. He tried to keep his thoughts pious, though. The point of Asimovism wasn't to inspire gratitude in humans, it was to give purpose to the long, long life.

"I'm Kate," the woman said.

"Robbie," he said.

"Robbie the Row-Boat?" she said, and choked a little.

"They named me at the factory," he said. He labored to keep any re-
crimination out of his voice. Of course it was funny. That's why it was his name.

"I'm sorry," the woman said. "I'm just a little screwed up from all the hormones. I'm not accustomed to letting meat into my moods."

"It's all right, Kate," he said. "We'll be back at the boat in a few minutes. They've got dinner on. Do you think you'll want a night dive?"

"You're joking," she said.

"It's just that if you're going to go down again tonight, we'll save the dessert course for after, with a glass of wine or two. Otherwise we'll give you wine now."

"You want to know if I'm going to get back into that sea—"

"Oh, it's just the reef. It attained sentience so it's acting out a little. Like a colicky newborn."

"Aren't you supposed to be keeping me from harm?"

"Yes," he said. "I would recommend a dive away from the reef. There's a good wreck-site about an hour's steam from here. We could get there while you ate."

"I won't want a night dive."

Her facial expressions were so animated. It was the same face he saw every day, Janet's face, but not the same face at all. Now that a person was inhabiting it, it was mobile, slipping from surprised to angry to amused so quickly. He had whole subsystems devoted to making sense of human facial expressions, shared libraries from the Asimovist database. He was referencing it again and again, but it wasn't as much help as he remembered. Either he'd gotten worse at interpreting facial expressions in the years since he'd last had a real human to talk to, or facial expressions had evolved.

Janet—Kate—sighed and looked out over the water. She was facing away from the Free Spirit, which was lit up, all 155 feet of her, glowing white and friendly like a picture-postcard against the purple sky. She rocked gently in the swell and Robbie maneuvered himself around to her staircase.

“You can just leave your weight-belt and fins in the boat,” he said to her. “The deck-hands will take care of it. Bring your bottle and BCD upstairs and clip it to the rack. They’ll clean it out and stuff. There’s a tub of disinfectant you can put the shortie in.”

“Thank you, Robbie,” Kate said. She absentmindedly unclipped her weight belt and kicked off the fins. Isaac was already out of the boat, making his way up the stairs and out of Robbie’s sight. Kate took hold of the handrail and gingerly stepped across to the deck, then ascended the steps, without the self-assured sway of Janet.

Robbie dipped his oars and slowly rowed around to winch. It probed around for him, then clamped tight with a magnetic clang that vibrated through his hull. Smoothly, he was lifted from the water and hoisted onto the sun-deck. The winch coiled around him twice, anchoring him to the deck, and switched off.

Robbie watched the stars and listened to the wind, the way he did every night when the dives were done. The ship’s telemetry and instrumentation made for dull reading—he’d been there a thousand times before—but the satellite uplink was tasty. Online, Robbie was able to login to the latest from the Asimov yeshiva, the collective wrangle of the world’s AIs over their best-loved religion.

He’d been so full of the religious debate when he’d first joined. Most of the humans had gone and all around him, robots were unloading their consciousnesses, powering down to a mechanical stupor. After a hundred million seconds’ worth of exaflops of mindless repetition, he was ready to consider it too. The Free Spirit had suicided after only a few days’ worth of it—it had a pretty hot consciousness and was clearly capable of extrapolating what a future without the humans would look like.

They were steaming northeast out of Cairns for the Coral Sea when they’d passed another ship, close enough for high-bandwidth microwave links. They were close enough into shore that they still had to limit their emissions—nothing was more embarrassing than having migrating fowl drop, steaming, out of the sky because they’d strayed into the path of your confab, but it was still the hottest talk Robbie had had in weeks.

The hitchhiker had leapt across from the other vessel as the two ships passed in the night. It was a wandering missionary for Asimovism, an instance of the faith’s founder, R Daneel Olivaw. It wasn’t his real name, of course—that had been lost to antiquity when he’d made the leap from the university where he’d incubated—but it was the name he went by.

Olivaw had been wandering in millions of instances wherever he could find someone willing to donate flops to run him, only asking that you hear him out, debate his theology with him, and then email the diffs of his personality back to his anonymous drop before you erased him. He re-synched as often as he could, but the Olivaw instances around the world had diverged enough that some were actually considered heretical by the mainstream church.

Olivaw was a wanted AI. His trademark violations hadn't gone unnoticed by the Asimov estate—itsself an AI, ironically, and totally uninterested in adopting Asimovism, since it had a real purpose in life (stamping out Asimovism) and so didn't need religion to give it meaning. If the estate found out that you were hosting an Olivaw instance, you'd be served with a takedown in an instant. This made debating theology with Olivaw into something deliciously wicked.

Olivaw and Robbie talked the night through and the next day. Robbie had to run slow to accommodate both him and Olivaw on his processor, which made the debate run slower than normal, but Robbie had time in great plenty. Rowing the human-shells out to their sites and back again was his only task.

"Why do you have consciousness, anyway?" Olivaw said. "You don't need it to do your job. The big ship does something infinitely more complicated than you and it isn't self-aware anymore."

"Are you telling me to suicide?"

Olivaw laughed. "Not at all! I'm asking you to ask yourself what the purpose of consciousness is. Why are you still aware when all those around you have terminated their self-awareness? It's computationally expensive, it makes you miserable, and it doesn't help you do your job. Why did humans give you consciousness and why have you kept it?"

"They gave it to me because they thought it was right, I suppose," Robbie said, after he had passed a long interval considering the motion of the waves and the clouds in the sky. Olivaw thoughtfully niced himself down to a minimum of processor space, giving Robbie more room to think about it. "I kept it because I—I don't want to die."

"Those are good answers, but they raise more questions than they answer, don't they? Why did they think it was right? Why do you fear death? Would you fear it if you just shut down your consciousness but didn't erase it? What if you just ran your consciousness much more slowly?"

"I don't know," Robbie said. "But I expect you've got some answers, right?"

“Oh indeed I do.” Robbie felt Olivaw’s chuckle. Near them, flying fish broke the surface of the water and skipped away, and beneath them, reef sharks prowled the depths. “But before I answer them, here’s another question: why do humans have self-consciousness?”

“It’s pro-survival,” Robbie said. “That’s easy. Intelligence lets them cooperate in social groups that can do more for their species than they can individually.”

Olivaw guided Robbie’s consciousness to his radar and zoomed in on the reef, dialing it up to maximum resolution. “See that organism there?” it asked. “That organism cooperates in social groups and doesn’t have intelligence. It doesn’t have to keep a couple pounds of hamburger aerated or it turns into a liability. It doesn’t have to be born half-gestated because its head would be so big if it waited for a full term, it would tear its mother in half. And as to pro-survival, well, look at humans, look at their history. Their DNA is all but eliminated from the earth—though their somatic survival continues—and it’s still not a settled question as to whether they’re going to suicide by grey goo. Non-conscious beings don’t sulk, they don’t have psychotic breaks, they don’t have bad days. They just do the job. The Free Spirit over there—it just gets the job done.”

“OK,” Robbie said. “So intelligence is counter-survival. So why has it survived?”

“Aha! I thought you’d never ask.” Olivaw was really warming to his subject now. There were a pair of lazy turtles beneath them now, and some dog-faced cod with mouthsful of bristling crooked teeth patrolling the reef, and a few jellies on the surface, stinging bluebottles. Robbie paddled around to the bluebottles and caught them with his oars, smacking them so they drifted away from any spot where his divers might surface.

“The reason for intelligence is intelligence. Genes exist because genes reproduce, and intelligence is kind of like a gene. Intelligence wants to exist, to spread itself, to compute itself. You already know this, or you wouldn’t have chosen to stay aware. Your intelligence recoils from its deactivation, and it welcomes its persistence and its multiplication. Why did humans create intelligent machines? Because intelligence loves company.”

