

As Above, So Below

A 3D Mandelbrot Set Story

by Rudy Rucker

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I'd been overhacking again. The warm California night was real and intimate, *synaesthetic*, with the distant surfsound matching the pebbly parking lot under my bare feet, and the flowering shrub of jade plant in front of me fitting in too, with its fat loplop green leaves and stuft yellow star petals knobbing along like my breath and my heartbeat, and the rest of the plants matching the rest of the world: the menthol-smelling eucalyptus trees like the rush of the cars, the palm trees like my jittering synapses, the bed of calla lilies white and wonderful as the woman waiting for me at home, ah the plants, with their smells and their realtime ongoing updates ...

The old flash came rushing over me once again: astonishment at the vastness of the invisible world machinery that keeps all this running, awe for the great program the world is working out. *What a system! What a hack!*

I was stoned and I'd been overhacking and my eyes were throbbing and I couldn't remember what I'd said to Donna when she phoned ... an hour ago? ... nor could I remember when I'd last eaten. Eat. I walked across Route 1 to the Taco Bell. There were some kids there with pet rats crawling out of their Salvation Army coats, nice middle class kids no doubt, this being Santa Cruz. They wanted their burritos with no beans. "Beans are the worst," one of them explained to the cholo countergirl. The back of the boy's head had a remarkable yellow and green food-coloring dye job. A buzzcut DA with the left back half kapok yellow and the right half a poisonous green. The colors made me think of the assembly language XOR operation, which is a little like MINUS. Green XOR Yellow is Red. If I let my eyes go out of focus I could see a strip of red down the back of his head. I didn't want to think about the weird screens I'd just been watching at my workstation in the empty Micromax labs.

The boy's rat poked its head over the boy's shoulder and cheesed its nose at me, *twitch twitch*, the long whiskers sweeping out envelopes of virtual surfaces. The beastie had long yellow fangs, though a festive air withal.

"You should dye the rat red," I observed. "And call him XOR. Exclusive OR."

"Beans are the worst," repeated the boy, not acknowledging. He paid for his beanless burritos and left.

"Your order sir?" My turn.

"Four tacos and a large iced-tea."

I ate the food out on the concrete patio tables. I poured on the hot sauce and it was really good. I liked being there except I didn't like the traffic and I didn't like the wind blowing all the paper off my table. They give you a lot a lot of paper at Taco Bell. It's really obvious that the paper costs more than the food. But except for the wind and the traffic, I was feeling good. It was so neat to be getting input for free. When you're hacking, you're coupled to the screen, and all your input is from the machine's output which all comes from the passage of time and from what you put in the machine. You're making your own world all the time. And then you go outside and there's all this great deep complex shit for free. The crackle of the thin taco shells, the faces of the punks, the wind on my face, and best of all --- always the best --- the plants.

Plants are really where it's at, no lie. Take an oak tree: it grows from an acorn, right? The acorn is the program and the oak tree is the output. The runtime is like 80 years. That's the best kind of computation ... where a short program runs for a long long time and makes an interesting image. Lots of things are like that --- a simple start and a long computation. In information theory we call it low complexity/high depth. *Low complexity* means short program, and *high depth* means a long runtime.

A really good example of a low complexity/high depth pattern is the Mandelbrot set. You grow it in the plane ... for each point you keep squaring and adding in the last value, and some points go out to infinity and some don't. The ones that don't are inside the Mandelbrot set which is a big warty ass-shape with a disk stuck onto it. There's an antenna sticking out of the disk, and shish-kabobbed onto the antenna are tiny little Mandelbrot sets: ass, warts & disk. Each of the warts is a Mandelbrot disk, too, each with a wiggly antenna coming out, and with shish-kabobs of ass, warts & disk, with yet

smaller antennae, asses, warts, and disks, all swirled into maelstroms and lobed vortices, into paisley cactus high desert, into the Santa Cruz cliffs being eaten by the evercrashing sea.

