

Schroedinger's Mousetrap

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The door into the asteroid was ten meters high and ten million years old. The pattern of triangles and rectangles engraved on the door had been seen only once before -- on an artifact older than the human species. Hube Chaney compared the image on his head-up display to the engraving one last time before allowing himself to believe his incredible luck. "Looks like the genuine article, Mary!" he said.

The crisp, feminine voice of his suit's Artificial Intelligence responded, "That's good, Hube."

"Get Dith and clear the head-up."

"Sure thing, Hube." The image disappeared and was replaced by a chronometer, oxygen gauge, and an inertial locator display all in a band across the top of his visor.

"Hube," Dithyram Kingston called over the radio, "is it real?" Hube's partner spoke in an almost-British accent, spiced with a hint of Caribbean dialect. He came from an impossibly small island nation on Earth called Saint Kitts and Nevis.

"It's real," Hube said.

Dith let out a whoop of triumph. "Yes!"

Hube spun slowly to face away from the asteroid, careful to let his tether harness pay out slack. The door was at the precise rotational axis of the cylindrical asteroid. Only two lines, fixed to magnetic grapples on either side of the huge door, prevented him from drifting with the centripetal force.

With his back to the asteroid, he waved at their small prospecting ship, the Gold Rush. The ship hung twenty meters in front of him, rolling slowly as Hube turned about the asteroid's axis. He gave the thumbs-up sign and swallowed a lump of exultation. Unlike Dith, Hube was a belter: born and raised in Sol's asteroid belt. His natural caution suppressed emotional display.

Before he could turn back, the Southern Cross caught his attention. Somewhere out among those stars, the Second Interstellar Colony was three years under weigh. Without Hube.

He had spent most of his youth preparing for it: physics and engineering degrees, technical and physical training. The Colony had favored married couples, so he had married. Then, at the last minute, Olga had changed her mind about the stars. Now he would never leave the solar system. Damn her!

He turned away from the stars and back to the ancient door. If he could not go to the stars, at least he had found a consolation prize.

Every spacer knew of the alien artifact John Terule had discovered eight years ago: a hollow cylinder of nickel-iron almost a kilometer long. It had been humanity's first encounter with evidence of non-human

intelligence. It had also been a disappointment.

Terule's asteroid was an empty shell, gutted of every scrap of machinery and any other artifact except the carbon polymer that coated the inside walls. The only clue to the Terullian people were fifteen patches of writing: columns of paired rectangles and triangles which linguists had no way to decipher. They had little hope of ever finding a Terullian to teach them the language; the molecular decay of the polymer dated the artifact at somewhere between nine and twelve million years old.

The Solar Authority had paid Terule a million SA dollars just for the empty hulk. Ever since, beltlers had added the search for alien artifacts to their prospecting. Hube and Dith had been lucky; they had made the second find.

His partner's breath crackled over the radio. "Hey, I'm gonna call in the claim. You want to come in?"

"No, I don't think I'll believe it if it's not right here in front of me. I'm going to set up the laser drill."

"Okay," Dith said. "Check in before you start punching holes. I want to be watching when you let the cat out of the box." The channel clicked off.

Hube smiled. He had told Dith the story of Schroedinger's Cat near the beginning of their partnership. Dith had adopted the Cat as his icon for the unknown. He even had a little pendant, a platinum chain with a small box hanging from it, which he always kept with him.

Minutes later, as Hube fitted the laser into its tripod, Mary called his name.

"What is it, Mary?" He clicked the pivots into the body of the laser.

"Wouldn't it be better to leave the alien artifact intact for the Solar Authority?"

Hube paused, about to test the laser's capacitors. He routinely left Mary's conversation mode inactive, so something must have triggered an advice routine. "Why?" he asked. "I want to see what's inside."

"You and Dith are far from any help. What if something inside is dangerous?"

"What could be dangerous after ten million years?"

"Do you want a list?" This was only a request for confirmation.

"No. I think the chances of finding anything dangerous are next to impossible."

"If you think so, Hube."

"Mary, you're being a pest."

"Yes, Hube." Mary's personality template did not include petulance, but Hube sometimes wondered if pouting had somehow slipped into her heuristic net.

He had powered the laser up and called Dith. "Ready to go," he said. "I'll start by punching a hole."

"Okay, Hube. I've got the camera trained on you."

Hube aimed the laser drill almost straight down at the door, and began vaporizing a hole a centimeter at a shot. Just after five centimeters, the depth gauge jumped to two thousand and vapor puffed out of the hole. He had punched through into whatever space was behind the door.

"You see the vapor?" Dith asked, excited.

"It's just from the drill."

"No, man, it didn't just disperse. It sprayed out. Check it!"

Hube snapped on the drill's safety and pulled a suit patch from the emergency pouch above his knee. As he brought the flexible patch close to the pencil-thin hole, it fluttered, then slipped from his gloved fingers and launched itself into space. "Atmosphere!"

Hube felt elated. Terule's asteroid had contained vacuum. If their find held atmosphere, it might contain other things. Images of alien technological treasures danced before Hube's eyes.

"Hey, Hube. You better plug that up!"

Hube shook off his amazement and felt guilty for acting like a groundhog. Among beltlers, bleeding another person's atmosphere was grounds for justifiable homicide. He fumbled for a larger patch and slapped it down.

"Well, we've kicked in their door," he said. "I hope nobody's home."

Thirty minutes later, he had erected an inflatable airlock over the laser drill and sealed it to the surface of the alien door. He started to cut a manhole-sized circle in the ancient metal. The geodesic dome of the airlock tightened as it filled with the alien atmosphere. When most of the circle was cut, Hube placed a magnetic clamp across the gap. He activated the laser drill again, cut the final arc, pulled the circle of metal aside and secured it to the surface of the huge door.

The opening was a black, gaping hole.

"Okay," Hube said, "I'm going inside."

"You be careful, Hube," Dith said from the ship, "All that metal is going to block radio."

