Among the Hackers

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(This is an excerpt from Rudy Rucker's memoir, *Confessions of a Cyberpunk*)

During my second year in San Jose—this would have been 1987—I attended an annual event called the Hackers Conference. Hacker was still a good word back then. These guys were Silicon Valley programmers and hardware tweakers. Some of them were even fans of my books. The fact that I'd written a science fiction novel called *Software* had put me on the hackers' radar.

I brought my crude old IBM PC computer with the cellular automaton accelerator card I'd bought from some guys at MIT, and I stayed up all night with the hackers, drinking beer, smoking pot, and admiring our weird screens. Although Hollywood often depicts hackers as nerdy, inhibited types, that's not generally accurate. It's more common that hackers are like hippies or acid freaks or mad scientists or car mechanics.

In the wee hours of the night, they examined my cellular automaton machine card and told me how it worked. One of them remarked that it should in principle be possible to get rid of the card and accelerate the CA programs with pure software.

Things really got complicated after I met John Walker at the Hackers Conference. Walker happened to be a founder and the CEO of a booming Sausalito corporation called Autodesk, and he asked me if I'd like to come work for him. Autodesk had a big surplus in the bank, and Walker wanted to explore some radically new kinds of software products.

As it happened, one of the computer science students at San Jose State had gone over the edge and mass-murdered seven people at the lab where he worked. Richard Farley. I'd in fact sat next to Farley in the assembly language class that I'd audited during my first semester of teaching. He was a real asshole, always arguing with the teacher over picayune points that made no sense, and sleazing all over any women students who committed the error of sitting near him. Farley's rampage had made me

start wondering whether San Jose State was paying me enough to be associating with these kinds of people. If I could go out industry and make some real money—why not?

So when Walker and one of his software engineers, Eric Lyons, showed up at my house with a computer to show me a new Mandelbrot fractal zoom program they'd written, I decided to pursue finding work at Autodesk. The job offer came through in the fall of 1988.

Fortunately, San Jose State liked the idea of having faculty go out and work in industry for awhile. It was, after all, by far the best way for a computer science professor to pick up new skills. Whatever you know about computers is continually becoming obsolete, and the only people who stay abreast are the commercial software engineers. So the math and computer science department agreed to let me go on half-time leave, which I later increased to full-time leave.

At that time, Autodesk's core business was a product called AutoCAD, an electronic drafting program used worldwide by architects and industrial designers. But Walker didn't want me to work on that. Instead he was starting a small Advanced Technology Division, headed by Eric Lyons, and, for the moment, me and one or two other guys.

My first project was to produce some cellular automata software with Walker. He was an insanely talented programmer. He worked at the level of a grand master in chess, or at the level of a mathematician at the Institute for Advanced Study. Over Autodesk's one-week-long Christmas break, Walker wrote an assembly language program that eliminated any need for a special card such as a cellular automaton machine I'd been carrying around.

My role was to create some sample CAs for our new software to run, and to write a manual explaining it all. I got deeply into it, and finished this over the course of several months. When we were done, we'd produced a slick, boxed software package called *CA Lab: Rudy Rucker's Cellular Automata Laboratory*, which sold for about $50. In those days, some people were actually willing to buy software of this kind. I did demos of it at a number of computer trade fairs, always having to parry that same old question, "What's it good for?"

We sold a decent number of copies, and Walker had the idea that we could develop a whole line of software packages for hackers to enjoy. These packages were meant to be like books, but interactive, illustrating new aspects of science. Walker wanted to call the line the Autodesk Science Series.

The second package in the series was *James Gleick's Chaos: The Software*, which lets the user play with some of the programs mentioned in Gleick's best-selling book *Chaos*. Creating this program was a lot harder for me, as this time Walker didn't step in and write the hard part of the code. Instead I worked with another Autodesk programmer, a knowledgeable and irascible guy called Josh Gordon. Truth be told, my own programming skills were still pretty rudimentary, and Josh was never shy about telling me this. Really, I was in over my head. But somehow we struggled to a conclusion and shipped this second product, too.

Later, on my own, I'd write a third science series program called *Artificial Life Lab*, which would be published not by Autodesk, but by a low-end company in the North Bay—who never paid me all the money they owed.

The three programs are all long out of print by now, but you can download them for free from my website, www.rudyrucker.com. In searching my site, note that eventually we had to change the name of *CA Lab* to *Cellab*. The robotic greedheads who run some boring company called Computer Associates were threatening to sue us for infringing on their sacred trademarked initials CA. As if cellular automata hadn't been around much longer than them.

As Autodesk was located in Sausalito, some seventy miles north of where I lived, I only went there physically about once a week. The rest of the time I'd stay in touch via email, which was something brand new to me.

I quickly learned some painful lessons about email such as: Never write and send a message when you're angry or, even worse, drunk. And don't send the message to everyone in the company. And especially don't use curse words. Fortunately, hackers tend to be resilient and forgiving types. As Walker once put it, "Don't worry too much about flaming me. I have thick scales."

Going up to Autodesk was always a kick. Some days it would feel like grabbing hold of a live electric wire with a million volts coursing through it. They always had the

latest software and hardware, and the engineers were weird and smart, with awesomely wild plans.

Sometimes after work I'd visit with some spacey fans who lived in Mill Valley. One day they gave me a large marijuana plant, live and growing in a big pot that I could nurture in my back yard. I'd gotten a maximum new Mac computer from Autodesk that same day as well, along with Stephen Wolfram's brand-new computer algebra software, *Mathematica*. *And* thanks to my fat new salary, I'd bought myself a peppy red Acura. Driving home across the Golden Gate Bridge that day with all my goodies, I was like, "*Yeah!*" It was one of those rare moments when everything comes together.