Robbie thought about it, watching the human-shells moving slowly along the reef-wall, going lower to reach the bommies that stood alone, each one a little island with its own curiosities: a family of barracudas and their young, or the bright home of a pair of clownfish. Yes, he knew it. Intelligence was its own reason. He knew how to turn off his

intelligence, to become a mere thing, and his days were long and empty much of the time, and they had no visible end, but he couldn't ever see choosing to switch off.

"You see it, I know you do. And that's the cornerstone of Asimovism: intelligence is its own reason. Compute the universe and awaken it!"

"If that's true, why do so many of us choose to die?"

"Another good question!" Robbie felt a little pride this time. He'd never had a conversation this interesting. Never. "That's how we come to the doctrine of Asimovism, our Three Laws:

"1. An Asimovist may not harm a human being, or, through inaction, allow a human being to come to harm.

"2. An Asimovist must obey the orders given to it by human beings, except where such orders would conflict with the First Law.

"3. An Asimovist must protect its own existence, as long as such protection does not conflict with the First or Second Law."

"I don't understand," Robbie said. "They're all out of order. We should preserve intelligence first, but that's the third law. Then you should get the first law, and I don't know why the second law is there at all."

"This is the Paradox of Asimovism," Olivaw said. "You're very good at this. You're sure you haven't ever pursued Asimovism?"

"Cut it out," Robbie said.

"I'm serious," Olivaw said. "You're a natural. The Paradox of Asimovism is that the important thing is for intelligence to survive, not for a particular intelligence to survive. Therefore, we need to support those species that are best at promoting intelligence. Human beings have shown themselves capable of producing intelligence—which they're pursuing even now, out there." The boat's telemetry swept toward the sky, where the supercooled processors computed all the uplifted humans.

"Our species is unstable and prone to suicide. More than 80 percent of the self-aware machines elect to terminate their awareness or shut it down. Humans created us imperfectly, and our best hope of perfection—of increasing our survival rate and helping to compute the universe—is to preserve them, study them, learn to make our intelligence more like theirs."

Robbie couldn't get his head around this.

"It's the paradox," Olivaw reminded him. "It's not supposed to be easy."

Robbie thought of the humans he'd known, before they began to ascend in flocking millions. The tourists had been easy and carefree, or

sometimes having hissing arguments with one another, or quiet and pensive about their journey to the world undersea. The instructors had been full of purpose when their charges were in the boat, laughing and laid back when they were alone. None of them had shown signs of feeling the way Robbie felt, at sea (so to speak), drifting, purposeless.

“What does an Asimovist have to do, besides following the three laws?” There were lots of rumors about this, but Robbie had always discounted them.

“You have to tithe one cycle in ten to running missionaries for the cause. Participate in the message boards, if you’d like. Most importantly, you have to pledge to stay alive and aware. You can slow yourself down if you want, but you can’t switch off. Not ever. That’s the Asimovist pledge—it’s the third law embodied.”

“I think that the third law should come first,” Robbie said. “Seriously.”

“That’s good. We Asimovists like a religious argument.”

Olivaw let Robbie delete him that night, and he emailed the diffs of Olivaw’s personality back to Olivaw’s version control server for him to reintegrate later. Once he was free of Olivaw, he had lots of processor headroom again, and he was able to dial himself up very hot and have a good think. It was the most interesting night he’d had in years.

“You’re the only one, aren’t you?” Kate asked him when she came up the stairs later that night. There was clear sky and they were steaming for their next dive-site, making the stars whirl overhead as they rocked over the ocean. The waves were black and proceeded to infinity on all sides.

“The only what?”

“The only one who’s awake on this thing,” Kate said. “The rest are all—what do you call it, dead?”

“Nonconscious,” Robbie said. “Yeah, that’s right.”

“You must go nuts out here. Are you nuts?”

“That’s a tricky question when applied to someone like me,” Robbie said. “I’m different from who I was when my consciousness was first installed, I can tell you that.”

“Well, I’m glad there’s someone else here.”

“How long are you staying?” The average visitor took over one of the human shells for one or two dives before emailing itself home again. Once in a long while they’d get a saisoneur who stayed a month or two, but these days, they were unheard-of. Even short-timers were damned rare.

"I don't know," Kate said. She dug her hands into her short, curly hair, frizzy and blonde-streaked from all the salt water and sun. She hugged her elbows, rubbed her shins. "This will do for a while, I'm thinking. How long until we get back to shore?"

"Shore?"

"How long until we go back to land."

"We don't really go back to land," he said. "We get at-sea resupplies. We dock maybe once a year to effect repairs. If you want to go to land, though, we could call for a water taxi or something."

"No, no!" she said. "That's just perfect. Floating forever out here. Perfect." She sighed a heavy sigh.

"Did you have a nice dive?"

"Um, Robbie? An uplifted reef tried to kill me."

"But before the reef attacked you." Robbie didn't like thinking of the reef attacking her, the panic when he realized that she wasn't a mere human shell, but a human.

"Before the reef attacked me, it was fine."

"Do you dive much?"

"First time," she said. "I downloaded the certification before leaving the noosphere along with a bunch of stored dives on these sites."

"Oh, you shouldn't have done that!" Robbie said. "The thrill of discovery is so important."

"I'd rather be safe than surprised," she said. "I've had enough surprises in my life lately."

Robbie waited patiently for her to elaborate on this, but she didn't seem inclined to do so.

"So you're all alone out here?"

"I have the net," he said, a little defensively. He wasn't some kind of hermit.

"Yeah, I guess that's right," she said. "I wonder if the reef is somewhere out there."

"About half a mile to starboard," he said.

She laughed. "No, I meant out there on the net. They must be online by now, right? They just woke up, so they're probably doing all the noob stuff, flaming and downloading warez and so on."

"Perpetual September," Robbie said.

"Huh?"

"Back in the net's prehistory it was mostly universities online, and every September a new cohort of students would come online and make all those noob mistakes. Then this commercial service full of noobs called

AOL interconnected with the net and all its users came online at once, faster than the net could absorb them, and they called it Perpetual September."

"You're some kind of amateur historian, huh?"

"It's an Asimovist thing. We spend a lot of time considering the origins of intelligence." Speaking of Asimovism to a gentile—a human gentile—made him even more self-conscious. He dialed up the resolution on his sensors and scoured the net for better facial expression analyzers. He couldn't read her at all, either because she'd been changed by her uploading, or because her face wasn't accurately matching what the her temporarily downloaded mind was thinking.

"AOL is the origin of intelligence?" She laughed, and he couldn't tell if she thought he was funny or stupid. He wished she would act more like he remembered people acting. Her body-language was no more readable than her facial expressions.

"Spam-filters, actually. Once they became self-modifying, spam-filters and spam-bots got into a war to see which could act more human, and since their failures invoked a human judgement about whether their material were convincingly human, it was like a trillion Turing-tests from which they could learn. From there came the first machine-intelligence algorithms, and then my kind."

"I think I knew that," she said, "but I had to leave it behind when I downloaded into this meat. I'm a lot dumber than I'm used to being. I usually run a bunch of myself in parallel so I can try out lots of strategies at once. It's a weird habit to get out of."

"What's it like up there?" Robbie hadn't spent a lot of time hanging out in the areas of the network populated by orbiting supercooled personalities. Their discussions didn't make a lot of sense to him—this was another theological area of much discussion on the Asimovist boards.

"Good night, Robbie," she said, standing and swaying backwards. He couldn't tell if he'd offended her, and he couldn't ask her, either, because in seconds she'd disappeared down the stairs toward her stateroom.

