

# INSIDE OUT

## Rudy Rucker

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*Rudy Rucker is a mathematician who writes books of popular science and science fiction. His SF swings widely and freely into the surreal and metaphysical upon occasion. In this story, his future is a fantasy land and his science is transformed by metaphor. In direct rebellion against the tradition of fantasy world-building, Rucker doesn't just paint the world of the story with a broad brush; he paints it with a broom. He simultaneously denies the necessity of rationalizing the world of the story while invoking the standard scientific technique of oversimplifying for the sake of mathematical argument (in this case involving topology—an interesting contrast to R. A Lafferty's story (pp.375-88). Fast and loose, wild-and-crazy fantastic, that's Rudy Rucker.*

You might think of Killeville as a town where every building is a Pizza Hut. Street after street of Pizza Huts, each with the same ten toppings and the same mock mansard roof—the same shiny zero repeated over and over like same tiles in a pavement, same pixels in a grid, same blank neurons in an imbecile's brain.

The Killevillers—the men and women on either side of the Pizza Hut counters—see nothing odd about the boredom, the dodecaduplication. They are ugly people, cheap and odd as K-Mart dolls. The Killeville gene pool is a dreg from which all fine vapors evaporate, a dreg so small that some highly recessive genes have found expression. Killeville is like New Zealand with its weirdly unique fauna.

Walking down a Killeville street, you might see the same hideous platypus face three times in ten minutes.

Of course a platypus is beautiful ... to another platypus. The sound that drifts out of Killeville's country clubs and cocktail parties is smug and well-pleased. It's a sound like locusts, or like feasting geese. "This is good food," they say, "Have you tried the spinach?" The words don't actually matter; the nasal buzzing honk of the vowels conveys it all: *We're the same. We're the same.*

Unless you were born there, Killeville is a horrible place to live. Especially in August. In August the sky is a featureless gray pizza. The unpaved parts of the outdoors are choked with thorns and poison ivy. Inside the houses, mold grows on every surface, and fleas seethe in the wall-to-wall carpeting. In the wet grayness, time seems to have stopped. How to kill it?

One can watch TV, go to a restaurant, see a movie, or drink in a bar—though none of these pastimes is fun in Killeville. The TV channels are crowded with evangelists so stupid that it isn't even funny. All the restaurants are, of course, Pizza Huts. And if all the restaurants are Pizza Huts, then all the movie theaters are showing Rambo and the Care Bears movie. MADD is very active in Killeville, and drinking in bars is risky. Sober, vigilant law-enforcement officers patrol the streets at every hour.

For all this, stodgy, nasty Killeville is as interesting a place as can be found in our universe. For whatever reason, it's a place where strange things keep happening ... *very* strange things. Look at what happened to Rex and Candy Redman in August, 198-.

Rex and Candy Redman: married twelve years, with two children aged eight and eleven. Rex was dark and skinny; Candy was a plump, fairskinned redhead with blue eyes. She taught English at Killeville Middle School. Rex had lost his job at GE back in April. Rex had been a CB radio specialist at the Killeville GE plant—the job was the reason the Redmans had moved to Killeville in the first place. When Rex got laid off, he went a little crazy. Instead of selling the house and moving—which is what he should have done—he got a second mortgage on their house and started a business of his own: Redman Novelties & Magic, Wholesale & Retail. So far it hadn't clicked. Far from it. The Redmans were broke and stuck in wretched Killeville. They avoided each other in the daytime, and in the evenings they read

magazines.

Rex ran his business out of a run-down building downtown, a building abandoned by its former tenants, a sheet music sales corporation called, of all things, Bongo Fury. Bongo Fury had gotten some federal money to renovate the building next door, and were letting Rex's building moulder as some kind of tax dodge. Rex had the whole second floor for fifty dollars a month. There was a girl artist who rented a room downstairs; she called it her studio. Her name was Marjorie. She thought Rex was cute. Candy didn't like the situation.

"How was *Marjorie* today?" Candy asked, suddenly looking up from her copy of *People*. It was a glum Wednesday night.

"Look, Candy, she's just a person. I do not have the slightest sexual interest in Marjorie. Even if I did, do you think I'd be stupid enough to start something with her? She'd be upstairs bothering me all the time. You'd find out right away ... life would be even more of a nightmare."

"It just seems funny," said Candy, a hard glint in her eye. "It seems funny, that admiring young girl alone with you in an abandoned building all day. It *stinks!* Put yourself in my shoes! How would *you* like it?"

Rex went out to the kitchen for a glass of water. "Candy," he said, coming back into the living room. "Just because you're bored is no reason to start getting mean. Why can't you be a little more rational?"

"Yeah?" said Candy. She threw her magazine to the floor. "Yeah? Well I've got a question for *you*. Why don't you get a JOB?"

"I'm trying, hon, you know that." Rex ran his fingers through his thinning hair. "And you know I just sent the catalogs out. The orders'll be pouring in soon."

"BULL!" Candy was escalating fast. "GET A JOB!"

"Ah, go to hell, ya goddamn naggin ... " Rex moved rapidly out of the room as he said this.

"THAT'S RIGHT, GET OUT OF HERE!"

He grabbed his Kools pack and stepped out on the front stoop. A little breeze tonight; it was better than it had been. Good night to take a walk, have a cigarette, bring home a Dr. Pepper, and fool around in his little basement workshop. He had a new effect he was working on. Candy would be asleep on the couch before long; it was her new dodge to avoid going to bed with him.