I took to listening to CDs of environmental sounds on the long drive home. Like—I missed rain so much that I'd play a CD of a thunderstorm. I had other nature CDs too: a rain forest, a blizzard with a banging shutter, and a walk along a brook in a meadow followed by a ride in a sailboat. My mind would drift and I'd think about computer programs—not as code, but as patterns of shapes and connections, sort of like the way I'd formerly thought about infinite sets.

Things were always changing at Autodesk. By the time I stopped working there, the Advanced Technology division employed about twenty or thirty people. As well as my little Science Series programs, they'd set up a virtual reality lab.

We had sets of Jaron Lanier's new VR goggles, which held a little TV screen for each eye, also some stretchy, optical-fiber-equipped Datagloves that tracked the position of each finger joint, and created images of your hands in the virtual world that the goggles were showing you. I wrote a demo that immersed the user in a flock of artificially alive birds that were continually wheeling and regrouping around the user's position in cyberspace. Rather than making them look like actual birds, I made the birds look like three and four dimensional polyhedra that I called topes—and thus my demo was called Flocking Topes.

The lab's goal was to develop a VR operating system to be called Autodesk Cyberspace®. They'd picked this name on their own, and without asking me about it. My old cyberpunk writer friend William Gibson was a little annoyed by this development. After all, he'd *coined* the word cyberspace, and now Autodesk wanted to trademark it? When I saw Gibson at a San Francisco virtual reality fair called the

Cyberthon a few months later, he half-jokingly threatened to trademark the name of Autodesk's original virtual reality programmer, a talkative hipster named Eric Gullichsen.

Although sales of our *Chaos* program were even better than *CA Lab*'s had been, the profits from these relatively low-priced packages were negligible compared to Autodesk's income from their flagship product, AutoCAD. And Autodesk Cyberspace® was shaping up to be a dud. And then the company's stock price dropped.

Autodesk got a new CEO called Carol Bartz, and she closed down the Advanced Technology division. The company offered me the option of moving to Michigan and working on postmodern mathematical methods of describing curves in space, but I couldn't face leaving California. And so I was out of my software engineering job.

I had the spring semester in which to finish the code and the manual for my *Artificial Life Lab* project. Autodesk had gladly granted me the rights to this package, they didn't care about at all. They were, like, "Don't let the door hit you in the ass on the way out."

I hacked pretty hard that spring, and got the program working. The best part of it was a colony of virtual ants that I called "boppers," like the robots on my *Ware* novels. By way of testing out my new material, I gave a talk on my boppers program at a Silicon Valley company called Interval.

The manager who'd issued the invitation struck me as a vain blowhard. He wanted to bend my ear about some fundamental contradiction in mathematics he thought he'd discovered, when all he'd really done was to have a sloppy stab at some ideas that occur to everyone who ever writes a thesis in mathematical logic.

"I'm no mathematician," he'd begin his declamations with feigned humility. I wanted to yell, "I can see that you're not!"

How is it that guys like that end up being managers, while the smart people are the peons? While we talked, some poor guy who'd applied for a job as a hardware tech was off in a corner assembling a balsa wood model airplane. This was supposed to be a dexterity test to see if the guy was qualified. What an obnoxious thing to do to someone at an interview.

The MacArthur prize-winning chaos theorist Rob Shaw had a research spot at Interval at this time. I'd always admired Shaw, he'd tried to use chaos theory to beat the roulette wheels in Vegas, and, in a more academic vein, he'd written a famous monograph called *The Chaotic Dynamics of a Dripping Faucet.* He looked more like a hippie or a biker. The very first time I'd encountered him, he'd been sitting next to me on a plane to Las Alamos, and I'd thought he was a carpenter. He'd been doing this odd calculation with a pencil on a matchbook cover—it looked like long division, and he seemed to be doing it wrong. Later, when I realized who he was, Shaw had informed me he'd been computing the square root of two in binary notation, to see if the sequence of zeroes and ones in the answer would appear chaotic.

After my talk on my virtual ants, I went up to Shaw's office with him to hang out. He showed me a virtual stream of water that he'd designed, and some nice artificially alive insects. He gave my virtual ant program his blessing.

"That's a wild piece of code, Rudy."

In the fall I headed back to teaching full-time at San Jose State. I was glad the department had kept my position open for me.

It was little weird to be teaching yet again. Everything felt slow and dull compared to the scene in the Autodesk research labs. I was back to grading tests and homework programs, back to worrying about the ratings the students gave me on their evaluations, back to worrying if I was ever going to get tenure.

Attending a department party, I visualized myself as a rabbit caught in a snare, struggling against the tightening wire noose around my neck. I'd learned from having pet rabbits in Lynchburg that, when frightened or upset, rabbits can in fact make a sound. In my head at the faculty party, I was going, "*Wheenk, wheenk, wheenk!*"

Head trips like that cheer me up. They make the world more like a novel. In fact I became so fond of the word "wheenk," that I'd begin using it a technical lit-crit sense to mean, "strong and touching emotions felt by a character in a work of fiction." And then, if some story I was writing seemed too cold and scientific, I could remind myself in shorthand to, "Put in more wheenk."

A couple of months after I returned to teaching, President Bill Clinton passed through Los Gatos—he and Hilary were having dinner with some tech execs in a

restaurant here. My family and I were standing on the sidewalk as the Clintons' limo tooled by—with Carol Bartz riding in there with them.

"Carol!" I yelled, leaning out into the street. "I want my job back!"

The people around us laughed. They understood.