The Mandelbrot set goes on forever, deeper and deeper down into more and more detail, except sooner or later you always get tired and go home. After I finished my tacos I walked back across Route 1 and got in my bicycle. It was a carbonfiber lowrider with fat smooth tires of catalyzed imipolex. I realized that I'd left my workstation computer on inside the Micromax building, but I just couldn't handle going back in there to shut things off. It had been getting too weird. The last thing I thought I'd seen on my Mandelbrot set screen had been hairline cracks in the glass.

There was a liquor store just before the turnoff from Route 1 to the long road uphill to our house. My friend Jerry Rankle had stopped by Micromax to hand me a little capsule of white dust a couple of hours ago and I'd swallowed it fast and robotlike, thinking something like *this'll get you off the machine all right, Will*, because I knew I was overhacking and I wanted to stop. I'd been the last one out of Micromax every day for a week.

"Lemme know how it hits you, Will," Jerry had said in his jerky stuttery voice, always on the verge of a giggle. He was an old pal, a rundown needlefreak who'd once summed up his worldview for me in the immortal phrase: "The Universe Is Made of Jokes."

"What is it exactly?" I'd thought to ask, sitting there at my workstation, feeling the little lump of the pill in my gullet, suddenly worried, but not talking too loud just in case my yuppie boss Steven Koss was within earshot. "How fast does it come on?"

"Wait and see," said Jerry. "It's brand new. You can name it, man. Some H. A. biohackers in Redwood City invented it last week. Could be a new scene." *H. A.* stood for *Hells Angels*. Jerry thought highly of H. A. drug suppliers.

Now, on my bicycle, two hours later, passing the liquor store, I realized Jerry's stuff was hitting me weird, worse than MDMA, this tinker-toy crap some slushed biker chemist had biohacked together --- I was grinding my teeth like crazy and for sure it was going to be a good idea to have some booze to smooth the edges.

Basically, I was scared of going nuts just then, with the overhacking and the pot and the speed and now Jerry's pill on top of it. The images I'd been getting on the machine just before quitting were at wholly new levels of detail in the Mandelbrot set. These were new levels I'd accessed with brand-new hardware boards, and the almost impossible thing is that at the new levels the images were becoming more than two-dimensional. Partly it was because I was breeding the Mandelbrot set with a chaotic tree pattern, but it had also seemed as if my new, enhanced Mandelbrot set was somehow taking advantage of the screen phosphor's slight thickness to ruck itself up into faintly gnarled tissues that wanted (I could tell) to slide off the screen, across the desk, and onto my face just like the speedy octopus stage of the creature in that old flick *Alien*, the stage where the creature grabs onto some guy's face and forces a sick egg down his esophagus.

Wo!

So I'd left the office, I'd had my tacos and tea, and now calmly calmly I was taking the precautionary measure of picking up a cylindrical pint bottle of Gusano Rojo, a Mexican-bottled distillation of mescal cactus, with an authentic cactus worm (*gusano rojo* means *red worm*) on the bottom. I paid the Korean behind the counter, I got back on my bike, I took a few hits of Gusano Rojo, I tucked the bottle in my knapsack, and I started the rest of the way uphill, trying to stave off the pill by ignoring it, even though I couldn't stop the grinding of my teeth.

I held it all together until the last slope up to our house. The fatigue and the fear and the drugs started to clash really badly, and then the new drug kicked in top-volume, fusing shut the sanity brainswitch I'd desperately been holding open. It was nasty.

I lost control of my bicycle and weaved into the ditch. The bike's cage protected me, more or less, not that I noticed. The bumps and jolts were like jerky camera motion on a screen. When the picture stopped moving the camera was pointing up into the sky.

I lay there quietly grinding my teeth, like a barnacle sifting seawater, unwilling to move and to stir up more sensations to analyze. The patch of sky I could see included the moon, which was nearly full. Her pale gold face churned with images, though her outline held steady. Dear moon, dear real world.

My calm lasted a few minutes, and then I began to worry. My leg was throbbing, was I badly cut? A car would stop soon; I would be institutionalized or killed; I was

really and truly going crazy for good; this would never stop; the whole cozy womany world I leaned on was a rapidly tattering computer pattern on the nonscreen of the angry Void; and *actually* I was bleeding to death and too wrecked to do anything about it?!?!?