Walking towards the 7-Eleven, Rex thought about his new trick. It was a box called Reverse that was supposed to turn things into their opposites. A left glove into a right glove, a saltshaker into a pepper grinder, a deck of cards into a Bible, a Barbie doll into a Ken doll. Reverse could even move a coffee cup's handle to its inside. Of course all the Reverse action could be done by sleight of hand—the idea was to sell the trapdoored Reverse box with before-and-after props. But now, walking along, Rex remembered his math and tried to work out what it would be like if Reverse were for real. What if it were possible, for instance, to turn things inside out by inverting in a sphere, turning each radius vector around on itself, sending a tennis ball's fuzz to its inside, for instance. Given the right dimensional flow, it could be done ...

As Rex calmed himself with thoughts of math, his senses opened and took in the night. The trees looked nice, nice and black against the citylit gray sky. The leaves whispered on a rising note. Storm coming; there was heat lightning in the distance and thundermutter. *Buddaboombabububu*. The wind picked up all of a sudden; fat rain started spitting; and then KCRAAACK! there was a blast to Rex's right like a bomb going off! Somehow he'd felt it coming, and he jerked just the right way at just the right time. Things crashed all around him—what seemed like a whole tree. Sudden deaf silence and the crackling of flames.

Lightning had struck a big elm tree across the street from him; struck it and split it right down the middle. Half the tree had fallen down all around Rex, with heavy limbs just missing him on either side.

Shaky and elated, Rex picked his way over the wood to look at the exposed flaming heart of the

tree. Something funny about the flame. Something very strange indeed. The flames were in the shape of a little person, a woman with red eyes and trailing limbs.

"Please help me, sir," said the flame girl, her voice rough and skippy as an old LP. "I am of the folk, come down on the bolt. I need a flow to live on. When this fire goes out, I'm gone."

"I," said Rex. "You." He thought of Moses and the burning bush. "Are you a spirit?"

Tinkling laughter. "The folk are information patterns. I drift through the levels doing this and that. Can you lend me a body or two? I'll make it worth your while."

The rain was picking up, and the fire was dying out. A siren approached. The little figure's hot perfect face stared at Rex. She reached out towards him beseechingly.

"I have an idea," said Rex. "I'll put you in Candy ... my wife. Just for a little while. Right now she's probably asleep, so she won't notice anyway. I live just over there ... "

"Carry me in a coal," hissed the little voice.

Rex tried to pick up part of the burning heartwood, but it was all one piece. On a sudden inspiration, he drew out a Kool and lit it by holding it against the dying flames. He puffed once, getting it lit, and the elfgirl entered him.

It felt good, it felt tingly, it felt like being alive. Quick thin fractal pathways grew down his arms and legs, spidering out from his chest, where the girl—

"My name is Zee."

—had settled in.

"It's nice in here," said Zee, her voice subvocal in Rex's throat. "No need to introduce yourself, Rex, I'm reading your mind. I'm going to keep your body and give Candy to Alf." Rex's lips moved slightly as Zee spoke. The reality of this hit Rex—he was possessed! He began a howl of surprise, but Zee cut him off toot sweet. She took over his motor reflexes and began marching him home. Rex's nerves felt thick, coated, crustacean.

"Sorry to do this to you, Rex," said the voice, "but I really don't have a choice. It's the only way I can get rid of Alf, the little spirit who possesses me. He's been insisting I get him a human body. But I like you, so we'll put him in your wife instead of you."

Candy was stretched out on the couch, softly snoring. Rex put the Kool in his mouth and leaned over Candy so that the ash end was just inside her mouth. He blew as she inhaled. A tiny figure of smoke—a little man much, much smaller than Zee—twisted off the cigarette tip and disappeared into Candy's chest. *Gazzzunk*. She snorted and sat up, eyes unnaturally bright.

"So you're Rex?" It was Candy's voice, but huskier, and with a different pronunciation.

"Rex Redman. And you're in my wife Candy. We're both possessed, me by little Zee and she by smaller who? Who are you? You haven't *hurt* Candy have you?"

"Hi Zee. Tell him shut up, Candy's here asleep, and I'm Alf. Let's shake this meat, Zee." Candy/Alf stretched her arms and pushed out her chest. "Hmm." She undid her blouse and bra and examined her breasts with interest. Her motions were open and youthful, and her features had a new tautness. "Do you want to make love?"

"Yeah," said Rex/Zee. "Sure."

Up in their second-floor bedroom, the sex was more fun than it had been in quite a while. The only reason Candy kept bugging Rex about Marjorie was, Rex felt, because Candy wanted to be unfaithful herself. Lately she'd been sick of him. Pumping in and out, Rex wondered if *this* was adultery. It *was* Candy's body, but Candy's mind was asleep, or on hold, and, for his part, Zee was calling the shots so good Rex wanted them all: come shots, smack shots, booze shots in the sweaty night. Eventually Candy woke up halfway and was happy. It became almost a fourway scene.

The way Zee told it, flaked out on the mattress there, she came from a race of disincorporated beings

consisting of pure patterns of information. The folk. They could live at any size scale or, ideally, at several size scales at once. Each of the folk had a physically real ancestor on some level or another, but the originals were long lost in the endless mindgaming and switching of hosts. Before entering Rex's nervous system, Zee had been a pattern of air turbulence up in the sky, a pattern that had wafted out from the leaves of a virus-infested bamboo grove in Thailand. The virus—which had been Zee—had evolved out of a self-replicating crystalline clay structure in the ground, which had been Zee too.