"Yeah. I've got some beacon relays. I'll put one right at the entrance." He pressed the adhesive surface of the fist-sized relay against the door. "Okay, I'm going in. Mary, give me some slack."

"Okay, Hube."

He pulled himself head-first through the hole, his automatic reels paying out both lines. "External light."

His helmet light flooded the darkness. Hube hung near the center of a drum-shaped chamber, twelve meters in diameter, its walls coated with a dull, plastic-like substance. The inner head of the drum held another ten-meter-high door.

"An airlock. Just like Terule's Asteroid," Hube said. "I'll have to cut through the internal door, too."

"Hube," Dith called over the radio. "What's the atmosphere?"

Was Dith's signal just a little weaker, despite the relay?

"How about it, Mary?" Hube asked.

"Zero point zero eight three atmospheres. No toxins. Mostly nitrogen. Trace of oxygen."

"Oxygen!" Dith said. "If there's some oxygen now, there was a lot more ten million years ago!"

"They breathed oxygen!" Hube said. The aliens seemed a little less alien.

"It could be just a byproduct, or an incidental like nitrogen is for us."

Hube went out to disassemble the laser and bring it inside. "No. Oxygen is too corrosive. It had to be part of their life cycle. I wish we had a better analyzer; it might tell us more than Mary's detector."

Transferring and reassembling the laser parts took ten minutes. Hube also moved his tethers and their grapples inside to control his tendency to drift away from the asteroid's axis of spin. Once he was ready at the inner door, he said, "Here we go again."

Hube punched a hole in the inner door and waited. The air pressure equalized to about one tenth of an atmosphere. Then he finished cutting and pulled the disk of metal out of the way. He shone his helmet light through the gap. "Looks pretty much like Terule's find," he said.

A larger drum-shaped chamber filled the space behind the second door. Six tunnels, equally distributed around the rim of the drum, led into the long body of the asteroid. In John Terule's asteroid, similar tunnels spiraled around the asteroid's core without connecting until all six met again at the opposite end of the asteroid in another drum-shaped hub. Each helical tunnel had been lined with huge bays which could have held anything, but now held only vacuum. Within the embracing six tunnels, Terule's asteroid had also held a long, empty core. The walls of the core had been very slightly radioactive, and researchers supposed it had once contained a power source. Some even speculated that the asteroid had held a reactionless drive and that the asteroid was a spacecraft rather than a

space station.

Hube hoped he would find something inside this asteroid. Even a single alien molecular circuit could make Dith and himself rich.

He thrust his wrist into the hole and asked Mary for the Geiger counter display. "Rads look normal," he said. "I'm going in."

He pulled himself into the inner chamber and looked around. It was at least forty meters in diameter, but featureless except for the tunnels in the opposite wall. "I'm going to move out to the rim. I think there's enough diameter for decent gravity."

He played out his lines, letting his body fall with the centripetal force of the rotating asteroid until his feet touched the curved floor of the hub-shaped chamber.

"I'm going to release my harness," he said.

"Your signal's weaker," Dith said, his own signal noticeably reduced. "Are you sure you want to go any

farther?"

"Hey, I want to know what we're selling when the time comes! If things get really bad, I'll set up another relay." Hube paused a moment and realized he had a burning need to see the alien artifact with his own eyes. Curiosity. The one flaw in his cautious Belter character. If he had any sense, he would leave now and let someone else take the risk.

He couldn't.

He unbuckled the harness with its tether and reel mechanisms and left it hanging against the wall, then he walked toward the nearest tunnel. His helmet light probed the dark, curving tunnel. In Terule's Asteroid these had been lined with empty bays. What alien devices might fill the bays off this tunnel?

Hube stepped into the tunnel and started down the slope toward the asteroid's outer skin. The tunnel leveled off and curved to the left. "Pseudograv feels like Ceres' Inner Ring," he said. "Maybe a quarter gee. I think I see a bay ahead!"

His heart began to pound as he shuffled forward. He had to fight the urge to run. As he grew closer, his helmet light revealed more and more of the bay, a vast space large enough to hold three ships the size of Gold Rush. It looked empty. He quickened his pace and rounded the corner. His heart sank. "Damn!" he muttered.

Dith's voice crackled, asking for a repeat.

"Empty bay," said Hube. "I'm going to look around."

Round finger-sized holes and half-meter slots pocked one wall. The polymer coating over the iron of the asteroid was scratched and scuffed in many places, as if heavy equipment had been removed.

Damn! thought Hube. If the Terullians had to move out, couldn't they at least leave the stove and the fridge?

"I'm continuing."

He followed the curving tunnel to the next bay, this time on his left. It was empty, too. He trudged on, passing empty bays alternating on the right and left. The excitement he had felt on passing through the alien door was quickly dwindling to disappointment. There was nothing here!

The few words he sent to his partner were terse and mechanical, prompted more by habit than conscious thought or observation of his surroundings. Once, something shifted in his peripheral vision. He turned to look, thinking he might have passed something without noticing, and his suit light swept over an empty expanse of floor. It was just the edge of the circle of light jiggling in the corner of his eye.

By the time his inertial tracker said he had almost traveled the length of the asteroid, the floor of the tunnel began to climb upward toward the axis of rotation. In Terule's asteroid a tunnel like this one had led to another hub-shaped room which opened into the hollowed core of the asteroid. Hube tried to expect nothing more, but could not hold back little hopeful visions that popped into his mind.

He climbed the gentle slope against the decreasing pseudogravity, and found the hub-shaped chamber he expected. It contained something else he had not expected.

"Hey, Dith! I found something!" he said.

Where Terule had found a hollow core running along the axis of his asteroid, Hube faced a wall. On that wall, spaced in a ring around the axis, thick metal stalks protruded at about head-height, and each stalk branched to support glassy globes, like a rack of spacesuit helmets. Dith's voice crackled distantly over the radio.