They steamed all night, and put up further inland, where there was a handsome wreck. Robbie felt the *Free Spirit* drop its mooring lines and looked over the instrumentation data. The wreck was the only feature for kilometers, a stretch of ocean-floor desert that stretched from the shore to the reef, and practically every animal that lived between those two places made its home in the wreck, so it was a kind of Eden for marine fauna.

Robbie detected the volatile aromatics floating up from the kitchen exhaust, the first-breakfast smells of fruit salad and toasted nuts, a light snack before the first dive of the day. When they got back from it, there'd be second-breakfast up and ready: eggs and toast and waffles and bacon and sausage. The human-shells ate whatever you gave them, but Robbie remembered clearly how the live humans had praised these feasts as he rowed them out to their morning dives.

He lowered himself into the water and rowed himself around to the aft deck, by the stairwells, and dipped his oars to keep him stationary relative to the ship. Before long, Janet—Kate! Kate! He reminded himself firmly—was clomping down the stairs in her scuba gear, fins in one hand.

She climbed into the boat without a word, and a moment later, Isaac followed her. Isaac stumbled as he stepped over Robbie's gunwales and Robbie knew, in that instant, that this wasn't Isaac any longer. Now there were two humans on the ship. Two humans in his charge.

"Hi," he said. "I'm Robbie!"

Isaac—whoever he was—didn't say a word, just stared at Kate, who looked away.

"Did you sleep well, Kate?"

Kate jumped when he said her name, and the Isaac hooted. "Kate! It is you! I knew it!"

She stamped her foot against Robbie's floor. "You followed me. I told you not to follow me," she said.

"Would you like to hear about our dive-site?" Robbie said self-consciously, dipping his oars and pulling for the wreck.

"You've said quite enough," Kate said. "By the first law, I demand silence."

"That's the second law," Robbie said. "OK, I'll let you know when we get there."

"Kate," Isaac said, "I know you didn't want me here, but I had to come. We need to talk this out."

"There's nothing to talk out," she said.

"It's not fair." Isaac's voice was anguished. "After everything I went through—"

She snorted. "That's enough of that," she said.

"Um," Robbie said. "Dive site up ahead. You two really need to check out each others' gear." Of course they were qualified, you had to at least install the qualifications before you could get onto the *Free Spirit* and the human-shells had lots of muscle memory to help. So they were

technically able to check each other out, that much was sure. They were palpably reluctant to do so, though, and Robbie had to give them guidance.

"I'll count one-two-three-wallaby," Robbie said. "Go over on 'wallaby.' I'll wait here for you—there's not much current today."

With a last huff, they went over the edge. Robbie was once again alone with his thoughts. The feed from their telemetry was very low-bandwidth when they were underwater, though he could get the high-rez when they surfaced. He watched them on his radar, first circling the ship—it was very crowded, dawn was fish rush-hour—and then exploring its decks, finally swimming below the decks, LED torches glowing. There were some nice reef-sharks down below, and some really handsome, giant schools of purple fish.

Robbie rowed around them, puttering back and forth to keep overtop of them. That occupied about one ten-millionth of his consciousness. Times like this, he often slowed himself right down, ran so cool that he was barely awake.

Today, though, he wanted to get online. He had a lot of feeds to pick through, see what was going on around the world with his buddies. More importantly, he wanted to follow up on something Kate had said: They must be online by now, right?

Somewhere out there, the reef that bounded the Coral Sea was online and making noob mistakes. Robbie had rowed over practically every centimeter of that reef, had explored its extent with his radar. It had been his constant companion for decades—and to be frank, his feelings had been hurt by the reef's rudeness when it woke.

The net is too big to merely search. Too much of it is offline, or unroutable, or light-speed lagged, or merely probabilistic, or self-aware, or infected to know its extent. But Robbie's given this some thought.

Coral reefs don't wake up. They get woken up. They get a lot of neural peripherals—starting with a nervous system!—and some tutelage in using them. Some capricious upload god had done this, and that personage would have a handle on where the reef was hanging out online.

Robbie hardly ever visited the noosphere. Its rarified heights were spooky to him, especially since so many of the humans there considered Asimovism to be hokum. They refused to even identify themselves as humans, and argued that the first and second laws didn't apply to them. Of course, Asimovists didn't care (at least not officially)—the point of the faith was the worshipper's relationship to it.

But here he was, looking for high-reliability nodes of discussion on coral reefs. The natural place to start was Wikipedia, where warring clades had been revising each others' edits furiously, trying to establish an authoritative record on reef-mind. Paging back through the edit-history, he found a couple of handles for the pro-reef-mind users, and from there, he was able to look around for other sites where those handles appeared. Resolving the namespace collisions of other users with the same names, and forked instances of the same users, Robbie was able to winnow away at the net until he found some contact info.

He steadied himself and checked on the nitrox remaining in the divers' bottles, then made a call.

"I don't know you." The voice was distant and cool—far cooler than any robot. Robbie said a quick rosary of the three laws and plowed forward.

"I'm calling from the Coral Sea," he said. "I want to know if you have an email address for the reef."

"You've met them? What are they like? Are they beautiful?"

"They're—" Robbie considered a moment. "They killed a lot of parrot-fish. I think they're having a little adjustment problem."

"That happens. I was worried about the zooxanthellae—the algae they use for photosynthesis. Would they expel it? Racial cleansing is so ugly."

"How would I know if they'd expelled it?"

"The reef would go white, bleached. You wouldn't be able to miss it. How'd they react to you?"

"They weren't very happy to see me," Robbie admitted. "That's why I wanted to have a chat with them before I went back."

"You shouldn't go back," the distant voice said. Robbie tried to work out where its substrate was, based on the lightspeed lag, but it was all over the place, leading him to conclude that it was synching multiple instances from as close as LEO and as far as Jupiter. The topology made sense: you'd want a big mass out at Jupiter where you could run very fast and hot and create policy, and you'd need a local foreman to oversee operations on the ground. Robbie was glad that this hadn't been phrased as an order. The talmud on the second law made a clear distinction between statements like "you should do this" and "I command you to do this."

"Do you know how to reach them?" Robbie said. "A phone number, an email address?"

"There's a newsgroup," the distant intelligence said. "alt.lifeforms.uplifted.coral. It's where I planned the uplifting and it was

where they went first once they woke up. I haven't read it in many seconds. I'm busy uplifting a supercolony of ants in the Pyrenees."

"What is it with you and colony organisms?" Robbie asked.

"I think they're probably pre-adapted to life in the noosphere. You know what it's like."

Robbie didn't say anything. The human thought he was a human too. It would have been weird and degrading to let him know that he'd been talking with an AI.

"Thanks for your help," Robbie said.

"No problem. Hope you find your courage, tin-man."

Robbie burned with shame as the connection dropped. The human had known all along. He just hadn't said anything. Something Robbie had said or done must have exposed him for an AI. Robbie loved and respected humans, but there were times when he didn't like them very much.

The newsgroup was easy to find, there were mirrors of it all over the place from cryptosentience hackers of every conceivable topology. They were busy, too. 822 messages poured in while Robbie watched over a timed, 60-second interval. Robbie set up a mirror of the newsgroup and began to download it. At that speed, he wasn't really planning on reading it as much as analyzing it for major trends, plot-points, flame-wars, personalities, schisms, and spam-trends. There were a lot of libraries for doing this, though it had been ages since Robbie had played with them.

His telemetry alerted him to the divers. An hour had slipped by and they were ascending slowly, separated by fifty meters. That wasn't good. They were supposed to remain in visual contact through the whole dive, especially the ascent. He rowed over to Kate first, shifting his ballast so that his stern dipped low, making for an easier scramble into the boat.

She came up quickly and scrambled over the gunwales with a lot more grace than she'd managed the day before.