Alf was a kind of parasite who'd just entered Zee recently. There were folk throughout the universe, and Alf had arrived in the form of a shower of cosmic rays. He'd latched right onto Zee. It had been his idea to get Zee to come down and possess a person—the folk didn't usually like to do that. Alf had gotten Zee to possess Rex so Rex would help put Alf into a person too. Zee was glad to get Alf out of her—she didn't like him.

Lying there spent, fondling Candy and listening to Zee in the dark, Rex began to think he was dreaming. Dreaming a factual dream of the folk who live in the world's patterns—live as clouds, as fires, as trees, as brooks, as people, as cells, as genes, as superstrings from dimension Z. Any type of ongoing process at all would do. *Fractal*; the word kept coming back. It meant something that is endlessly complex at every level—like a coastline, with its spits within inlets within bays; like a high-tree habitat where the thick branches keep merging to thicker ones, and the thin ones split and split.

"Would you really have died if I'd let your fire go out?" Rex asked. It was dawn and this was no dream.

"No," laughed Zee. "I'm a terrible liar. I would have gone down into the wood's grain-patterns, and then into the sugars of the sap. But I just had to get rid of Alf. And I like you, Rex. I was *aiming* for you when I rode the lightning down. You smelled interesting and ... thick like extra space."

"You could smell me all the way up in the sky?"

"It's not really *smelling*. For us nothing's so far away, you know. Your whole notion of space and distances is ... a kind of flat picture? The folk are much realer than that. We live in full fractal Hil-bert space. You think like a flat picture, but the paper, if you'll just look, is all bumpy like a moonscape of bristlebushes covered with fuzzy fleas. There's no fixed dimensions at all. Does it feel good when Alf and I do this?"

"Yes."

Candy's wordless smiling daze ended when the first rays of the sun came angling in the window. She jerked, rubbed her eyes, and groaned. "Rex, what have you been *doing* to me? I dreamed ... " She tried to sit up and Alf wouldn't let her. Her eyes rolled. "There *are* things in us, Rex, it's real, I'm scared, I'm SCARED SCARED OOOOoooo—"

Her skin seemed to ridge up as Alf's tendrils clamped down. Her mouth snapped shut and then her face smoothed into an icky pixie grin. She got out of bed and dressed awkwardly. Rex didn't usually pay much attention to what women wore, but Candy's outfit today definitely did not look right. A cocktail dress tucked into a pair of jeans. Where did she think she was going so early?

"I'll call in sick," said Alf through Candy. "Just a minute." She went to the phone and tried to call the school where she worked. Alf didn't seem to realize it was summer vacation.

"Mommy's up!" shouted Griff, hearing the call.

"Where's breakfast?" demanded little Leda.

"LOOK OUT, KIDS!" shouted Rex. "MOMMY AND I HAVE BEEN TAKEN OVER BY—" Zee's clampdown hit him like a shot of animal tranquilizer.

"Just kidding," called Zee/Rex. The kids laughed. Daddy was wild. Zee/Rex went into the kitchen to look for food and Leda asked for breakfast again. "Feed yourself, grubber," mouthed Rex. Hungry. Zee had him brush past Griff and Leda and fill a bowl with milk, sugar, and three raw eggs. Zee/Rex leaned over the bowl and lapped the contents up.

"Daddy, you are eating like a pig!" laughed Leda. She fixed herself a bowl of milk and sugar and tried lapping it up like Daddy. The bowl slid off the table and onto the floor. Griff, upset by the disorder, grabbed some bread and headed out the door to play with the dog. Leda cleaned up halfheartedly until she realized that Daddy didn't care, and then she went to watch cable TV.

"Do you want to fuck your wife some more?" said Zee. The voice was subvocal.

"Uh, no," said Rex, beginning to wonder what he'd gotten his family into. "Not right now. Do you remember saying that you'd make it worth my while if I gave the use of our bodies, Zee? What kind of payment do the folk give?"

"As a rule, none," said Zee, making Rex nibble on a stick of butter. "I told you I'm a terrible liar. Isn't having me in you payment enough? Don't you like being part of the Zee fractal?" Rex didn't understand, but Zee helped him and then he did. Folk like Zee were long thin vortices in the fractal soup of all that is. Or like a necklace strung with diverse beads. Rex was a Zee-bead now, and Candy was an Alf-bead. Alf's thread passed up through Zee, too, and up through Zee to who knew where.

It was dizzying to think about: the endlessness and the weird geometry of it all. To hear Zee tell it, every size scale was equally central, each object just another crotch in the transdimensional fractal world-tree. Zee and Alf were in them, above them, and maybe below them now, too: in their genes and in their memes. Rex's thoughts felt no longer quite his.

He'd made a terrible mistake picking Zee up. He kept remembering the desperate expression on Candy's face as Alf made her stop yelling. And the puzzled looks the children had given their terribly altered Dad.

"Can't you and Alf move on, Zee? Leave your fractal trail in us, but move on down into the atoms? Can I drive you anywhere?"

"No. It's ugly here in Killeville. I just came down because of you. When I'm through eating, I want to get back in bed with Candy and Alf." Rex watched himself open the fridge, hunker down, and begin using a stick of celery to dig peanut butter out of the jar. Crunch off some celery each time. It tasted good. Whenever he relaxed, the nerve-tingle of Zee's possession started to feel good. That was bad.

"What was it about me that attracted you so much, Zee?"