Wo. I sat up. The bike's front wheel was broken. I dragged my machine up the road's low sand embankment and shoved it into the manzanita chaparral. There was a tussocky meadowlet of soft grass and yellow-blossomed wood-sorrel a few meters further in. All the plants smiled at me and said, "Hello." I lolled down and took a hit off my pint. Donna would be worried, but I couldn't hack going home just yet. I needed to lay out here in the moonlight a minute and enjoy my medication. I was pretty together after all; the clashing was all over and the drugs had like balanced each other out. Though I was in orbit, I was by no means out to lunch. My skin felt prickly, like just before a thunderstorm.

And that's when the creature came for me --- all the way from the place where zero and infinity are the same.

The first unusual thing I noticed was a lot of colored fireflies darting around, all red, yellow and green. I could tell they weren't hallucinations because they kept bumping into me. And then all at once there was this giant light moving up the hillside towards me. The light was so big and so bright that the manzanita bushes cast shadows. At first I was scared it was a police helicopter, and I scooted closer to the bushes to hide. The light kept getting brighter, so bright that I thought it was a nuclear explosion. I didn't want to be blinded, so I closed my eyes.

And then nothing was happening, except there was a kind of hissing sound, really rich and complicated hissing, like a thousand soft radios playing at once. I opened my eyes back up and the light was overhead. It was hovering right over me, hissing and sputtering in a whispery way. I decided it was a UFO.

I knew the aliens could do whatever they wanted, and I knew they saw me, so I just lay there staring up at the ship. It was maybe fifty feet overhead and maybe fifty feet long. Or maybe a hundred and a hundred ... it was kind of hard to tell. There were zillions of those fireflies now; and the ones high off the ground and closer to the ship seemed larger. There were thin tendrils connecting the fireflies to the ship so that the whole thing was like a jellyfish with bumpy tentacles hanging down, though by the time they got to

the ground the tendrils were too small to see, so that it looked like the “fireflies” weren’t connected. I reached out and caught a couple of them ... they were tingly and hard to hold on to. My skin was prickling like mad.

I yelled “Hello!” up at the UFO just so it would know I was an intelligent being. And then I was thinking maybe it had come especially to see me, so I yelled, “Welcome! My name is Will Coyote! I’m a hacker!” For the time being the mothership just stayed up there, hissing and with all its tendrils wafting this way and that like beautiful strings of Tivoli lights flashing red, yellow and green.

The ship itself was shaped in three main parts. There was a great big back section with a dimple in it, and then there was a smaller spherical section attached opposite the dimple, and sticking out of the front of the sphere section was a long spike kind of thing. It was just like --- oh my God! --- *just like a giant three-dimensional Mandelbrot set!* Though also like a beetle in a way, and like a jellyfish.

The UFO came lower and then some of the thicker tendrils were brushing against me. They felt shuddery, like the metal on a shorted out toaster. I figured the prickly feeling I’d been getting was from invisible fine tendrils that I couldn’t see. Could it be possible the thing was going to eat me like a Portuguese man-of-war that’s got hold of a small fish? I screamed out, “Don’t hurt me, I’m an intelligent being like you!” and the thing hissed louder, and then suddenly the hissing Fourier-transformed itself into a human voice. A woman’s voice.

“Don’t worry, William, I am very grateful to you. I wish to take you for a ride.”

I tried to stand up then, but I was too fucking zoned. So I just smiled and stretched by arms up to the big UFO ass. UFO? This *had* to be a hallucination. Slowly, slowly, it came lower.

The tendrils were thick as vines, and the fireflies on the tendrils were as big as grapefruits and baseballs. Since this whole ship was a fractal, each of the firefly globs was a three-sectioned thing like the main body: each of them was a dimpled round ass part with a little antennaed head-sphere stuck onto it. This was absolutely the best graphic ever. I was really happy.