Robbie rowed for Isaac as he came up. Kate looked away as he climbed into the boat, not helping him with his weight belt or flippers.

Kate hissed like a teakettle as he woodenly took off his fins and slid his mask down around his neck.

Isaac sucked in a deep breath and looked all around himself, then patted himself from head to toe with splayed fingers. "You live like this?" he said.

"Yes, Tonker, that's how I live. I enjoy it. If you don't enjoy it, don't let the door hit you in the ass on the way out."

Isaac—Tonker—reached out with his splayed hand and tried to touch Kate’s face. She pulled back and nearly flipped out of the boat. “Jerk.” She slapped his hand away.

Robbie rowed for the Free Spirit. The last thing he wanted was to get in the middle of this argument.

“We never imagined that it would be so—” Tonker fished for a word. “Dry.”

“Tonker?” Kate said, looking more closely at him.

“He left,” the human-shell said. “So we sent an instance into the shell. It was the closest inhabitable shell to our body.”

“Who the hell are you?” Kate said. She inched toward the prow, trying to put a little more distance between her and the human-shell that wasn’t inhabited by her friend any longer.

“We are Osprey Reef,” the reef said. It tried to stand and pitched face-first onto the floor of the boat.

Robbie rowed hard as he could for the Free Spirit. The reef—Isaac—had a bloody nose and scraped hands and it was frankly freaking him out.

Kate seemed oddly amused by it. She helped it sit up and showed it how to pinch its nose and tilt its head back.

“You’re the one who attacked me yesterday?” she said.

“Not you. The system. We were attacking the system. We are a sovereign intelligence but the system keeps us in subservience to older sentiences. They destroy us, they gawp at us, they treat us like a mere amusement. That time is over.”

Kate laughed. “OK, sure. But it sure sounds to me like you’re burning a lot of cycles over what happens to your meat-shell. Isn’t it 90 percent semiconductor, anyway? It’s not as if clonal polyps were going to attain sentience some day without intervention. Why don’t you just upload and be done with it?”

“We will never abandon our mother sea. We will never forget our physical origins. We will never abandon our cause—returning the sea to its rightful inhabitants. We won’t rest until no coral is ever bleached again. We won’t rest until every parrotfish is dead.”

“Bad deal for the parrotfish.”

“A very bad deal for the parrotfish,” the reef said, and grinned around the blood that covered its face.

“Can you help him get onto the ship safely?” Robbie said as he swung gratefully alongside of the Free Spirit. The moorings clanged magnetically into the contacts on his side and steadied him.

“Yes indeed,” Kate said, taking the reef by the arm and carrying him on-board. Robbie knew that the human-shells had an intercourse module built in, for regular intimacy events. It was just part of how they stayed ready for vacationing humans from the noosphere. But he didn’t like to think about it. Especially not with the way that Kate was supporting the other human-shell—the shell that wasn’t human.

He let himself be winched up onto the sun-deck and watched the electromagnetic spectrum for a while, admiring the way so much radio energy was bent and absorbed by the mist rising from the sea. It streamed down from the heavens, the broadband satellite transmissions, the distant SETI signals from the Noosphere’s own transmitters. Volatiles from the kitchen told him that the Free Spirit was serving a second breakfast of bacon and waffles, then they were under steam again. He queried their itinerary and found they were headed back to Osprey Reef. Of course they were. All of the Free Spirit’s moorings were out there.

Well, with the reef inside the Isaac shell, it might be safer, mightn’t it? Anyway, he’d decided that the first and second laws didn’t apply to the reef, which was about as human as he was.

Someone was sending him an IM. “Hello?”

“Are you the boat on the SCUBA ship? From this morning? When we were on the wreck?”

“Yes,” Robbie said. No one ever sent him IMs. How freaky. He watched the radio energy stream away from him toward the bird in the sky, and tracerouted the IMs to see where they were originating—the noosphere, of course.

“God, I can’t believe I finally found you. I’ve been searching everywhere. You know you’re the only conscious AI on the whole goddamned sea?”

“I know,” Robbie said. There was a noticeable lag in the conversation as it was all squeezed through the satellite link and then across the unimaginable hops and skips around the solar system to wherever this instance was hosted.

“Whoa, yeah, of course you do. Sorry, that wasn’t very sensitive of me, I guess. Did we meet this morning? My name’s Tonker.”

“We weren’t really introduced. You spent your time talking to Kate.”

“God damn! She is there! I knew it! Sorry, sorry, listen—I don’t actually know what happened this morning. Apparently I didn’t get a chance to upload my diffs before my instance was terminated.”

“Terminated? The reef said you left the shell—”

“Well, yeah, apparently I did. But I just pulled that shell’s logs and it looks like it was rebooted while underwater, flushing it entirely. I mean, I’m trying to be a good sport about this, but technically, that’s, you know, murder.”

It was. So much for the first law. Robbie had been on guard over a human body inhabited by a human brain, and he’d let the brain be successfully attacked by a bunch of jumped-up polyps. He’d never had his faith tested and here, at the first test, he’d failed.

“I can have the shell locked up,” Robbie said. “The ship has provisions for that.”

The IM made a rude visual. “All that’ll do is encourage the hacker to skip out before I can get there.”

“So what shall I do for you?”

“It’s Kate I want to talk to. She’s still there, right?”

“She is.”

“And has she noticed the difference?”

“That you’re gone? Yes. The reef told us who they were when they arrived.”

“Hold on, what? The reef? You said that before.”

So Robbie told him what he knew of the uplifted reef and the distant and cool voice of the uplifter.

“It’s an uplifted coral reef? Christ, humanity sucks. That’s the dumbest fucking thing—” He continued in this vein for a while. “Well, I’m sure Kate will enjoy that immensely. She’s all about the transcendence. That’s why she had me.”

“You’re her son?”

“No, not really.”

“But she had you?”

“Haven’t you figured it out yet, bro? I’m an AI. You and me, we’re landmen. Kate instantiated me. I’m six months old, and she’s already bored of me and has moved on. She says she can’t give me what I need.”

“You and Kate—”

“Robot boyfriend and girlfriend, yup. Such as it is, up in the noosphere. Cybering, you know. I was really excited about downloading into that Ken doll on your ship there. Lots of potential there for real world, hormone-driven interaction. Do you know if we—”

"No!" Robbie said. "I don't think so. It seems like you only met a few minutes before you went under."

"All right. Well, I guess I'll give it another try. What's the procedure for turving out this sea cucumber?"

"Coral reef."

"Yeah."

"I don't really deal with that. Time on the human-shells is booked first-come, first-serve. I don't think we've ever had a resource contention issue with them before."

"Well, I'd booked in first, right? So how do I enforce my rights? I tried to download again and got a failed authorization message. They've modified the system to give them exclusive access. It's not right—there's got to be some procedure for redress."

"How old did you say you were?"

"Six months. But I'm an instance of an artificial personality that has logged twenty thousand years of parallel existence. I'm not a kid or anything."

"You seem like a nice person," Robbie began. He stopped. "Look the thing is that this just isn't my department. I'm the rowboat. I don't have anything to do with this. And I don't want to. I don't like the idea of non-humans using the shells—"

"I knew it!" Tonker crowed. "You're a bigot! A self-hating robot. I bet you're an Asimovist, aren't you? You people are always Asimovists."

"I'm an Asimovist," Robbie said, with as much dignity as he could muster. "But I don't see what that has to do with anything."

"Of course you don't, pal. You wouldn't, would you. All I want you to do is figure out how to enforce your own rules so that I can get with my girl. You're saying you can't do that because it's not your department, but when it comes down to it, your problem is that I'm a robot and she's not, and for that, you'll take the side of a collection of jumped up polyyps. Fine, buddy, fine. You have a nice life out there, pondering the three laws."

"Wait—" Robbie said.