"I said I could smell you. You were thinking about your magic box called Reverse. It makes your flat space get thick, and it spins things over themselves. I told you the higher dimensions are real; you can build up to them with fractals. I bet I could make Reverse really work. I could do *that* for you, dear Rex."

"Well, all right." Rex went back in the bedroom and talked things over with Candy, who was busy putting on a different set of clothes. "I think I'll drive down to my office, Candy," said Rex. "Zee says she can help me get the Reverse working. And maybe then they'll leave."

"I'm going to stay in bed all day," said Candy, making that pixie face. She had taken all her clothes back off, and one of her hands was busy down in her crotch. "I love this body." Her voice was husky and strange. Rex felt very uneasy.

"Maybe I shouldn't leave you like this, Candy."

"Go on, go downtown to your Marjorie. I won't be lonely, Rex. You can count on that."

"Do you mean—"

Zee cut him off and marched him out of the bedroom and back down the stairs.

"And take the kids," called Candy in something like her normal voice. She sounded scared. "Get the poor children out of here!"

"Right."

Rex rounded up the children and took them over to the Car-randines' house. Luanne Carrandine was a little surprised when Rex asked her to babysit, but after the usual heavy flirting, she agreed to help out. She was a charming blonde woman with a small jaded face. Some of the suggestions which Zee

forced out of Rex's mouth made Luanne laugh out loud. If her husband Garvey hadn't been upstairs, Rex and Zee might have stayed on, but as it was, they headed downtown.

Last night's storm had left Killeville gray and steamy. Kudzu writhed up the walls of the abandoned building Rex rented space in. The other renter—the famous Marjorie—didn't usually show up till ten. Rex/Zee's footsteps echoed in the empty space. He walked her up the filthy stairs to his little office. There on his desk sat the Re-verso: a silver-painted, wood box with a hidden trapdoor in the bottom.

Rex felt foolish showing his crummy trick to a truly magical spirit like Zee. But she insisted, and he ran through the patter.

"This is a handy little box that turns things into their opposites," said Rex, putting a right-handed leather glove in the chamber. "Suppose that you have two pairs of gloves, but you lose the left glove to each pair. No problem with Reverse!" *He* lifted the box up and shook it (meanwhile sneaking a hand in through the trapdoor to turn the special glove inside out). He set the Reverse back down. "Open it up, Zee. You see! Right into left." He took out the left glove and put in a fake saltshaker. "But that's not all. Reverse changes all kinds of opposites. What if you have salt but no pepper?" He shook the chamber again. (A hidden curtain inside the "saltshaker" slid down, changing its sides from white to black.) "Open the chamber, Zee—salt into pepper! Now what if you're short on shelf space and your coffee cups' handles keep bumping into each other?" He drew out a (special) coffee cup and placed it in the chamber. "Simple! We use Reverse to turn inside to out and put the handle on the inside for storage!" (He opened the chamber, moving the suctioned-on cup-handle to the cup's inside as he drew it out.) "See!"

"I know a way to do the first and last tricks without cheating," said Zee. "I know how to really turn things inside out. Look." Rex's hand picked up a pencil and drew a picture of two concentric circles. "See the annular ring between the circles? Think of lots of little radial arrows in the ring, all leading from the inner circle to the outer circle." His hand sketched rapidly. "Think of the ring part as something solid. To turn it inside out means to flip each of the arrows over." Zee stopped drawing and ran a kind of animation on Rex's retina. He seemed to see the ring's radial arrows rotating up out of the paper to point inwards. All of them turning together made a trail shaped like a torus. "Yes, a torus, whose intersection with the plane looks like two circles. Think of a smoke-ring, a torus whose inner circle keeps moving out—like a tornado biting its own tail. A planecutting toroidal vortex ring turns flat objects inside out. What we need for your real Reverse is a hypertorus whose intersection with your space looks like two spheres, a big one and a little one. I know where to get 'em, Rex, closer than you know. These hypertoruses have a fuzzy fractal surface and a built-in vortex flow. You won't *believe* where ... "

"Talking to yourself, Rex?" It was Marjorie, come up the stairs to say hi. Rex and Zee, in the throes of scientific rapture, had failed to hear her come in.

Marjorie was a thin young woman who smiled a lot. She wore her hair very short, and she smoked Gauloises—which took some doing in a chain-store town like Killeville. "I'm making coffee for us, and I wondered if you remembered to bring milk and sugar."

"Uh, no. Yes, I guess I am talking to myself. This Reverse trick, you know." Suddenly Zee seized control of Rex's tongue. "Do you want to make love?"

Marjorie laughed and gave Rex a gentle butt with her head. "I never thought you'd ask. *Sex now?*"

"No time now," cried Rex, taking back over. "Shut up, Zee!"

Marjorie stepped back to the door and gave Rex a considering look. "Are you high, Rex? Or what? You have some for me?"

"I have to work," said Rex. "Stay quiet, Zee."

"I can make you feel like Rex," said Zee through Rex's mouth. "With an Alf. Come back here, honey."

"Meanwhile on planet Earth," said Marjorie, and disappeared down the stairs, shaking her head.

"Stop it, Zee, and let's get to work. Where are we supposed to find that hypertoroidal vortex ring

you were talking about?"

"Space's dimensionality depends on the size scale you look at, Rex. From a distance a tree seems like a pattern of one-D lines. Get closer and the bark looks like a warpy two-D surface. Land on the surface and it's a fissured three-D world. Down and down. Hypertoroidal vortex rings are common at the atomic scale. They're called quarks."

"Quarks!"