"Hold on a minute," Hube said, "I'll put out another relay." He shuffled rapidly down the tunnel again and pressed his second-last beacon relay against the wall.

Dith's voice burst in his ears. ". . . I didn't get that. Hube, come in."

"Relax. I'm just at the far end. It has another hub, like Terule's rock, but wait till you see what I've found!" He returned to the hub and looked up at the nearest cluster again. It hung just above the top of his helmet. He described it as best he could.

"Sounds strange, man," Dith said. "Any heat or radiation?"

Hube held out the Geiger probe on his wrist and asked Mary to display the radiation count. "Looks safe," he said.

"Yeah, maybe," Dith replied. Hube's hand was only a centimeter from the nearest globe. He moved to touch it as his partner said, "Come back to the . . ."

Silence.

Dith's voice cut off the second Hube's glove touched the globe. Hube jerked his hand back. "Dith, can you hear me? I've lost your signal!" He shifted and looked at the globe again. Had one of the relay beacons died just at that second, or had something else happened?

Hube moved back toward the relay he had just stuck to the wall. "Dith, I've lost you. I'm moving back now. " He stopped in confusion; the beacon relay was gone! He looked up and down the corridor. It couldn't have gone far, even if it had somehow come loose.

"Mary, are there any other frequencies active? Any radio activity in the last few minutes?"

"Only yours, Hube," the AI's close, soothing voice said.

Hube aimed the suit lights down the curving tunnel, but saw nothing. He whirled and looked back toward the hub. Nothing.

"Dith. Come in. Gold Rush come in! Mary, start a Mayday call."

"Sure, Hube." The AI paused. "Diagnostics say everything's working fine. We just aren't receiving anything."

"Damn it! On second thought, cancel the distress. A beacon doesn't just disappear, someone must have taken it. I don't want to advertise."

In the harsh environment of space, interfering with a belter's equipment could be the same as murder. Was someone trying to kill him? Was one of the aliens who had built this place still lurking around inside

it?

Was it Dith? Had the man decided he didn't want to share the reward for finding the alien asteroid, and cut off Hube's communication? Hube could not believe that. He had worked closely with the man for almost three years; Dith had always seemed very relaxed. Besides, why come all the way inside, when all Dith had to do was strand him until his air ran out? There was no need to steal his beacon.

Who else could it be? There were no other ships around when they arrived, and a torcher was hard to miss, even at several thousand kilometers: the fusion exhaust was just too bright.

Maybe it was an alien, revived from the dead, thought Hube. He shivered and looked behind him.

He started cautiously down the tunnel, back toward the other end of the asteroid. Maybe it was just some freak accident and he would regain contact with his partner farther on. Still, he found himself cringing as he approached the first empty bay.

He bobbed around the corner for a quick look, then ducked back. The bay was empty. He shook his head at his own paranoia and kept going. He had to get back to the exit and see Gold Rush floating outside. If the ship was still there, he would be all right.

He came to the halfway point where he had left another beacon. It was gone, too.

Was Dith playing some kind of joke? No belter would play pranks like that -- if one did, he could easily have his last laugh in a vacuum. Dith was a groundhog at heart, but not an idiot. He hadn't done this.

Hube hurried on, trying not to think about who -- or what -- had pried those beacons off the wall.

As he approached the next bay, something caught the corner of his eye. A white-suited arm sprawled into the corridor from the adjacent bay. "Mary, transmit!" Hube ordered. "Dith! Are you there? Are you all right?" He hurried forward, bounding in the low pseudo-gravity.

He overshot the suited body by several meters and had to return to it. The human-shaped suit sat against the wall of the bay, slumped over sideways with one arm flopped out into the tunnel. Whoever was inside was unconscious or dead.

Every belter decorated his suit with some large, colored pattern that served as an identifier. This one had the same orange tiger-stripes that marked Hube's own suit. The helmet's faceplate was an opaque mirror. Hube blinked in confusion, then knelt beside the suit and touched it.

It flicked out of existence like a light turned off.

He froze, staring at the space before him. The vision of the suit disappearing replayed several times in his mind. His indrawn breath rustled loudly in his helmet. He closed his eyes, opened them and looked again. He checked the oxygen and air mix readings on his helmet's head-up display, then did a quick check of his own faculties. He found nothing warped or strange in his eyesight or his thoughts. He stood, taking deep breaths until his heart stopped pounding.

"Mary," he said finally, "bio check?"

"You're a bit excited, Hube, but your bio-signs are fine. Is there some danger?"

"No, I'm okay." He pressed his lips together and turned to go.

Another suit lay face-down on the tunnel floor, a floor that had been empty moments before.

Hube stared, waiting -- and perhaps hoping -- for this suit to flick out of existence. When it did not, he began to wish Mary had a visual system. A computer confirmation would help his sanity.

He gathered his resolve and advanced on the suit. Leaning over it, awkward in his own gear, he tried to catch every detail without touching it. This suit lay face down on the nickel-iron floor and was decorated with the same orange tiger-stripes as the other one. A gentle patina of dust coated the life-support pack and the ribbed backs of the arms. Under the dimmed light from his helmet lamp, the white material seemed yellowed-like ancient paper -- and the orange stripes were faded.

Hube had the cold feeling that he was looking at his own body, mummified after centuries alone in space. He reached to turn the suit over.

It disappeared.

He only swayed slightly this time. He had half-expected the thing to disappear.

I'm going crazy, he thought. Everyone knows that belters sometimes crack, especially when they're alone.

He turned and shuffled down the tunnel as fast as he could. He had to see the stars! To prove the universe was out there. To prove he wasn't trapped in some macabre tomb. Panic, like a static burst in the middle of a vid show, blotted out his flight. He realized his retreat into oblivion only when the tunnel disgorged him into the airlock hub.

The door was dark and huge, and solid. The exit he had cut had sealed over.

"No."

He gaped at the metal expanse for a moment. Then closed his eyes. Maybe this apparition would disappear like the spacesuits.