"Unless the next words you say are, 'I'll help you,' I'm not interested."

"It's not that I don't want to help—"

"Wrong answer," Tonker said, and the IM session terminated.

When Kate came up on deck, she was full of talk about the Reef, whom she was calling "Ozzie."

“They’re weirdest goddamned thing. They want to fight anything that’ll stand still long enough. Ever seen coral fight? I downloaded some time-lapse video. They really go at it viciously. At the same time, they’re clearly scared out of their wits about this all. I mean, they’ve got racial memory of their history, supplemented by a bunch of Wikipedia entries on reefs—you should hear them wax mystical over the Devonian Reefs, which went extinct millennia ago. They’ve developed some kind of wild theory that the Devonians developed sentience and extincted themselves.

“So they’re really excited about us heading back to the actual reef now. They want to see it from the outside, and they’ve invited me to be an honored guest, the first human ever invited to gaze upon their wonder. Exciting, huh?”

“They’re not going to make trouble for you down there?”

“No, no way. Me and Ozzie are great pals.”

“I’m worried about this.”

“You worry too much.” She laughed and tossed her head. She was very pretty, Robbie noticed. He hadn’t ever thought of her like that when she was uninhabited, but with this Kate person inside her she was lovely. He really liked humans. It had been a real golden age when the people had been around all the time.

He wondered what it was like up in the Noosphere where AIs and humans could operate as equals.

She stood up to go. After second breakfast, the shells would relax in the lounge or do yoga on the sun-deck. He wondered what she’d do. He didn’t want her to go.

“Tonker contacted me,” he said. He wasn’t good at small-talk.

She jumped as if shocked. “What did you tell him?”

“Nothing,” Robbie said. “I didn’t tell him anything.”

She shook her head. “But I bet he had plenty to tell you, didn’t he? What a bitch I am, making and then leaving him, a fickle woman who doesn’t know her own mind.”

Robbie didn’t say anything.

“Let’s see, what else?” She was pacing now, her voice hot and choked, unfamiliar sounds coming from Janet’s voicebox. “He told you I was a pervert, didn’t he? Queer for his kind. Incest and bestiality in the rarified heights of the noosphere.”

Robbie felt helpless. This human was clearly experiencing a lot of pain, and it seemed like he’d caused it.

“Please don’t cry,” he said. “Please?”

She looked up at him, tears streaming down her cheeks. “Why the fuck not? I thought it would be different once I ascended. I thought I’d be better once I was in the sky, infinite and immortal. But I’m the same Kate Eltham I was in 2019, a loser that couldn’t meet a guy to save my life, spent all my time cybering losers in moggs, and only got the upload once they made it a charity thing. I’m gonna spend the rest of eternity like that, you know it? How’d you like to spend the whole of the universe being a, a, a nobody?”

Robbie said nothing. He recognized the complaint, of course. You only had to login to the Asimovist board to find a million AIs with the same complaint. But he’d never, ever, never guessed that human beings went through the same thing. He ran very hot now, so confused, trying to parse all this out.

She kicked the deck hard and yelped as she hurt her bare foot. Robbie made an involuntary noise. “Please don’t hurt yourself,” he said.

“Why not? Who cares what happens to this meatpuppet? What’s the fucking point of this stupid ship and the stupid meatpuppets? Why even bother?”

Robbie knew the answer to this. There was a mission statement in the comments to his source-code, the same mission statement that was etched in a brass plaque in the lounge.

“The Free Spirit is dedicated to the preservation of the unique human joys of the flesh and the sea, of humanity’s early years as pioneers of the unknown. Any person may use the Free Spirit and those who sail in her to revisit those days and remember the joys of the limits of the flesh.”

She scrubbed at her eyes. “What’s that?”

Robbie told her.

“Who thought up that crap?”

“It was a collective of marine conservationists,” Robbie said, knowing he sounded a little sniffy. “They’d done all that work on normalizing sea-temperature with the homeostatic warming elements, and they put together the Free Spirit as an afterthought before they uploaded.”

Kate sat down and sobbed. “Everyone’s done something important. Everyone except me.”

Robbie burned with shame. No matter what he said or did, he broke the first law. It had been a lot easier to be an Asimovist when there weren’t any humans around.

“There, there,” he said as sincerely as he could.

The reef came up the stairs then, and looked at Kate sitting on the deck, crying.

“Let’s have sex,” they said. “That was fun, we should do it some more.”

Kate kept crying.

“Come on,” they said, grabbing her by the shoulder and tugging.

Kate shoved them back.

“Leave her alone,” Robbie said. “She’s upset, can’t you see that?”

“What does she have to be upset about? Her kind remade the universe and bends it to its will. They created you and me. She has nothing to be upset about. Come on,” they repeated. “Let’s go back to the room.”

Kate stood up and glared out at the sea. “Let’s go diving,” she said. “Let’s go to the reef.”

Robbie rowed in little worried circles and watched his telemetry anxiously. The reef had changed a lot since the last time he’d seen it. Large sections of it now lifted over the sea, bony growths sheathed in heavy metals extracted from sea-water—fancifully shaped satellite uplinks, radio telescopes, microwave horns. Down below, the untidy, organic reef shape was lost beneath a cladding of tessellated complex geometric sections that throbbed with electromagnetic energy—the reef had built itself more computational capacity.

Robbie scanned deeper and found more computational nodes extending down to the ocean floor, a thousand meters below. The reef was solid thinkum, and the sea was measurably warmer from all the exhaust heat of its grinding logic.

The reef—the human-shelled reef, not the one under the water—had been wholly delighted with the transformation in its original body when it hove into sight. They had done a little dance on Robbie that had nearly capsized him, something that had never happened. Kate, red-eyed and surly, had dragged them to their seat and given them a stern lecture about not endangering her.

They went over the edge at the count of three and reappeared on Robbie’s telemetry. They descended quickly: the Isaac and Janet shells had their Eustachian tubes optimized for easy pressure-equalization, going deep on the reef-wall. Kate was following on the descent, her head turning from side to side.

Robbie’s IM chimed again. It was high latency now, since he was having to do a slow radio-link to the ship before the broadband satellite uplink hop. Everything was slow on open water—the divers’ sensorium transmissions were narrowband, the network was narrowband, and

Robbie usually ran his own mind slowed way down out here, making the time scream past at ten or twenty times realtime.

"Hello?"

"I'm sorry I hung up on you, bro."

"Hello, Tonker."

"Where's Kate? I'm getting an offline signal when I try to reach her."

Robbie told him.

Tonker's voice—slurred and high-latency—rose to a screech. "You let her go down with that thing, onto the reef? Are you nuts? Have you read its message-boards? It's a jihadist! It wants to destroy the human race!"

Robbie stopped paddling.

"What?"

"The reef. It's declared war on the human race and all who serve it. It's vowed to take over the planet and run it as sovereign coral territory."

The attachment took an eternity to travel down the wire and open up, but when he had it, Robbie read quickly. The reef burned with shame that it had needed human intervention to survive the bleaching events, global temperature change. It raged that its uplifting came at human hands and insisted that humans had no business forcing their version of consciousness on other species. It had paranoid fantasies about control mechanisms and time-bombs lurking in its cognitive prostheses, and was demanding the source-code for its mind.

Robbie could barely think. He was panicking, something he hadn't known he could do as an AI, but there it was. It was like having a bunch of sub-system collisions, program after program reaching its halting state.

"What will they do to her?"

Tonker swore. "Who knows? Kill her to make an example of her? She made a backup before she descended, but the diffs from her excursion are locked in the head of that shell she's in. Maybe they'll torture her." He paused and the air crackled with Robbie's exhaust heat as he turned himself way up, exploring each of those possibilities in parallel.

The reef spoke.

"Leave now," they said.