"A quark is a toroidal loop of superstring. Now just hold still while I reach down and yank—"

There was a sinking feeling in Rex's chest. Zee was moving down through him, descending into the dimensional depths. With her bright "growth tip" gone from him, Rex felt more fully himself than he had since last night. Zee's fractal trail was still in him, but her active self was down somewhere in his atoms. He sighed and sank down into his armchair.

Interesting how receptive Marjorie had been to that suggestion of Zee's ... but no. The peace of his neutral isolation was too sweet to compromise. *But what was Candy up to right now? What was Alf getting her to do?*

Rex's nervous gaze strayed to the shelves of the little novelties that he was ready to mail, once the orders started coming in. He tried to calm himself by thinking about business. *Boy's Life* might be a good place to advertise, maybe he should write them for their rates. Or—

"Wuugh!" Zee's heavy catch swelled and stung in Rex's rising gorge and he gagged again, harder. A flickering fur sphere flopped out of his mouth and plopped onto the floor in front of him. It had an aura of frenzied activity, but it didn't seem to be going anyplace. It just lay there on the pine boards, its surface flowing this way and that.

"I'm back," murmured Zee with Rex's mouth.

Rex nudged the sphere with his foot. It shrank from his touch.

"If you're rough with it, it shrinks," said Zee. "And if you pat it, it gets bigger. Try."

Rex leaned forward and placed his hands lightly on the sphere's equator. It wasn't exactly fur-covered after all. Velcro was more like it. Zee had him rub his hands back and forth caressingly, and then move them apart. The sphere bulged along with his hands, out and out till it was four feet across. Rex felt like a tailor fitting a fat man for a suit. He pushed back his chair and got up to take a better look at the thing.

At any instant, its surface was fractally rough: cracked and fissured, with cracks in its cracks, and with a tufty overlay of slippery fuzz that branched and rebranched. In its richness of structure, it was a bit like an incredibly detailed scale model of some alien planet.

What made the fuzzball doubly strange was that its surface was in constant flux. If it was like the model of a planet, it was a dynamic model, with speeded-up time. As if to the rhythm of unseen seasons, patches of the fuzzball's stubble would grow dark red, flatten out to eroded yellow badlands, glaze over with blue crackle, and then blossom back into pale red growth.

"A quark is this complex?" Rex asked unbelievably. "And you say this is really a hypertorus? Where's the inner sphere? And how can anything ever get inside it?"

"It's the hyperflow that makes it impervious," said Zee. "And you valve that down with a twist like this." She made Rex grab the sphere and twist it clockwise about its vertical axis. It turned as grudgingly as a stiff faucet. "If you give it a half-turn, the hyperflow stops." Sure enough, as Zee/Rex's hands rotated the sphere it stopped its flickering. It was static now, with a big red patch near Rex. Frozen still like this, the sphere was filmy and transparent. Peering into it, Rex could see a small sphere in the middle with a green patch matching the outer sphere's red patch.

"You can still make it change size when it's stopped like this," said Zee, urging Rex's reluctant hands forward. "But now, even better, you can push right through it. Even though it still resists shear, it's gone matter-transparent."

The outer sphere was insubstantial as a curtain of water; the central sphere was, too. It had been the hyperflow, now halted, that gave the spheres their seeming solidity. Zee now demonstrated that if Rex jabbed or caressed the barely palpable inner sphere, it grew and shrank just as willingly as did the outer sphere. The two could be adjusted to bound concentric shells of any size.

The region between the spheres felt tingly with leashed energies. Rex could begin to see what would happen if the hyperflow started back up. Everything would turn over. The inside would go out, and the outside would go in. He jerked his hands back.

"And of course you restart it by turning it the other way," said Zee. Rex dug into the sphere's yielding surface and twisted it counterclockwise. Insubstantial though it was, the sphere resisted this axial rotation as strongly as before. Slowly it gave and unvalved. The hyperflow started back up. The big outer patch near Rex shifted shades from red through orange to yellow to green to blue to violet. Rex watched for a while and then stopped the flow the next time a green outer patch appeared. Peered in. Yes, now the inner patch was red. They'd traded places. The stuff of the outer sphere had flowed up through hyperspace and back down to the inner sphere. It was just the same as the way the stuff of a donut-shape's outer equator can flow up over the donut's top and down to its inner equator. Like a sea cucumber, the big quark lived to even.

"Let's call it a cumberquark," said Rex.

"Fine," said Zee. "Wonderful. I'm glad I showed it to you. Aren't you going to try it out?"

Rex's eye lit on a glass jar of rubber cement. He halted the cumberquark's flow, jabbed the central sphere down to the size of a BB, squeezed the outer sphere down to the size of a small cantaloupe, and then adjusted the temporarily matter-transparent sphere so that the inner one was inside his jar of rubber cement. The outer sphere included the whole jar and a small disk-section of Rex's desktop. With one quick motion, Rex unvalved the cumberquark just enough for the green patch to turn red, twisted the hyperflow back off, and shoved the cumberquark aside to see what it had wrought.

Thud floop. A moundy puddle of rubber cement resting in a crater on his desk. Wedged into the hole was an odd-shaped glass object. Rex picked it up. A jar, it was the rubber cement jar, but with the label inside, and rattling around inside it was—

"That hard little thing is the disk of desk the jar was sitting on."