But the door was still whole. There was no evidence of cutting; it was as smooth as when he had found it.

"Oh, god!" He twisted around to look back down the corridor, half expecting one of the phantom suits behind him. Then he turned back to the door. "Mary. Magnetic grapples."

"Grapples on, Hube."

Hube put his palms against the metal door. The magnetic pads in his suit palms clung with enough force so he could lift himself in the low pseudogravity. He pulled himself up the door, letting the larger magnets on his knees take most of his weight. Soon, he crossed the place where he had cut through, tapping at it with his hand, hoping the gap would reappear. When it did not, he crawled back to the edge of the door and stood again on the hub's outer rim.

"What happened?" he asked aloud. "Did it regenerate by itself?" Hube had a brief vision of living metal, closing in around him. He pushed the thought away. "No. It has to be some sort of secondary door."

That would explain why he had lost contact with Dith. He took a sip from the water-nipple in his helmet and swished it around his dry mouth. He had left the laser just beyond this door. Dith could cut his way in.

But if the outer door had also sealed, Dith could not get at the laser. And nothing else on the _Gold Rush_ could cut the asteroid open again. Dith would have to call for help.

Hube had trouble swallowing the water he had taken.

"Mary, how much air do I have?"

His suit's comforting voice said, "Six hours and twenty-two minutes, Hube, at the present rate of consumption."

Hube pressed the side of his head against the side of his helmet, a habit he had developed as a substitute for rubbing his forehead. Even in populated parts of the belt, six and a half hours was not enough time for an emergency response. If the outer door had closed, Hube was dead.

"Okay. Okay. Can't panic. Survival protocol." All the training Hube had received, from his youth in the corridors of Ceres to his five years as a prospector, kicked in. Protocol said call for help, reduce oxygen intake, wait.

He knocked on the solid metal door. Calling for help seemed useless, with ten centimeters of that to stop radio waves. So -- reduce oxygen intake -- "Wait a minute!" He knocked on the metal again. "Can I tap out a message? Sure, but Dith would have to be touching the asteroid to feel it. Damn it!" He started to turn away, but another idea flashed. "Mary! Channel transmissions through the external data jack."

"Optic or electric, Hube?"

"Electric!" Hube went to the polymer-coated wall of the chamber and pulled the maintenance kit from his left thigh pocket. Along with the tools were some lengths of wire and two replacement jacks. The prospecting kit in the right thigh pocket carried a small hammer and chisel. It took ten minutes to cut the polymer and expose the nickel-iron of the asteroid in two patches. Then he stripped one end of a jack line, used adhesive strips to stick the bare ends of two wires against a metal wall, and jacked the line into his suit.

Now the whole asteroid would be his antenna!

"_Gold Rush! Gold Rush!_" he called. "Dith, do you hear me? It's Hube. Dith? Respond." Hube waited a few tense seconds, listening. Mary automatically suppressed static and hiss, so Hube's headset was dead silent. He repeated the call again and waited.

Nothing.

Hube sighed and closed his eyes. "Mary, repeat that call on automatic."

"Sure, Hube."

Was something wrong with his plan? Was Dith unable to respond? Worry niggled in his stomach. Call for help, reduce oxygen intake, wait. Reduce oxygen intake.

He settled down with his back to the wall. The helmet chronometer said seventeen fifty-five. He closed his eyes and tried to think.

Schroedinger's Cat. He was the cat this time.

Hube remembered explaining the story six months after he and Dith became partners in the prospecting ship. Hube had returned to Ceres Habitat to make a final plea with the Application Board for the Third Interstellar Colony.

Even if he could find a mate willing to go, they had said, he would be too old for the hibernation process.

Hube would never go to the stars. His life had been wasted.

The Long Shot served a drink called Schroedinger's Cat. It was good for getting drunk, and Hube needed to get drunk that night. The cocktail's name had sparked an explanation. Schroedinger's Cat was a thought-experiment, dreamed up by a physicist of the Einsteinian Era. Take one cat, a vial of poison gas with a radiation detector as the trigger, and a low-emission radioactive source, and put them all in a box. Rig the poison trigger so it could be turned on and off from outside the box. Now close the lid and flip the switch. Wait long enough for a fifty-fifty chance that the radioactive source will trigger the poison, then turn off the trigger.

The box now contains a cat that is both alive and dead.

"That's crazy!" Dith had said.

"The universe is crazy at the quantum level. Schrödinger found that the particles he was working with behaved as if they were both waves and particles. The wavicle doesn't resolve into a given state until it interacts with another wavicle. His thought-experiment made the cat's state of health dependent on radioactive decay -- a quantum phenomenon which can only be expressed as a probability."

Hube paused to let that sink in, then continued. "Schrödinger turned the whole system inside the box into a wavicle. It remains indeterminate until we open the box -- the cat is both alive and dead. When we open the box, the act of observation forces the system to collapse into one of the two possible states. Dead or alive."

Dead or alive.

Now, three years later, Hube had to wait until someone opened his box. He didn't relish waiting for events beyond his control to decide his fate. At least the cat had had the advantage of being imaginary. "Hube?" a familiar voice crackled distantly, "I hear your distress call. Where are you, man?"

Hube smiled in relief and allowed himself to hammer one triumphant fist against vacuum. He clambered to his feet. "Dith, it's good to hear your voice. I'm trapped inside the asteroid. I think some sort of secondary door closed over the hole I cut in the inner door. Has the outer door closed up, too?"

"Hube, I don't understand. Are you trapped somewhere? I'll come get you. Just tell me where you are."

Dith wasn't stupid; what did he think was going on? "I'm right behind the second door in the airlock hub. The second door has sealed up somehow."

"Hang on, man. I'm coming. Stay where you are."

"How long?"

"Just a few minutes, Hube. Hang on."

He's just about to cut through, Hube thought. Relief pushed up and blossomed on his face in a grin.