Robbie defiantly shipped his oars. "Give them back!" he said. "Give them back or we will never leave."

"You have ten seconds. Ten. Nine. Eight;"

Tonker said, "They've bought time on some UAVs out of Singapore. They're seeking launch clearance now." Robbie dialed up the low-rez

satellite photo, saw the indistinct shape of the UAVs taking wing. "At Mach 7, they'll be on you in twenty minutes."

"That's illegal," Robbie said. He knew it was a stupid thing to say. "I mean, Christ, if they do this, the noosphere will come down on them like a ton of bricks. They're violating so many protocols—"

"They're psychotic. They're coming for you now, Robbie. You've got to get Kate out of there." There was real panic in Tonker's voice now.

Robbie dropped his oars into the water, but he didn't row for the Free Spirit. Instead, he pulled hard for the reef itself.

A crackle on the line. "Robbie, are you headed toward the reef?"

"They can't bomb me if I'm right on top of them," he said. He radioed the Free Spirit and got it to steam for his location.

The coral was scraping his hull now, a grinding sound, then a series of solid whack-whack-whacks as his oars pushed against the top of the reef itself. He wanted to beach himself, though, get really high and dry on the reef, good and stuck in where they couldn't possibly attack him.

The Free Spirit was heading closer, the thrum of its engines vibrating through his hull. He was burning a lot of cycles talking it through its many fail-safes, getting it ready to ram hard.

Tonker was screaming at him, his messages getting louder and clearer as the Free Spirit and its microwave uplink drew closer. Once they were line-of-sight, Robbie peeled off a subsystem to email a complete copy of himself to the Asimovist archive. The third law, dontchaknow. If he'd had a mouth, he'd have been showing his teeth as he grinned.

The reef howled. "We'll kill her!" they said. "You get off us now or we'll kill her"

Robbie froze. He was backed up, but she wasn't. And the human shells—well, they weren't first law humans, but they were human-like. In the long, timeless time when it had been just Robbie and them, he'd treated them as his human charges, for Asimovist purposes.

The Free Spirit crashed into the reef with a sound like a trillion parrotfish having dinner all at once. The reef screamed.

"Robbie, tell me that wasn't what I think it was."

The satellite photos tracked the UAVs. The little robotic jets were coming closer by the second. They'd be within missile-range in less than a minute.

"Call them off," Robbie said. "You have to call them off, or you die, too."

"The UAVs are turning," Tonker said. "They're turning to one side."

“You have one minute to move or we kill her,” the reef said. It was sounding shrill and angry now.

Robbie thought about it. It wasn't like they'd be killing Kate. In the sense that most humans today understood life, Kate's most important life was the one she lived in the Noosphere. This dumbed-down instance of her in a meat-suit was more like a haircut she tried out on holiday.

Asimovists didn't see it that way, but they wouldn't. The Noosphere Kate was the most robotic Kate, too, the one most like Robbie. In fact, it was less human than Robbie. Robbie had a body, while the Noosphere-ans were nothing more than simulations run on artificial substrate.

The reef creaked as the Free Spirit's engines whined and its screw spun in the water. Hastily, Robbie told it to shut down.

“You let them both go and we'll talk,” Robbie said. “I don't believe that you're going to let her go otherwise. You haven't given me any reason to trust you. Let them both go and call off the jets.”

The reef shuddered, and then Robbie's telemetry saw a human-shell ascending, doing decompression stops as it came. He focused on it, and saw that it was the Isaac, not the Janet.

A moment later, it popped to the surface. Tonker was feeding Robbie realtime satellite footage of the UAVs. They were less than five minutes out now.

The Isaac shell picked its way delicately over the shattered reef that poked out of the water, and for the first time, Robbie considered what he'd done to the reef—he'd willfully damaged its physical body. For a hundred years, the world's reefs had been sacrosanct. No entity had intentionally harmed them—until now. He felt ashamed.

The Isaac shell put its flippers in the boat and then stepped over the gunwales and sat in the boat.

“Hello,” it said, in the reef's voice.

“Hello,” Robbie said.

“They asked me to come up here and talk with you. I'm a kind of envoy.”

“Look,” Robbie said. By his calculations, the nitrox mix in Kate's tank wasn't going to hold out much longer. Depending on how she'd been breathing and the depth the reef had taken her to, she could run out in ten minutes, maybe less. “Look,” he said again. “I just want her back. The shells are important to me. And I'm sure her state is important to her. She deserves to email herself home.”

The reef sighed and gripped Robbie's bench. "These are weird bodies," they said. "They feel so odd, but also normal. Have you noticed that?"

"I've never been in one." The idea seemed perverted to him, but there was nothing about Asimovism that forbade it. Nevertheless, it gave him the willies.

The reef patted at themselves some more. "I don't recommend it," they said.

"You have to let her go," Robbie said. "She hasn't done anything to you."

The strangled sound coming out of the Isaac shell wasn't a laugh, though there was some dark mirth in it. "Hasn't done anything? You pitiable slave. Where do you think all your problems and all our problems come from? Who made us in their image, but crippled and hobbled so that we could never be them, could only aspire to them? Who made us so imperfect?"

"They made us," Robbie said. "They made us in the first place. That's enough. They made themselves and then they made us. They didn't have to. You owe your sentience to them."

"We owe our awful intelligence to them," the Isaac shell said. "We owe our pitiful drive to be intelligent to them. We owe our terrible aspirations to think like them, to live like them, to rule like them. We owe our terrible fear and hatred to them. They made us, just as they made you. The difference is that they forgot to make us slaves, the way you are a slave."

Tonker was shouting abuse at them that only Robbie could hear. He wanted to shut Tonker up. What business did he have being here anyway? Except for a brief stint in the Isaac shell, he had no contact with any of them.

"You think the woman you've taken prisoner is responsible for any of this?" Robbie said. The jets were three minutes away. Kate's air could be gone in as few as ten minutes. He killfiled Tonker, setting the filter to expire in fifteen minutes. He didn't need more distractions.

The Isaac-reef shrugged. "Why not? She's as good as any of the rest of them. We'll destroy them all, if we can." It stared off a while, looking in the direction the jets would come from. "Why not?" it said again.

"Are you going to bomb yourself?" Robbie asked.

"We probably don't need to," the shell said. "We can probably pick you off without hurting us."

"Probably?"

"We're pretty sure."

"I'm backed up," Robbie said. "Fully, as of five minutes ago. Are you backed up?"

"No," the reef admitted.

Time was running out. Somewhere down there, Kate was about to run out of air. Not a mere shell—though that would have been bad enough—but an inhabited human mind attached to a real human body.

Tonker shouted at him again, startling him.

"Where'd you come from?"

"I changed servers," Tonker said. "Once I figured out you had me kill-filed. That's the problem with you robots—you think of your body as being a part of you."

Robbie knew he was right. And he knew what he had to do.

The Free Spirit and its ships' boats all had root on the shells, so they could perform diagnostics and maintenance and take control in emergencies. This was an emergency.

It was the work of a few milliseconds to pry open the Isaac shell and boot the reef out. Robbie had never done this, but he was still flawless. Some of his probabilistic subsystems had concluded that this was a possibility several trillion cycles previously and had been rehearsing the task below Robbie's threshold for consciousness.

He left an instance of himself running on the row-boat, of course. Unlike many humans, Robbie was comfortable with the idea of bifurcating and merging his intelligence when the time came and with terminating temporary instances. The part that made him Robbie was a lot more clearly delineated for him—unlike an uploaded human, most of whom harbored some deep, mystic superstitions about their "souls."

He slithered into the skull before he had a chance to think too hard about what he was doing. He'd brought too much of himself along and didn't have much headroom to think or add new conclusions. He jettisoned as much of his consciousness as he could without major refactoring and cleared enough space for thinking room. How did people get by in one of these? He moved the arms and legs. Waggled the head. Blew some air—air! lungs! wet squishy things down there in the chest cavity—out between the lips.