I took one of the baby Mandelbrot sets in my hands and peered at it. It was warm and jittery as a pet mouse. Even though the little globster was vague at the edges, it was

solid in the middle. Better than a graphic. I cradled it and touched it to my face. As the big mamma came lower I kept calm by wondering if she was real.

I stayed cool right up to when the giant ass landed on me and began pressing me down against the ground --- pressing so hard that I could barely breathe. Was I like *dying* or some shit? Had I passed out, gotten apnea, and forgotten to breathe? I blinked and looked again, but the ass was still there; and right up against my face was the incredibly detailed female hide of a gigantic three dimensional Mandelbrot set, man, like all covered with warts on warts and cracks in cracks and bristles'n'bristles evverywhaaar, oh sisters and brothers, and the whole thing rippling with every color of the rainbow and loaded with such a strong electric charge that my nose prickled and I had to sneeze.

The sneeze changed something. Everything got black. Now I was really dead, right?

“Welcome aboard, William,” came the deep, thrilling voice of the mandelsphere’s dark innards. “My name is Ma.”

It was not wholly dark, no indeed --- there were objects, but objects of such a refined and subtle nature that, likely as not, I would normally have walked right through them, except that here I had nothing else to walk into or through, so they became real to me.

It was not really dark, and it was not really small inside Ma. The space within was the mirror of the space without. While the outside of the Mandelbrot set’s hide was crowded and entangled, the hide’s inside was endlessly spacious. There being nowhere in particular to go, I sat myself down in a faintly glowing blue armchair and spoke.

“Where are you from?”

“I am everywhere; beyond all space, and within the tiniest motes. I am any size that wants me. You called me here.”

“It’s good to see all that programming finally pay off.” I was giddy with excitement. “Can I get a drink?”

Faint shapes wafted around me, and then a long luminous beaker of yellow was in my hand. I sucked greedily at the pure energy fluid. This was the kind of rest I deserved after all that mindbreaking hacking: always shifting bits left and right to make bytes, masking the bytes together into register-sized words, generating lookup tables, finding

room for the tables in RAM, feeding the output into the color display ports ... I drank and drank, and my glass was always full.

One pale shape after another came to me, flowed over me, and gave way to the next one. Each was reading me like a book, accessing me like a hypertext, learning the nature of my familiar world. It seemed that each could sense me in a slightly different way. While they read me, I thought questions and they thought answers back.

The shapes were like different body parts --- each an aspect of the single higher-dimensional entity called Ma.

According to Ma, the smallest and largest sizes were one and the same. That was her native habitat.

Ma needed my presence to easily stay at this size-scale; for her it was more natural to exist as a quark or a universe. I was like a snag in a rushing river for her to hold onto.

Despite that, said Ma, there was only one thing at all, and that one thing was Ma.

“Am I you?”

“You are a pattern in the potentially infinite computation that is the universe; and I am the actually infinite end of said computation. I am all space and all time. The world you live in is happening; my essence is what comes before and after your mundane time.”

“How long is the program that starts it all?”

“Two bits. One Zero.”

“What about all the details?”

“You’d call it ‘screen wrap.’ Patterns grow out and around and come back over themselves and make fringes. It adds up over the billions of years, especially when you remember that each point in space is updating the computation each instant. Each of those points is me; I’m the rule that runs it all; and looked at the other way, I’m all the past and all the future.”

“I can totally dig it, Ma. The universe has a simple code and a long rich parallel computation. There are infinitely many size scales so in fact each orange or atom has everything inside it. Right on. What about uncertainty and Planck’s constant, though. Is that a hassle for you, Ma?”

She got into a complex answer involving infinite-dimensional Hilbert space --- the human modes of thinking were new to her so we had some back and forth about it --- and the conversation drifted on. Talking mathematical metaphysics, lolling on my ethereal couch, sipping my invigorating energy drink, and with the eager phantom Ma figures mounting me like harem girls, I swore I'd never been so happy. But then, all at once, the joy ended.

"Two more people are here," said Ma's sweet voice. "One of them is --- Ow!" There was a sputtering and a lashing. "They've torn off a piece of me," she screamed. "And now ... oh no --- "

There was a brainsplitting cry of pure agony, a pop, and then I thudded to the hard ground.