He turned to watch the huge alien door. Any moment now, the laser would vaporize an almost invisibly small hole in the inner door. Hube fought down the impulse to chatter over the radio-let Dith concentrate.

Many minutes passed, then Dith called, "Hube?"

"Yeah, I'm here. What's up? I can't see anything happening. Is something wrong?"

A gloved hand clamped onto his shoulder. In a micro-second, Hube's gut turned icy cold. _The phantom space suit!_

"Hube!" The hand pulled him around to face a suited figure.

It wasn't a phantom. The suit had Dith's blue double chevron markings across the chest and Hube could see a living human face through the visor.

"Dith! Christ, you scared me! How did you get in?"

"Through the holes you cut. I waited a half hour after we lost contact, then I came after you."

Hube leaned back to look up at the door. Had the hole really been hidden from him somehow? Dith turned and looked with him, and Hube heard him gasp.

"Oh Christ!" choked Dith. He placed his hands on the door. "I came through here, not half an hour ago."

"Half an hour? I've been here at least since then. The door's been sealed the whole time."

Dith turned and looked down at Hube, his dark face half hidden behind his polarized visor. "Are you sure? I came through at seventeen fifty-three. Maybe we missed each other."

Hube asked Mary when he had activated his magnetic grapples. "I've been here since seventeen thirty."

"How could we both be here at the same time? This has to be some sort of duplicate hub. Like we're in a maze. Same appearance, different location."

Hube glanced around the hub before checking with Mary. "Inertial locator says we're in the right place. Mary would have detected any magnetic field strong enough to mess up the locator. This is the place."

"It can't be. Look, I'm going to backtrack. This has to be some sort of second chamber. If I go back, I can get us out of here."

Hube looked at the dark metal door again. Dith had to be right; there was no way they could have been at the same place at the same time. He tried to feel relieved, but could not.

Together they backtracked up the tunnel Dith had used. Along the way, Hube recounted what had happened since they lost contact, but he left out the phantoms. He didn't want to admit he might be on the edge.

Then Dith told his own story. His rapid re-telling was calm and professional, and gave no clue that he might have had any similar experience. His journey had been almost identical to Hube's. He had entered through the alien airlock, followed one of the twisting tunnels to the opposite hub, and found the globes. There he had heard Hube's message.

Something twitched in Hube's mind. "You heard me just after you touched one of the globes?" he asked excitedly.

"Yeah, couldn't resist." Dith's accent became more bouncy as he grew excited. "Like a kid with a new toy."

They arrived at the second hub. The globes still grew in orderly clusters out of the inner wall. Dith stepped back to look up at them and said, "That's our find, Hube! Reactionless drive, I bet. Imagine the money we could get for that!"

Hube stepped up to the wall and leaned back, studying the globe just overhead. "I'm not so sure," he said. "There's something about the globes." They were the key to the mystery, he was sure.

"Come on, Hube," Dith urged, "we've got to find our way out of this maze." He moved toward one of the radiating tunnels. "I think this is the way I came--"

"I'm not sure it's the way out," Hube said. He stared at the milky globe for a second, then reached up and touched it. He turned back to Dith. "Did you mean you heard me, the moment you touched--" But his voice caught.

Dith was gone.

The pieces fell into place. Hube staggered in a wave of revelation.

Dith popped into existence, pulling his hand from a nearby globe. "Christ, Hube! Jesus, Luther, and King Henry! You disappeared; just flicked out like a light! What's going on?"

"Time travel," said Hube.

"Don't spin out on me, man!" Dith said. He stepped away from the globes and looked around the hub. "There has to be some explanation."

"There is. Think about it. I cut a hole through the door and went through. I came here. When I touched one of the globes, I lost contact with you.

"When I went back to the airlock, the hole was gone. I spent forty-five minutes there exploring, then working on my radio. What did you do? You waited a half hour, then went through the holes I cut. My chronometer and locator say I was there when you came through. The holes were there for you. They were gone for me. Something is wrong with that equation." He paused, then said slowly, "We weren't there at the same _time!_"

"Okay. Maybe. But how did the holes close up?" asked Dith.

Hube bit his lip. Dith hadn't understood. "The hole only exists after I cut it. When each of us touched the globe, we were sent back through time to a point before I cut the hole in the door." He paused to think again. "Which globe did you touch the first time?"

Dith looked around the hub. "I don't know. They all look the same."

"Yeah. Odds are good we didn't touch the same globe the first time, but we're both here in the same place. I'll bet all the globes are set the same; any one will send us back the same distance through time. The time machine has only one setting."

Dith swayed on the balls of his feet. "I don't like it."

"Neither do I. This is worse than a maze, it's a trap: once in, there's no way out."

Dith's voice took on a strange edge Hube had never heard. "I don't buy it. Time travel is impossible! It's some sort of matter transmitter. We've been transmitted from one duplicate chamber to another-maybe from one asteroid to another." He stepped back and stared at the ring of globes on the circular wall.

Hube looked at the wall. Dith's theory was no more far-fetched than Hube's, and it had the virtue of offering eventual escape. "Well," Hube offered, "we touched different globes and ended up in the same place. That might mean there are only two ends of the link."

"Yeah. We've been through it twice. There and back again, do you think?"

Hube raised his hands in the suited belter's shrug. "We can go check."

Dith turned and headed down a tunnel. As they passed one of the bays, Hube cringed inwardly. He didn't want to see any more phantom spacesuits. He hurried after his partner.

Not minutes later, he heard Dith groan. Hube arrived in the airlock chamber and stood beside his partner. Together, they leaned back and looked up at the solid door. Dith's face was a dark ghost behind his visor. He turned to Hube and said nothing. Then he turned to the door and hammered a fist against it.

They headed back to the globes in silence, Dith trudging with determination like a man prepared to dig his way out of a collapsed mine, Hube thinking furiously. He was convinced they had traveled in time, not space, but how could he prove it?

An idea blazed in his mind, like the sun emerging from behind an asteroid.