The jar's lid was on the top, but facing inwards. Rex pushed on its underside and got it untwisted. As he untwisted it, compressed air hissed out: all the air that had been between the jar and the cumber-quark's outer sphere was squeezed in there. The lid clattered into the jar's dry inside. Peeking in, Rex could see that the rubber cement label had mirror-flipped to tmemec rebbur. Check. He jiggled the jar and spilled the shrunken bit of desk out into his hand. Neat. It was a tiny sphere, with a BB-sized craterlet where the cumberquark's inner sphere had nestled. A small gobbet of unverted rubber cement clung to this dimple.

Quick youthful footsteps ascended the steps to Rex's office. Marjorie, back for today's Round Two.

"I want you to meet Kissycat. Kissycat, this is Rex." Marjorie had a sinewy black cat nestled against her flattish chest. She pressed forward and placed the cat on Rex's shoulder. It dug its claws in. Rex sneezed. He was allergic to cats. He had some trouble getting the neurotic beast off his shoulder and onto the desktop. He had a wonderful, awful, Grinchy idea.

"Will you sell me that cat, Marjorie?"

"No, but you can babysit him. I'm going down to the sub shop. Want anything?"

"Just a Coke. I'm going to meet Candy for lunch." He'd been away too long already.

"La dee da. Where?"

"Oh, just at home." Rex ran his shaky fingers through his hair, wondering if Candy was still in bed. But dammit, this was more important than Candy's crazy threats. The cat. In just a minute he would be alone with the cat.



Kissycat nosed daintily around Rex's desktop and began sniffing at the cumberquark.

"Rad," said Marjorie, noticing it. "Is that a magic trick?"

"It's a cumberquark. I just invented it."

"What does it do?"

"Maybe I'll show you when you get back. Sure, Kissycat can stay here. That's fine. Here's seventy-five cents for the Coke."

As soon as she'd left the building, Rex dilated the cumberquark to pumpkin size and began stalking Kissycat. Sensing Rex's mood—a mixture of prickly ailurophobia and psychotic glee—the beast kept well away from him. Fortunately he'd closed his office door and windows. Kissycat wedged himself under Rex's armchair. Rex thumped the chair over and lunged. The cat yowled, spit, and slapped four nasty scratches across Rex's left hand.

"You want me to kill you *first*?" Rex snarled, snatching up the heavy rod that he used to prop his window open. Candy had him all upset. "You want me to crush your head before I turn you inside out, you god—"

His voice broke and sweetened. Zee taking over. He'd forgotten all about her.

"Niceums kitty. Dere he is. All thcared of nassy man? Oobie doobie purr purr purr." Zee made Rex rummage in his trashcan till he found a crust of yesterday's tuna sandwich. "Nummy nums for Mr. Tissyat! Oobie doobie purr purr purr." This humiliating performance went on for longer than Rex liked, but finally Kissycat was stretched out on the canvas seat of the director's chair next to Rex's desk, shedding hair and licking his feet. Rex halted the cumber-quark's flow and moved gingerly forward. "Niceums!"

Kissycat seemed not to notice as the gossamer outer sphere passed through his body. Cooing and peering in, Rex manipulated the sphere till its BB-sized center was inside the cat, hopefully inside its stomach. With a harsh cackle, Rex unvalved the sphere, let it flow through a flip, and turned it back off. There was a circle of canvas missing from the chair seat now, and the evened cat dropped through the hole to the floor, passing right through the temporarily matter-transparent cumberquark.

Kissycat was a goodsized pink ball with two holes in it. Rex had managed to get the middle sphere bang on in the cat's stomach. The crust he'd just fed Kissycat was lying right there next to the stomach. The stomach twitched and jerked. It had two sphincterish holes in it—holes that presumably tunneled to Kissycat's mouth and anus. Rex gave the ball a little kick and it made a muffled mewling noise.

"A little *strange* in there is it, hand-scratcher?"

"Rex," came Zee's subvocal voice. "Don't be mean. Isn't he going to suffocate?" She was like a goddamn good conscience. If only Alf had been good, too. *He couldn't let himself think about Candy!*

Rex forced his attention back to the matter at hand. "Kissycat won't suffocate for a few minutes. Look how big he is. There's a lot of air in there with him. He's like a balloon!" The ball shuddered and mewed again, more faintly than before. "I'm just surprised the flip didn't break his neck or something."

"No, that's safe enough. Space is kind of rubbery, you know. But listen, Rex, his air is running out fast. Turn him back."

"I don't want to. I want to show him to—" Rex was struck by an idea. Moving quickly, he took the tubular housing of a ballpoint pen and pushed it deep into one of the stomach holes. Kissycat's esophagus. Stale air came rushing out in a gassy yowl. The pink ball shrank to catsize. After a few moments of confused struggle, the ball began pulsing steadily, pumping breaths in and out of the pen-tube.

There was noise downstairs. Marjorie! Rex turned the cumber-quark back into a bright flowing little fuzzball, then put it and the everted cat inside his briefcase. He pounded down the stairs and got his Coke. "Thanks, Marjorie! Sorry to run, I just realized how late it is."

"Where's Kissycat?"

"Uh ... I'm not sure. Inside or outside or something." Rex's briefcase was making a faint hissing noise.

"Some babysitter *you* are," said Marjorie, cocking her head in kittenish pique. "What's that *noise*? Do you—"

Rex lunged for the door, but now Zee had to put her two-cents worth in. "Look," cried Rex's mouth as his arms dumped the contents of his briefcase out onto the dirty hallway floor.

Marjorie screamed. "You've killed him! You're crazy! Help!"