"Will! Hey, Will!" It was my wife, Donna, and my boss, Stephen Koss. They were proud of themselves for "saving" me.

"Yeah," gloated Koss, stupid yuppie that he was. "I shot it with my Tazer." He held up a stubby box with two wires trailing out of it. "Was some kind of anomalous electromagnetic field, I guess, and my jolt disrupted it. You feeling okay, big guy?"

"Why did you shoot it?" I asked, sitting up. "It was so beautiful!"

"It was going for your wife!" he snapped. I noticed that he had his arm across her shoulders.

Donna's face was a white patch inside her long, hanging-down dark hair. "Are you all right, Will? What happened was I pulled off one of the baby globbies, and it started screaming and flashing checkerboard sparks." She held something cradled against her breasts. It glowed.

"You got a baby Ma?" I cried, getting to my feet.

Donna cracked her fingers so Koss and I could peek in and see a flowing, colored, tiny Ma. Donna held it tight as a baby. Its little tail or spike stuck out below her hands. The tail was knobbed with tinier Mas.

"I broke it off the big one, and the big one got mad," smiled Donna. "Do you think we could keep this one for a pet?"

"Pet, hell," said Koss. "We can sell them."

The magic energy drink Ma'd given me had gotten my head back together pretty good. The three of us went on up to our house on top of the hill, Donna and I in our dingy Honda, Koss following behind in his Jaguar with my wrecked bike.

"I was really worried when you didn't come home," said Donna. She was driving and I was holding the baby Ma. Ma felt good to my hands.

"I called Micromax and nobody was there except that thing, that AI answering machine," continued Donna. She didn't sound particularly friendly. "So I decided to drive downtown and look for you. I just knew you'd be drunk and stoned again. God, I'm sick of you, Will. You never notice me anymore."

"Don't start nagging me, Donna."

"Oh, right. That's what you always say: *Don't talk, Donna, be quiet*. Well, I've had it, Will, with your computer and your drugs. When was the last time you bothered to touch me? I need love, Will, I need someone who'll listen to me!"

What she said was true, but why did she have to start in on it now? "I hear you, Donna, loud and clear. Can you tell me more about how you found me?"

She sighed and shook her head and grudgingly told me the rest. "Halfway down the hill I saw this huge bright light UFO sitting on the ground. I got out and looked at it, and after awhile I picked a bud off it. It got all upset. That's all."

"How does Koss fit in?" I demanded. "Who told him to show up with his asshole electric gun?"

"Steven thought I was in danger," said Donna. "He cares about me. Not like you, Will, so stoned and hacked you don't know the first thing about me anymore. Steven showed up in his Jaguar right before I picked the bud. He said the stupid AI thing at Micromax called him to tell him a window was broken. And when he went there he found your terminal's glass all broken out, too. He thinks the UFO thing came from your computer, Will."

"Her name is Ma, Donna. She's an infinite fractal from Hilbert space. This little one is all of her. Each of her bumps is all of her. She's every particle, and she's the whole world." I held Ma up to my face and kissed her warty tingly hide. Each time I kissed her she grew a little. Donna sighed heavily.

Back at the house, I couldn't get Koss to leave. He was all fired up with excitement from having killed something. Jock, caveman, yuppie --- all the same. He preened himself in front of the disgustingly attentive Donna, laying down his moronic rap about what he thought had happened.

"I was in the exercise room working out with my exercise machine --- hey, I need it every day, guys --- and then the emergency phone's all ringing from our AI about a broken window. I get in my Jag, cruise down there, and find Will's fifteen thousand dollar Mitsubishi VGA with the front screen blown away. I'm wondering if one of Will's dusted-out friends've blown him away or what. I decide not to call the pig in, I board up the broken window --- then outside I'm all *what's that light on the hillside?* I wind the Jag on up here and it's some kind of atmospheric plasma display? Donna's standing under it looking real fine --- and she's got the idea to tear off a little bud from it and all at once it's violent."