"Listen," he said as they walked the last two hundred meters of tunnel. "I have an experiment I want to try. I want to touch one of the globes, then leave a beacon in the chamber."

"You want to get more lost in this crazy maze?" his partner asked.

"I don't think it's a maze."

Dith stopped and pivoted to face Hube. "Man, I don't know about you, but I've got nine hours of air left to find my way out of here. I don't want to mess around with crazy theories about time travel." He turned away and continued on.

Hube hurried after, groping for a response.

As Dith led the way into the globe chamber, he let out a cry. "Ah! You see! Here's your beacon."

Hube stepped into the chamber. Dith stood near the center of the curving floor, pointing at a beacon near his feet. Hube blinked. "How could it get there?" he asked. "I stuck it to one of the tunnel walls. If it fell loose, it would have fallen farther down the tunnel, not up here."

Dith crouched beside the beacon and reached for it. A sudden thought poured like icewater down Hube's spine. He lunged toward his partner, crying, "Don't touch it!"

He was too late. Dith's fingers brushed the beacon and it disappeared.

Dith jerked to his feet and stared at the empty floor space. "What the hell?" he whispered.

"You saw it disappear?" Hube asked urgently.

Dith looked up again. The whites of his eyes stood out behind his dark visor. "I saw it. What the hell happened?"

Hube felt a sudden relief and let out his secret. "I've seen two other phantoms like that. In one of the bays. The moment I tried to touch them, they flicked out just like that."

"Man, that's creepy." Dith stared at the empty spot on the floor. "Is it some sort of hologram?"

Hube hesitated. He recalled another old physicist: Heisenberg. It is impossible to specify completely the position and momentum of a particle. Was it impossible to verify both the existence and appearance of a phantom suit or beacon? "I think it has something to do with time travel," he said, finally. "Maybe that beacon, and the suits, are in some sort of indeterminate quantum state, like Schrdinger's Cat."

Dith's hand reached for the suit pocket where he kept his platinum pendant. He was quiet for a moment. "It's really crazy," he said. "You're saying that beacon was both there and not there. But Schrdinger's Cat can only be both dead and alive while the box was sealed. I don't see any box."

With a flash of inspiration Hube pointed to the asteroid that surrounded them. "There!" he said. "This whole asteroid is your box."

Dith turned to look, then paused. "Oh, shit."

"Yeah."

They stood in silence for a moment. Hube could hear Dith's rapid breathing. Finally, his partner asked, "You said you could test for time travel?"

"It won't take any time to prove. I'll go through one of the globes." Hube pointed to the floor at his feet. "I'll leave a relay beacon right here. If it shows up, you know I'm right." He looked down again and felt a cold shiver. Was that the same place they had seen the phantom beacon? Christ! He hadn't consciously chosen that spot!

"Hube, are you okay? I need help here."

Hube knew he wasn't crazy, but he could hear the fragile edge in his partner's voice. Dith might try to stop him. "Dith, if nothing happens in five minutes, you just have to follow me. It's worked twice before." And he stepped forward, reaching up, and touched the nearest globe.

Dith disappeared. Hube turned around, playing his helmet light over the empty chamber. He paused and took a deep breath, then walked back to where he had been standing and stuck the beacon to the floor.

Then he stepped back to wait.

Several minutes passed before Dith flicked into existence, holding the beacon in one gloved hand. Hube stepped forward, breath hissing out in relief. "Dith! Hey, you brought it with you!" Hube reached out for the beacon and both it and Dith ceased to exist.

"Oh no!" Hube staggered and tried to rub his eyes, but only clunked his glove against the rim of his visor. "Pull yourself together, groundhog!" he told himself. He stepped back from the globes and forced himself to think. He looked at the beacon and back at the circle of globes.

The phantoms had something to do with time travel. Even Dith had become a phantom-when his actions became dependent on the twisted cause-and-effect loops of time travel.

A horrible thought occurred to Hube.

The phantoms were quantum expression of changes in the past caused by time travel. The beacon might not have one hundred percent existence in the future until Hube made his decision to leave it irrevocable. If there was the slightest chance he might decide to pick it up, it would have uncertain existence in the future.

Dith might only find a phantom, and decide not to follow. Hube's partner was in yet another Schrodinger's Box, encased by time as well as metal. The time loop could not resolve into a fixed state until Hube absolutely committed to a decision.

How?

"Well," he said, "I can either kill myself or touch one of the globes."

"Hube?" Mary's voice sounded in his ears, in her most soothing tone. "Is there something you want to talk about?"

Hube smiled. His suicidal words had triggered her psychology routine. "I doubt you'd understand, Mary. I think I have to do something crazy."

"Perhaps it would help if we discussed it," Mary said as he reached up and touched a globe.

The beacon was gone, of course; he had taken another step back in time.

"Mary, I can't think of anything to discuss. I had to make a decision." Then he realized his mistake: he should have left a message for Dith. "Dammit!" He stepped across the floor.

"Hube, I'm very concerned," Mary said, "this is the fourth time your bio-signs have jumped like this. Are you okay?"

He pressed his head against the inside of his helmet and groaned. "I should have left a message for him to follow."

"Hube, your adrenal system is near exhaustion. You should relax a while."

He started pacing. "I can't," he said. "I really screwed up. If Dith can't figure this out, I may never see him again."

"Is it really your fault?" Mary prompted.

Hube laughed, then stopped.

A suited figure had appeared, its upraised hand drawing away from a globe.

"Dith?" Hube called as he bounded away from the wall.

The suit, marked with Dith's blue chevrons, turned as Hube approached. Again it held the beacon. Hube scrambled to a halt, not daring to touch his friend-or the image of his friend.

"You bastard!" Dith's voice blasted over the radio. "Are you trying to mess with my head, man?"

Hube touched his friend's arm and it remained in existence. He grabbed Dith in a bear hug and felt the reality of him, then pulled away. "Hey, I did something stupid," he said.