Zee relinquished control of Rex and hunkered somewhere inside him, snickering. Rex could hear her laughter like elfin bells. He snatched up his cumberquark and made as if to run for it, but Marjorie's tearful face won his sudden sympathy. She was a pest, and a kid, but still—

"Stop screaming, dammit. I can turn him back."

"You killed my cat!"

"He scratched my hand. And he's not dead anyway. He's just inside out. I wanted to borrow him to show Candy. I wasn't going to hurt him any. Honest. I turned him inside out with my cumberquark, and I can turn him back."

"You can? What's that plastic tube?"

"He's breathing through it. Now look. Let's get something that can go in his stomach without making him sick. Uh ... how about a sheet of newspaper. Yeah." Moving quickly, Rex spread out a sheet of old newspaper and set the everted cat on it. Marjorie watched him with wide, frightened eyes. "Don't look at me that way, dammit. Come here and pick up the paper, Marjorie, hold it stretched tight out in front of you." She obeyed, and Rex got the cumberquark halted and in position, more or less. He reached in and took out the pen-tube, then readjusted the cumberquark. Marjorie was shaking. If Rex did the flip with the inner sphere intersecting Kissycat's flesh, this was going to be gross.

"Hold real still." He steadied himself and unvalved the cumber-quark for a half turn, then tightened it back.

Mrrraaow! Kissycat landed on his feet, right on the circle of cloth that had been part of Rex's chairseat upstairs. Marjorie stared down through the hole in her newspaper at him and cried out his name. Spotting Rex, the cat took off down the hall, heading for the dark recesses of the basement.

Everything was OK for a moment there, but then Zee had to speak back up. "I was thinking, Marjorie, about a wild new way to have sex. I could put the cumberquark's central sphere in your womb and turn you inside out and—"

With a major effort of will, Rex got himself out the door and on the street before Zee could finish her suggestion. Marjorie watched him leave, too stunned to react.

The three-mile drive home seemed to take a very long time. As the hot summer air beat in through the open car window, Rex kept thinking about inside out. What was the very innermost of all—the one/multi language of quantum logic? And what, finally, was outermost of all—dead Aristotle's Empeyrean? Zee knew, or maybe she didn't. Though Zee was not so scalebound as Rex, she was still finite, and her levels reached only so far, both up and down. There's a sense in which zero is as far away as infinity: you can keep halving your size or keep doubling, but you never get to zero or infinity.

Rex's thoughts grew less abstract. His perceptions were so loosened by the morning's play that he kept seeing things inside out. Passing through Killeville, he could hear the bored platypus honking inside the offices, outside the tense exchanges in the Pizza Hut kitchens, inside the slow rustlings in the black people's small shops, outside the redundant empty Killeville churches, inside the funeral homes with secret stinks, outside the huge "fine homes" with only a widow home, inside a supermarket office with the manager holding a plain teenage girl clerk on his gray-clad knees, outside a plastic gallon of milk. Entering his neighborhood, Rex could see into his neighbor's hearts, see the wheels of worry and pain; and finally he could understand how little anyone else's problems connected to his own. No one cared about him,

nobody but Candy.

There were four strange cars in front of his house. A rusty pickup, a beetle, an MG, and a Jap pickup. Rex knew the MG was Roland Brody's, but who the hell were those other people?

There was a man sitting on Rex's porch steps, a redneck who worked at the gas station. He smiled thinly and patted the spot on the porch next to him.

"Hydee. Ah'm Jody. And Ah believe yore her old man. Poor son. Hee hee."

"This isn't right."

Another man hollered out the front door, a banker platypus in his white undershirt and flipperlength black socks. "Get some brew, Jodih, and we'll *all* go back for seconds! She goin' strong!"

Laughter drifted down from the second floor. The phone was ringing.

Rex staggered about on the sidewalk there, in the hot sun, reeling under the impact of all this nightmare. What could he do? Candy had flipped, she was doing it with every guy she vaguely even knew! A Plymouth van full of teenage boys pulled into Rex's drive. He recognized the driver from church, but the boy didn't recognize Rex.

"Is old lady Redman still up there putting out?" asked the callow, lightly mustached youth.

Rex put his briefcase down on the ground and took out the cumberquark. "You better get out of here, kid. I'm Mr. Redman."

The van backed up rapidly and drove off. Rex could hear the excited boys whooping and laughing. Jody smiled down at him from the porch. Standing there in the high-noon moment, Rex could hear moans from upstairs. His wife; his wife having an orgasm with another man. This was just so—

"Poor Rex," said Zee. "That Alf is awful. He's not even from Earth."

"Shut up, you bitch," said Rex, starting up the steps.

"You gonna try and whup me?" Jody's hands were large and callused. He was ready for a fight. In Jody's trailerpark circles, fighting went with sex.

Rex spread the cumberquark out to the size of a washing machine, and cut off its rotation. There was a lot of noise in his head: thumps and jabber. Jody rose up into a crouch. Rex lunged forward, spreading the cumberquark just a bit wider. For a frozen second there, the outer sphere surrounded Jody, and Rex cut the hyperflow on.

The surface was opaque fractal fuzz. You wouldn't have known someone was inside, if it hadn't been for the wah-wah-wah sound of Jody's screams, chopped into pulses by the hyperflow. The cumber-quark rested solidly on the hole it had cut into the porch steps.

"You're next, man," Rex yelled to the platypus man looking out the front door. "I'm going to kill you, you preppy bastard!" With rapid movements of his bill and flippers, the banker got in his black Toyota truck and left. Rex turned Jody *off* to see what was what.