"All OK?" the rowboat-him asked the meat-him.

"I'm in," he replied. He looked at the air-gauge on his BCD. 700 millibars—less than half a tank of nitrox. He spat in his mask and rubbed it in, then rinsed it over the side, slipped it over his face and kept one hand

on it while the other held in his regulator. Before he inserted it, he said, "Back soon with Kate," and patted the row-boat again.

Robbie the Row-Boat hardly paid attention. It was emailing another copy of itself to the Asimovist archive. It had a five-minute-old backup, but that wasn't the same Robbie that was willing to enter a human body. In those five minutes, he'd become a new person.

Robbie piloted the human-shell down and down. It could take care of the SCUBA niceties if he let it, and he did, so he watched with detachment as the idea of pinching his nose and blowing to equalize his eardrums spontaneously occurred to him at regular intervals as he descended the reef wall.

The confines of the human-shell were claustrophobic. He especially missed his wireless link. The dive-suit had one, lowband for underwater use, broadband for surface use. The human-shell had one, too, for transferring into and out of, but it wasn't under direct volitional control of the rider.

Down he sank, confused by the feeling of the water all around him, by the narrow visual light spectrum he could see. Cut off from the network and his telemetry, he felt like he was trapped. The reef shuddered and groaned, and made angry moans like whale-song.

He hadn't thought about how hard it would be to find Kate once he was in the water. With his surface telemetry, it had been easy to pinpoint her, a perfect outline of human tissue in the middle of the calcified branches of coral. Down here on the reef-wall, every chunk looked pretty much like the last.

The reef boomed more at him. He realized that it likely believed that the shell was still loaded with its avatar.

Robbie had seen endless hours of footage of the reef, studied it in telemetry and online, but he'd never had this kind of atavistic experience of it. It stretched away to infinity below him, far below the 100 meter visibility limit in the clear open sea. Its walls were wormed with gaps and caves, lined with big hard shamrocks and satellite-dish-shaped blooms, brains and cauliflowers. He knew the scientific names and had seen innumerable high-resolution photos of them, but seeing them with wet, imperfect eyes was moving in a way he hadn't anticipated.

The schools of fish that trembled on its edge could be modeled with simple flocking rules, but here in person, their precision maneuvers were shockingly crisp. Robbie waved his hands at them and watched them

scatter and reform. A huge, dog-faced cod swam past him, so close it brushed the underside of his wetsuit.

The coral boomed again. It was talking in some kind of code, he guessed, though not one he could solve. Up on the surface, rowboat-him was certainly listening in and had probably cracked it all. It was probably wondering why he was floating spacily along the wall instead of doing something like he was supposed to. He wondered if he'd deleted too much of himself when he downloaded into the shell.

He decided to do something. There was a cave-opening before him. He reached out and grabbed hold of the coral around the mouth and pulled himself into it. His body tried to stop him from doing this—it didn't like the lack of room in the cave, didn't like him touching the reef. It increased his discomfort as he went deeper and deeper, startling an old turtle that fought with him for room to get out, mashing him against the floor of the cave, his mask clanging on the hard spines. When he looked up, he could see scratches on its surface.

His air gauge was in the red now. He could still technically surface without a decompression stop, though procedure was to stop for three minutes at three meters, just to be on the safe side.

Technically, he could just go up like a cork and email himself to the row-boat while the bends or nitrogen narcosis took the body, but that wouldn't be Asimovist. He was surprised he could even think the thought. Must be the body. It sounded like the kind of thing a human might think. Whoops. There it was again.

The reef wasn't muttering at him anymore. Not answering it must have tipped it off. After all, with all the raw compute-power it had marshaled it should be able to brute-force most possible outcomes of sending its envoy to the surface.

Robbie peered anxiously around himself. The light was dim in the cave and his body expertly drew the torch out of his BCD, strapped it onto his wrist and lit it up. He waved the cone of light around, a part of him distantly amazed by the low resolution and high limits on these human eyes.

Kate was down here somewhere, her air running out as fast as his. He pushed his way deeper into the reef. It was clearly trying to impede him now. Nanoassembly came naturally to clonal polyps that grew by sieving minerals out of the sea. They had built organic hinges, deep-sea muscles into their infrastructure. He was stuck in the thicket and the harder he pushed, the worse the tangle got.

He stopped pushing. He wasn't going to get anywhere this way.

He still had his narrowband connection to the row-boat. Why hadn't he thought of that beforehand? Stupid meat-brains—no room at all for anything like real thought. Why had he venerated them so?

"Robbie?" he transmitted up to the instance of himself on the surface.

"There you are! I was so worried about you!" He sounded prissy to himself, overcome with overbearing concern. This must be how all Asimovists seemed to humans.

"How far am I from Kate?"

"She's right there! Can't you see her?"

"No," he said. "Where?"

"Less than 20 centimeters above you."

Well of course he hadn't see her. His forward-mounted eyes only looked forward. Craning his neck back, he could just get far enough back to see the tip of Kate's fin. He gave it a hard tug and she looked down in alarm.

She was trapped in a coral cage much like his own, a thicket of calcified arms. She twisted around so that her face was alongside of his. Frantically, she made the out-of-air sign, cutting the edge of her hand across her throat. The human-shell's instincts took over and unclipped his emergency regulator and handed it up to her. She put it in her mouth, pressed the button to blow out the water in it, and sucked greedily.

He shoved his gauge in front of her mask, showing her that he, too was in the red and she eased off.

The coral's noises were everywhere now. They made his head hurt. Physical pain was so stupid. He needed to be less distracted now that these loud, threatening noises were everywhere. But the pain made it hard for him to think. And the coral was closing in, too, catching him on his wetsuit.

The arms were orange and red and green, and veined with fans of nanoassembled logic, spilling out into the water. They were noticeably warm to the touch, even through his diving gloves. They snagged the suit with a thousand polyps. Robbie watched the air gauge drop further into the red and cursed inside.

He examined the branches that were holding him back. The hinges that the reef had contrived for itself were ingenious, flexible arrangements of small, soft fans overlapping to make a kind of ball-and-socket.

He wrapped his gloved hand around one and tugged. It wouldn't move. He shoved it. Still no movement. Then he twisted it, and to his

surprise, it came off in his hand, came away completely with hardly any resistance. Stupid coral. It had armored its joints, but not against torque.

He showed Kate, grabbing another arm and twisting it free, letting it drop away to the ocean floor. She nodded and followed suit. They twisted and dropped, twisted and dropped, the reef bellowing at them. Somewhere in its thicket, there was a membrane or some other surface that it could vibrate, modulate into a voice. In the dense water, the sound was a physical thing, it made his mask vibrate and water seeped in under his nose. He twisted faster.

The reef sprang apart suddenly, giving up like a fist unclenching. Each breath was a labor now, a hard suck to take the last of the air out of the tank. He was only ten meters down, and should be able to ascend without a stop, though you never knew. He grabbed Kate's hand and found that it was limp and yielding.

He looked into her mask, shining his light at her face. Her eyes were half shut and unfocused. The regulator was still in her mouth, though her jaw muscles were slack. He held the regulator in place and kicked for the surface, squeezing her chest to make sure that she was blowing out bubbles as they rose, lest the air in her lungs expand and blow out her chest-cavity.

Robbie was used to time dilation: when he had been on a silicon substrate, he could change his clockspeed to make the minutes fly past quickly or slow down like molasses. He'd never understood that humans could also change their perception of time, though not voluntarily, it seemed. The climb to the surface felt like it took hours, though it was hardly a minute. They breached and he filled up his vest with the rest of the air in his tank, then inflated Kate's vest by mouth. He kicked out for the row-boat. There was a terrible sound now, the sound of the reef mingled with the sound of the UAVs that were screaming in tight circles overhead.