Dith bobbed backward in mock disbelief. "You, the perfect belter, do something stupid?" He paused. "Yeah you did, but I don't think the shit gets any deeper."

"You believe me?"

"Yeah, what else can I think? The beacon just popped into existence, right where you said it would. The globes send us back through time, and it's got to be a pretty long stretch, man. Look at this." He handed over the beacon.

Hube looked closely at it. The gray paint had faded. The plastic touch pad had yellowed.

"Check the battery," said Dith.

"Dead!"

"Long gone." Dith took back the beacon and hooked it to his belt. "Slow burn fission cell, man," he said slowly, "guaranteed for a millennium."

"Christ!" Hube said, "more than a thousand years at a pop!"

"So you were right. But now we're more dead than if I was right. I liked my theory better." Hube could see his partner's downcast face through the tinted visor.

"Yeah." Hube looked at the beacon, again. They had been through the globes four times. Four thousand years, at least. Back on Earth, the pyramids were mankind's best try at leaving the atmosphere. "There has to be a way to reverse this thing. Send us to our own time."

Dith said quietly, "You got seven hours to learn to read Terullian-unless you want to just start yanking and poking anything that looks like a control." His calm tone had passed; Hube could hear the ragged edge again.

Hube closed his eyes. They were still alive. Any chance was better than none. "Guess it's got to be the yank-and-poke routine. Unless a Terullian pops in to show us-hey, why not?"

Dith was studying the bands of Terullian script below the globes. "Hunh?"

"Why don't we go back and ask them? It's our best chance. Hell, I detected a trace oxygen atmosphere when I first cut in-at least we'll be able to breathe."

Dith turned to face him.

"I'm not spinning out," Hube said. "Think about it. The door has locked behind us. The only thing to do is go back through time until someone opens it."

Dith stood silent, his visor partly reflecting Hube's helmet and shoulders in a fish-eye view. Then he bobbed forward. "Yeah, you're right. So what do we do?"

Hube raised his hands to shrug. "Start touching a globe, and keep touching it, until we find somebody."

Dith looked at the globes. "The Terullians are supposed to have been gone for ten million years. How many times do we have to touch a globe to go back that far?"

"At a thousand years a touch?" Hube calculated. "Ten thousand touches. Mary, oxygen check."

"Four hours and thirty-five minutes at current rate of consumption."

Tension clenched its fist in Hube's solar plexus. "Four and a half hours!" he breathed. "How much at easy-work rate?"

"Five hours, fifty-seven minutes," his AI reported.

"Ten thousand touches in six hours. About sixteen hundred an hour. One every two seconds."

Dith turned to face him. "Hey, Hube, I've got at least an hour's more air than you. We could equalize our tanks."

Hube's belter pride was hurt. "Nah, I think I've got enough." He stepped forward and raised each hand toward a separate globe. "Let's get started." He touched the right-hand globe and Dith was gone.

The first half hour went okay. They tested each globe in the room, just to confirm that any two globes always brought them together. They also discovered that holding onto a globe did not produce longer jumps; the globes only transported once for each touch.

After that, it became routine. Touching the globes fell into a steady rhythm: _tap tap tap pause, tap tap tap pause. . . _ Hube relaxed into the pace. If archaeologists' estimates of the antiquity of the Terullians was right, it would be a long time before he would have to start watching for aliens.

Two hours of monotony set in. _Tap tap tap pause. . . tap tap tap pause. . . _ His arms grew leaden,

even against the low pseudogravity produced by the asteroid's spin. "Dith!" he called. He flicked past his partner before he could stop his hand, then paused and called repeatedly. Dith appeared, drawing his hand from a globe.

"Dith," Hube said, "I've got to rest. My arms are starting to feel numb."

"My arms are getting a little tired," Dith said. "But we can't stop long. We don't know how far we have to go yet, and we don't know if our oxygen will last."

"I know." Hube wondered if Dith's Earth-grown muscles had a bit more endurance than his own. There might, he reflected, be some advantages to growing up on Earth.

They sat side by side against the wall, drank some water and some liquid nutrient.

"You really think we'll get home this way?" Dith asked.

Hube closed his eyes. "It's our only chance." He looked at Dith. "Just think. If we do, we'll have a time machine to sell. Hell, I could _buy_ the Third Interstellar Colony."

"Yeah, count me in on that."

They sat in silence for a while, then Hube shifted and said, "Let's get back at it."

They started again. _Tap, tap, tap, pause. Tap, tap, tap, pause_. After fifteen minutes, Hube was conscious only of the effort required to hold his hands near the globes and of the small, repetitive motion of his wrist. He passed Dith once, then his partner passed him. They gave up any attempt to coordinate their actions and, in time, Hube's mind lost focus.

After an hour, he had to stop again. As before, he called to catch Dith's attention, but this time the man flicked by without noticing. Hube chased him for several taps, but did not catch up. He decided to take a short break alone.

After five minutes, cold anxiety drove Hube back to the globes. His world dissolved into vague ache of his arms and the force of his will holding them up.

"Hube."

Tap, tap, tap, tap pause. Tap, tap, pause

"Hube, please respond. Your oxygen is running low."

_Tap, tap, tap tap, pause. Tap, tap, tap, tap, tap _ - "Hunh?"

"Hube, I'm very concerned. You have only twenty-three minutes of oxygen at this rate of consumption. Your blood shows a high level of fatigue. Perhaps you should consider resting."

Hube checked the time. "Four and a half hours!" he groaned. "And still not there. Where's Dith?"

"I haven't received signals from him for the last eighty-six minutes."

Hube closed his eyes and tried to clear the fatigue from his brain, from his arms. "Dammit! Start

transmitting a call for him."

He should never have turned down Dith's offer to share his oxygen. Dith might stop to wait for him, but there was no way to know how many taps further through time his partner was. He could only continue.