Not right. Edge-on to all normal dimensions, Jody was an annular cut-out, a slice of Halloween pumpkin. Rex eased him through another quarter turn and Jody was back on the steps. The cumberquark had stayed good and steady through all this—everything was back where it had started.

"How did it look, Jody?" Rex's teeth were chattering.

"Unh." For gasping Jody, Rex was no longer a person but rather a force of nature. Jody moved slowly down the steps talking to himself. "No nothin' all inside out mah haid up mah butt just for snatch man god—"

Rex shrank the cumberquark down a bit as Jody drove off. The VW and the MG were still there. How could Roland have done this to him? And who was the fourth guy?

The fourth guy was the real one, the lover a husband never sees. As Rex entered his house, the fourth man ran out the back door, looped around the house, and took off in his bug. Let him go. Rex went upstairs, Roland Brody was sitting on the edge of Rex and Candy's bed looking chipper.

"Damn, Rex! I didn't know Candy had it in her. I mean to tell you!" Roland fished his underpants off the floor and pulled them on. He was an old friend, an utterly charming man, tall and twitchy and with a profile like Thomas Jefferson on the nickel. A true Virginia gentleman. He had a deprecating way of turning everything into a joke. Even now, it was hard to be angry with him. The VW's popping faded, and Rex sank down into a chair. He was trembling all over. The cumberquark nestled soothingly in his lap.

Candy had the sheet pulled all the way up to her nose. Her big blue eyes peered over the top. "Don't leave, Roland, I'm scared of what he'll do. Can you forgive me, Rex? Alf made me do it."

"Who's this fellow?" asked Roland, tucking the tail of his button-down shirt into his black pants. "Was he the guy in the VW?"

"You're a bastard to have done it too, Roland," said Rex.

"Hell, Rex. Wouldn't you?"

The room reeked of sex. The jabbering was still in Rex's head—a sound like a woman talking fast. All of a sudden he didn't know what he was doing. He stretched the cumberquark out big and stopped and started it, turning big chunks of the room inside out. Part of the chair, circles of the floor, Candy's dresser-top, a big piece of mattress. Roland tried to grab Rex, and Rex turned Roland's forearm into pulp that fell to the floor. Candy was screaming bloody murder. Rex advanced on her, chunking the cumberquark on and off like a holepuncher, eating up their defiled bed. The womanvoice in his head was coming through Rex's mouth.

"Better get out of her, Alf, better get out or your bod is gone, you crooked hiss from outspace, Alf, I'll chunk you down, man, better split Alf, better go or—"

"Stop!" yelled Candy. "Rex please stop!" Rex made the cumberquark go matter-transparent, and he slid it up over her legs. Candy's face got that pixie look and Alf spoke.

"I'm only having fun," he said. "Leave me alone, jerk, I'm your wife. I'm in here to stay."

Then Rex knew what to do, he knew it like a math problem. He thought it fast with Zee, and she said yes.

Rex shrank the cumberquark real small and put it in his pocket. Poor Roland had collapsed on the floor. He was bleeding to death. Rex tied off Roland's armstub with his necktie.

"Sorry, Roland. I'll drive you to the hospital, man."

"Damn, Rex, damn. Hurry."

"That's right," said Alf/Candy. "Get out of here and leave me alone."

The hospital wasn't far. Rex dropped Roland at the emergency door and went back home. Instead of going in the front door he went in the basement door to sit in his study. There was no use talking to Candy before he got rid of Alf.

He took the cumberquark out of his pocket and set it down on his desk. Small, fast, flowy. He leaned over it and breathed. Hot bright Zee rode his breath out of his body and into the cumberquark. She could live there as well as in Rex. The little sphere lifted off Rex's desk and buzzed around the study like a housefly. Zee had a way of pulsing its flow off and on to convert some of its four-D momentum into antigravity. Now she stopped the quark's flow entirely and inflated it out through Rex so that it held all of him except his feet. Rex hopped into the air, up into the big light bubble. It stuttered on when he was all in.

Rex's sense inputs became a flicker. His room, his body, his room, his body, his room, his body ... In between the two three-D views were two prospects on hyperspace: *ana* and *kata*, black and white, heaven and hell. Room, *ana*, body, *kata*, room ... The four images were shuffled together seamlessly, but only the room view mattered right now.

Zee shrank the cumberquark down to fly-size again. Rex felt the antigravity force as a jet from his spine. Thanks to the way Zee was pulsing the hyperflow, there was plenty of fresh air. They looped the

loop, got a fix on things, and space-curved their way upstairs.

Candy/Alf didn't notice them at first. She was lying still, staring at the ceiling. Rex/Zee hovered over her and then, before the woman could react, they zoomed down at her, shrinking small enough to enter her nose.

Pink cavern with blonde hairs, a dark tunnel at the back, rush of wind, onward. No light in here, but Rex/Zee could see by the quark-light of quantum strangeness. Oh Candy it's nice in you. Me, *kata*, you, *ana*, me, *kata*, you ...

There was an evil glow in one of Candy's lungs: Alf. He looked like a goblin, crouched there with pointed nose and ears. Rex/Zee bored right into him, wrapping his fibers around and around them, knotting him into their complex join.

And zoomed back out Candy's nose, and got big again, and stopped.

Rex was standing in his bedroom. The ball that was Zee and Alf dipped in salute and sailed out the window.

Candy stood up and hugged Rex. They were still in love.

That winter Rex would get a new job, and they would leave Killeville, taking with them the children, a van of furniture, and the memory of this strange summer day.