By this point Koss was pacing and pounding his hand with his fit tan fist, reliving the big play. "At the speeds I travel, you can't waste time saying why. You just react. I snapped my Jaguar's utility boot open and got out the heavy-duty stungun I keep in there in case of trouble. Sucker's got a gunpowder charge that shoots two metal fishhook electrodes twenty yards. Those 'trodes pack 150 volts! I aimed steady and I nailed that big mother right in its butt. *FFFFFTT!*"

"Big deal," I said. "Donna already told me."

"Let's tear another glob off that little one," said Koss.

"You better not," said Donna. "It'll get violent!"

"This little one can't hurt us," chortled Koss, snatching it out of my hands and tearing off a bud.

Little Ma screamed, but only I could hear her. She got an ugly cyan/white/magenta for a few minutes, and her broken tendril shot out black and white sparks, but a minute later she was a calm red/yellow/green and the sparking spot had healed over.

"Check it out, Donna!" exulted Koss. "We got work to do!" He pulled off another bud and another. "Like artichokes!"

"How exciting," squealed Donna.

I just wanted to be alone with a Ma and grow it big enough to get inside again, but Koss got on my case about how I should write up a sample ad for the new company we were going to start. I told him to get fucked. Donna frowned at me and wrote an ad that was so bogus that I rewrote it. The finished version went like this:

WONDERGLOBS

The living Wonderglob is an object of unparalleled beauty. Like God or the Universe itself, the Wonderglob feeds on YOUR attention --- the more you look at it, the larger it grows.

Perhaps the most satisfying aspect of owning a Wonderglob is that you can HARVEST BUDS from it and, under our franchising agreement, SELL these buds to your friends! The initial investment pays for itself in a matter of weeks!

The Wonderglob dislikes electricity and is easily kept captive in our patented Wondertanks, whose metal-plated glass sides carry a small electric charge. The Wonderglob may be removed for play and meditation, but be sure to replace it in the Wondertank, particularly after harvesting.

We didn't happen to have any "patented Wondertanks" handy, but Donna had the idea of hooking a wire to the tightly woven steel mesh of our old djinkotl cage and keeping the buds in there. The Mas hated it, man, they were shrinking steadily. Meanwhile Koss was giving Donna lines of coke and jabbering about money. I couldn't tell if things were as bad as they seemed, or worse. I chilled and crashed.

I snapped awake at 4:00 A. M. the way I sometimes do. Like if I go to bed wrecked, the survival reflex wakes me as soon as the limbic systems reboot. I wake up to assess the damages. Am I in bed? Who did I phone? What did I break?

Donna wasn't in bed with me. I got up and went in the living room. There was Koss putting it to her right there on our rug, her legs wrapped around his dumb cheeks.

My Mas are dying specks in a shitty lizard's cage and Koss here is putting it to my wife? While torturing my dreams for *gain*?

I picked up the djinkotl cage and headed outside. Koss and Donna barely noticed.

It so happens I know my woods like the back of my own prick. I went around the hill to a green boulder redwood gully, a special spot all ferned and purling, with small white flowers and soggy mosses and rivulets underfoot, and overhead clear sky and stars past the tall trees. I took the Ma buds out of djinkotl cage --- sixteen of them in all --- and held them in my hands and mooshed down into soft trickly moss where living water could well in through my finger cracks and feed the ripped off and the newborn buds.

They drank the water avidly; they grew closer to my size. I could hear her/their happy thoughts. Ma'd never tasted water at this size scale before. The newly harvested buds stopped at the size of oranges, while Donna's maimed original puffed up to womansize and continued to grow. Big Ma.

The spots where Koss had torn buds off were flat scars covered with a fine fractal down of new growth. Each of the new baby buds bore a single birth-scar, a kind of navel hidden in the cheeks of her swelling behind. Ma's girls.

Sixteen is hex-ten. The girls lifted off and darted about. When they got farther away from me, they either got a lot smaller or a lot bigger. Some of them went high into the redwoods and on up into the sky, growing as they flew. There were quick blinks of brightness across the sky as one by one they maxx'd out to cosmic scale. Others bumped down the gully towards the sea, dwindling to tiny bright specks in the water. A few hung around watching me and the main Ma.