He tried to stay focused, gave in to fatigue after the first five minutes. He concentrated on tapping the globes. Later, his mind wandered. He remembered the carefully tended fields and groves of Ceres' Outer Ring. He felt as if he were flying a meter from the ground between the maple and walnut trees. Long white coffins sprouted up from their roots. Hibernation pods. Each with its passenger to the stars. That wasn't right. Ceres Habitat wasn't going to the stars. He heard Olga's voice calling through the forest. "Hube? Hube?"

"Yeah?"

"Hube, you've been inactive for the last three minutes and forty-nine seconds. I've started emergency medical procedures. I estimate four minutes of air remaining. You must get a new air supply." The heavy gelatin-clarity of anti-fatigue drugs flooded his mind.

He realized where he was. "What about Dith?"

"I detected his carrier frequency three minutes ago. It had a duration of less than a second."

Somewhere in the fuzz in his head, Hube realized he had caught up with Dith but missed him. His partner had touched a globe before he had time to react to the call. Hube had to hope Dith had stopped, and was waiting. Of course, if he was as fatigued as Hube, he might have missed the call completely.

Hube noticed he sat on the floor, leaning against the wall. He tried to force himself up, but his knees felt like water. He slumped down and stared at his feet. So he would die alone, millions of years in the past, far from his beloved stars and finished by the pride that had made him refuse to share his partner's air.

He growled. He leaned back and looked up at the globe hanging two meters above his head. The dark expanse of wall reminded him of the sealed airlock door, how he had crawled up over its surface. He gasped. "Mary, grapples on."

"Grapples on, Hube."

A centimeter at a time, he attached himself to the wall and slid up it. It was easier than standing. Finally, he got close enough to touch a globe, and did so.

"Mary? Is Dith here?" he gasped. Blackness worked its fingers into the edge of his vision.

"I don't detect his frequency," Mary said. "Hube, oxygen supply is zero. I will cease cycling to conserve what is sealed in your suit. . . " she rambled on, but darkness was flooding Hube's head. He had only one thought. He raised his hand again, the muscles in his shoulder twitching, and groped blindly for a globe. As blackness dissolved his consciousness, he felt the globe's hard surface through his glove.

The trees rustled and a sandalwood-scented breeze played gently on his face. Hube opened his eyes, and the illusion vanished. His suit lay in a heap on an adjacent table, medical data cables still linked to the undersuit he wore.

"Hello, Hube." Mary's voice sounded distant and lonely, speaking from his empty helmet. "I'm very glad

you're conscious."

Hube realized his head was starting to ache. "I'm not sure I am," he said.

An East Indian woman of about forty leaned into view and patted his shoulder. "I'm Doctor Ramakrishnan," she said. "You're out of the woods. You have a mild case of oxygen starvation and a major case of fatigue." She flashed a penlight in his eye, then turned it aside. "Yes, that's fine."

As Hube blinked away the afterimage, Dith's tall frame loomed into view.

"Hube?" Dith wore his undersuit fatigues with Schrdinger's Box hanging on a chain from his neck. "You're going to be okay, man."

"You got us home!"

Dith shook his head. "Not home. The time machine can't send us forward in time. We're stuck here."

"Here?" Hube looked around. The room was a small cubicle, walled with white partitions, except for one dark wall. Clusters of glowing prisms and cylinders thrust out from the dark wall at about two-meter's height, like a strip from a model city.

Hube recognized the dark, plastic-like coating behind the strip. "We're still in the asteroid," he moaned. He swung his feet off the table and tried to stand. A wave of dizziness staggered him.

Mary spoke from his helmet again. "Hube, it may not be wise to move right now."

Hube reached to unplug the med cable, then stopped. Mary had kept him conscious until he could reach Dith. She had saved his life. He knew she was only a collection of programs, but he felt gratitude and respect. He left the cable alone and leaned against the doctor's table.

"We're still here," Dith said. "Eleven million years in the past. The time machine only works backward."

"What?" Hube looked at Dr. Ramakrishnan.

She looked sad and said, "I am sorry, but there is no way home."

Hube eyed her aquiline nose, dark thick eyebrows, and full lips. "You're a Terullian?" he asked incredulously.

She laughed. "No, I am human. Shakti Ramakrishnan of the First Temporal Expedition."

"Temporal Expedition! You came back here without knowing where you would end up? Only a groundhog would take a risk like that."

Dr. Ramakrishnan looked miffed. "When a research team determined that your asteroid was a temporal translocator, the Solar Authority called for volunteers to travel back through time. I and seven others set out to find the Terullians. As you say, no beltors volunteered for the expedition."

Hube frowned. "So did you find the Terullians?"

"Yes."

Hube straightened and looked at the door. His heart pounded. "Are they here?"

Dr. Ramakrishnan moved to block the door and said apologetically, "You have very much to assimilate, and some strength to regain. You must stay here a while longer."

Hube blinked and looked at his partner.

Dith pressed his lips together and shook his head. "They're really weird, man."

Hube looked at the door once more. This cubicle was obviously a makeshift, constructed for humans. He tried to massage the headache from his skull. After a moment, another question popped into his mind. "Why the hell did they leave a time machine running? Were they trying to catch us? Run us through a temporal maze like lab rats?"

Dith and the doctor exchanged a glance. The doctor said, "It was a mistake."

"A _mistake_?"

"The Terullians have given up on their future. Right now, they are disassembling what remains of their whole empire and transmitting themselves back to their golden era. They have left only a skeleton crew to turn off their installations. Apparently, they just lost track of this one."

Hube lowered his head into his hand. "I can't believe it."

Doctor Ramakrishnan shrugged. "They only learned of the oversight when humans started arriving. The consequences of using temporal dislocation to correct the problem are complicated by certain. . . pseudo-quantum effects. . . so they've left it alone. They are very sorry and have supplied us with very adequate compensation."

"Compensation? What could compensate me for my life?"

Dith shook his head and grinned. "Have I got a surprise for you, man."

"What? What is it?"

"Do you still want to colonize the stars?"

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