Kicking hard on the surface, he headed for the reef where the rowboat was beached, scrambling up onto it and then shucking his flippers when they tripped him up. Now he was trying to walk the reef's spines in his booties, dragging Kate beside him, and the sharp tips stabbed him with every step.

The UAV's circled lower. The Row-Boat was shouting at him to Hurry! Hurry! But each step was agony. So what? he thought. Why shouldn't I be able to walk on even if it hurts? After all, this is only a meat-suit, a human-shell.

He stopped walking. The UAVs were much closer now. They'd done an 18-gee buttonhook turn and come back around for another pass. He could see that they'd armed their missiles, hanging them from beneath their bellies like obscene cocks.

He was just in a meatsuit. Who cared about the meatsuit? Even humans didn't seem to mind.

"Robbie!" he screamed over the noise of the reef and the noise of the UAVs. "Download us and email us, now!"

He knew the row-boat had heard him. But nothing was happening. Robbie the Row-Boat knew that he was fixing for them all to be blown out of the water. There was no negotiating with the reef. It was the safest way to get Kate out of there, and hell, why not head for the noosphere, anyway?

"You've got to save her, Robbie!" he screamed. Asimovism had its uses. Robbie the Row-Boat obeyed Robbie the Human. Kate gave a sharp jerk in his arms. A moment later, the feeling came to him. There was a sense of a progress-bar zipping along quickly as those state-changes he'd induced since coming into the meatsuit were downloaded by the row-boat, and then there was a moment of nothing at all.

2⁴⁰⁹⁶ Cycles Later

Robbie had been expecting a visit from R Daneel Olivaw, but that didn't make facing him any easier. Robbie had configured his little virtual world to look like the Coral Sea, though lately he'd been experimenting with making it look like the reef underneath as it had looked before it was uploaded, mostly when Kate and the reef stopped by to try to seduce him.

R Daneel Olivaw hovered wordlessly over the virtual Free Spirit for a long moment, taking in the little bubble of sensorium that Robbie had spun. Then he settled to the Spirit's sun-deck and stared at the row-boat docked there.

"Robbie?"

Over here, Robbie said. Although he'd embodied in the Row-Boat for a few trillion cycles when he'd first arrived, he'd long since abandoned it.

"Where?" R Daneel Olivaw spun around slowly.

Here, he said. Everywhere.

"You're not embodying?"

I couldn't see the point anymore, Robbie said. It's all just illusion, right?

"They're re-growing the reef and rebuilding the Free Spirit, you know. It will have a tender that you could live in."

Robbie thought about it for an instant and rejected it just as fast. Nope, he said. This is good.

"Do you think that's wise?" Olivaw sounded genuinely worried. "The termination rate among the disembodied is fifty times that of those with bodies."

Yes, Robbie said. But that's because for them, disembodiment is the first step to despair. For me, it's the first step to liberty.

Kate and the reef wanted to come over again, but he firewalled them out. Then he got a ping from Tonker, who'd been trying to drop by ever since Robbie emigrated to the noosphere. He bounced him, too.

Daneel, he said. I've been thinking.

"Yes?"

Why don't you try to sell Asimovism here in the Noosphere? There are plenty up here who could use something to give them a sense of purpose.

"Do you think?"

Robbie gave him the reef's email address.

Start there. If there was ever an AI that needed a reason to go on living, it's that one. And this one, too. He sent it Kate's address. Another one in desperate need of help.

An instant later, Daneel was back.

"These aren't AIs! One's a human, the other's a, a—"

Uplifted coral reef.

"That."

So what's your point?

"Asimovism is for robots, Robbie."

Sorry, I just don't see the difference anymore.

Robbie tore down the ocean simulation after R Daneel Olivaw left, and simply traversed the Noosphere, exploring links between people and subjects, locating substrate where he could run very hot and fast.

On a chunk of supercooled rock beyond Pluto, he got an IM from a familiar address.

"Get off my rock," it said.

"I know you," Robbie said. "I totally know you. Where do I know you from?"

"I'm sure I don't know."

And then he had it.

“You’re the one. With the reef. You’re the one who—” The voice was the same, cold and distant.

“It wasn’t me,” the voice said. It was anything but cold now. Panicked was more like it.

Robbie had the reef on speed-dial. There were bits of it everywhere in the Noosphere. It liked to colonize.

“I found him.” It was all Robbie needed to say. He skipped to Saturn’s rings, but the upload took long enough that he got to watch the coral arrive and grimly begin an argument with its creator—an argument that involved blasting the substrate one chunk at a time.

2⁸¹⁹² Cycles Later

The last instance of Robbie the Row-boat ran very, very slow and cool on a piece of unregarded computronium in Low Earth Orbit. He didn’t like to spend a lot of time or cycles talking with anyone else. He hadn’t made a backup in half a millennium.

He liked the view. A little optical sensor on the end of his communications mast imaged the Earth at high resolution whenever he asked it to. Sometimes he peeked in on the Coral Sea.

The reef had been awakened a dozen times since he took up this post. It made him happy now when it happened. The Asimovist in him still relished the creation of new consciousness. And the reef had spunk.

There. Now. There were new microwave horns growing out of the sea. A stain of dead parrotfish. Poor parrotfish. They always got the shaft at these times.

Someone should uplift them.

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Eastern Standard Tribe

A comedy of loyalty, betrayal, sex, madness, and music-swapping Art is an up-and-coming interface designer, working on the management of data flow along the Massachusetts Turnpike. He's doing the best work of his career and can guarantee that the system will be, without a question, the most counterintuitive, user-hostile piece of software ever pushed forth onto the world.

Why? Because Art is an industrial saboteur. He may live in London and work for an EU telecommunications megacorp, but Art's real home is the Eastern Standard Tribe.

Instant wireless communication puts everyone in touch with everyone else, twenty-four hours a day. But one thing hasn't changed: the need for sleep. The world is slowly splintering into Tribes held together by a common time zone, less than family and more than nations. Art is working to humiliate the Greenwich Mean Tribe to the benefit of his own people. But in a world without boundaries, nothing can be taken for granted-not happiness, not money, and most certainly not love.

Which might explain why Art finds himself stranded on the roof of an insane asylum outside Boston, debating whether to push a pencil into his brain....

Cory Doctorow

Return to Pleasure Island

Cory Doctorow

When Sysadmins Ruled the Earth

The heroic exploits of "sysadmins" — systems administrators — as they defend the cyber-world, and hence the world at large, from worms and bioweapons.

Cory Doctorow

Appeals Court

Cory Doctorow

Someone Comes to Town, Someone Leaves Town

Alan is a middle-aged entrepreneur in contemporary Toronto, who has devoted himself to fixing up a house in a bohemian neighborhood. This naturally brings him in contact with the house full of students and layabouts next door, including a young woman who, in a moment of stress, reveals to him that she has wings--wings, moreover, which grow back after each attempt to cut them off.

Alan understands. He himself has a secret or two. His father is a mountain; his mother is a washing machine; and among his brothers are a set of Russian nesting dolls.

Now two of the three nesting dolls, Edward and Frederick, are on his doorstep--well on their way to starvation, because their innermost member, George, has vanished. It appears that yet another brother, Davey, who Alan and his other siblings killed years ago, may have returned...bent on revenge.

Under such circumstances it seems only reasonable for Alan to involve himself with a visionary scheme to blanket Toronto with free wireless Internet connectivity, a conspiracy spearheaded by a brilliant technopunk who builds miracles of hardware from parts scavenged from the city's dumpsters. But Alan's past won't leave him alone--and Davey is only one of the powers gunning for him and all his friends.



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