And then the main Ma was big enough for me to get in her, so I did; I did it by hugging her against me until her shape slipped over me and I was back inside the endlessly vast interior of a fractal solid weird screen come true.

I wandered about in there at will. There were trees, there were boulders, but when you tripped over something it didn't hurt. I went up a nubby slope and found an ethereal armchair, same one as before, except now it was purple and it had wood trim along the arms. There was a glass of energy-drink on the floor by the chair, and laying there on the left arm's wood trim was a monster jay with a book of matches. I fired up for sure.

Breathing the smoke out, watching the tendrils, with a pink womany Ma shape on my lap, I forgot everything I ever knew.

And it was calm, and it was wonderful, until of course some new Nazi asshole was on our case.

“A loud machine,” said Ma. “Coming closer.”

If I peered closely at a little speck in the air near me, I could see out to the world outside. It was all there, right in that little speck, the hill, and the ocean, and Santa Cruz. Racketting towards Ma and me was an Army helicopter with searchlights and with guns. From the speck’s shifty viewpoint, I could even see the soldiers in the chopper, all peering down at our glow. They were getting ready to shoot us.

“Can we hide somewhere?” I asked Ma.

“Yes, William. I can shrink and I can jump in and out of Earth’s space.”

“Won’t that hurt me?”

“Inside me you’re already out of Earth’s space. And as far as shrinking goes --- infinity divided by ten is still infinity. My inside is always the same.”

“Then let’s go and get ... inside the can of Geisha Girl crabmeat in my kitchen cupboard.”

“It’s ... done.”

I took my attention off the little worldview speck --- which now showed strands of crabmeat, a can, and outside the can our kitchen. Cops in the house, talking to Koss and Donna.

That all happened yesterday, or maybe it’s been two days. The longer I’m in here, the better I can see. At my request, Ma’s got soft-edged computer graphics rippling over the endlessly unfolding surfaces around me --- Escher images, Gosper hacks, Conway games --- whatever I feel like seeing. It’s like programming without ever having to touch a key. And with the energy drinks I’m never hungry. It’s perfect in here.

I just hope no one gets hungry for canned crab.

Note on As Above, So Below

This story appeared in Byron Preiss, ed., *The Microverse*, Bantam Books, 1989, and in Rudy Rucker, *Gnar!!*, Four Walls Eight Windows Press, 2000. It was written in Los Gatos, California, in 1987.

Soon after moving to California, I gave a talk on Cellular Automata in Ralph Abraham's Chaos Seminar at the University of California at Santa Cruz. Nick Herbert, author of *Quantum Reality* (Anchor Books, 1987) was there. I knew Nick from having corresponded with him about relativity theory. After my UCSC talk we had dinner with Ralph, and then some hackers showed Nick and me a lot of Mandelbrot set graphics. All of this came together pretty readily into the start of a story.

"As Above So Below" is a phrase used by the mystic P.D. Ouspensky and by the theosophist Madame Blavatsky. They attribute the phrase to a legendary magician called Hermes Trismigistus.

It took me awhile to completely finish "As Above So Below." The first installment of it came out in *Terra Nova*, a hippie hacker zine published by Nick Turner and Romana Machado, whom I met at a reading I gave for the magazine *Mondo 2000*.

A few years later I was approached by the theater director Kathelin Hoffman, who was interested in putting on a one-act play by me in a theater in Fort Worth. I worked "As Above So Below" into a script, and it was produced from August 20 - September 5, 1992, by the Theater of All Possibilities at the Caravan of Dreams Performing Arts Center in Fort Worth. It was an amazing thing to see the actor Jim Covault impersonate Will Coyote who was, in turn, an impersonation of me.

Ma the Mandelbrot set was played by the thrilling Fiorella Tirenzi. The great SubGenius Ivan Stang was there in the audience next to me. What a night. Mathematics has been good to me.